Practical Instrument Electronics

Model 522
Thermocouple Calibrator
Datasheet

Features

Direct Temperature Input/Output

Read or Source in °C or °F for your T/C type

8 Standard T/C Types Available

Types J, K, E, T, R, S, B, N and mV

Custom types and ranges are available

Cold Junction Compensated

Accurate to ±0.2 °C (±0.4 °F) with 0.1° Resolution

Millivolt accuracy of ±(0.008 % + 0.006 mV)

EZ-Dial™ Knob

Easily adjust output by 0.1 °

Pressing down and turning will select a faster dialing speed

EZ-Check™ Switch

User selectable EZ-Check™ for 0 % and 100 % span adjustment

Store new EZ-Check™ values by pressing the EZ-Dial™ knob

Recall stored minimum and maximum readings

Uses a standard 9V Alkaline Battery

Superior battery life of 45 hours under typical continuous usage

Easy access to battery compartment

Lightweight and Rugged with a Solid Feel

Small, tough and protected to 60 V

CE APPROVED!

Description

The Practical Instrument Electronics Model 522 is a complete source/read thermocouple calibrator providing direct temperature input to all types of instruments such as transmitters, recorders, controllers, alarms, data acquisition, and computer systems. The Model 522 also reads thermocouple outputs and displays temperature, eliminating the need for cumbersome books of conversion tables.

The Model 522 is equipped with a miniature T/C connector and slotted screws to connect to common thermocouple equipment or bare extension wire. Select from 8 T/C types to source/read in °C or °F with 0.1 ° resolution. Or, select mV for direct millivolt source/read capability. The Model 522 is internally cold-junction compensated for accuracy in any operating environment.

Use the EZ-Check™ Switch to quickly switch between three stored temperature/mV outputs. It's easy to customize these values to your application. In read mode, the EZ-Check™ Switch recalls minimum and maximum readings. Store/Clear memory with a press of the EZ-Dial™ Knob.

The Practical Instrument Electronics Model 522 offers the highest performance and functions in its class by exceeding the accuracy and functions of many higher priced thermocouple calibrators. It is a low cost solution for checkout and calibration of all thermocouple instruments in the field, shop or control room. Contact Practical Instruments Electronics for custom thermocouple curves, ranges, or special requirements not provided by the Model 522.

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Specifications

General Specifications:

Unless otherwise indicated all specifications are rated from a nominal 23 °C, 70 % RH for 1 year from calibration.

Temperature Range	-25 to 60 °C (-10 to 140 °F)
Relative Humidity Range	10 % ≤RH ≤90 % (0 to 35 °C), Non-condensing
	10 % ≤RH≤ 70 % (35 to 60 °C), Non-condensing
Overall Size	4.9 X 3.15 X 1.82 inches (125.5 X 80 X 46.2 mm)
Overall Weight (including 9V battery)	7.2 oz (204 grams)
Battery	9V Alkaline provides 45 hours of continuous use
Miscellaneous	Low battery indication with nominal 1 hour of operation left
	Overload protected to 60 volts for 30 seconds or less
	High-contrast graphic liquid crystal display with *0.357" (9.07 mm)* high digits
Accuracy:	
Millivolt Accuracy	±(0.008 % of mV Setting + 0.006 mV)
Temperature Coefficient of mV Source	50 ppm/°C of output range
Cold Junction Calibration Accuracy	±0.1 °C (0.2 °F)
Cold Junction Sensor Temperature Coefficient	±0.025 °/° in ambient temperature (°C or °F)
General Temperature Accuracy	±(0.008 % of mV setting + 0.006 mV) ± 0.1 °C (0.2 °F)
Resolution	0.1 °C or 0.1 °F

Source Thermocouple Specifications:

Output Range	-13.000 to +80.000 mV
Output Noise	±5 µV pp from 0.1 Hz to 10 Hz
Output Impedance	0.2 Ω (200 nV/uA)
Source Current	< 8 mA

Read Thermocouple Specifications:

Input Noise	< ±1 LSD from 0.1 Hz to 10 Hz
Input Impedance	> 1 MΩ
Open T/C Test Pulse	< 1 uA for 300 ms
Open T/C Response Time	< 3 seconds
Open T/C Threshold	10 kΩ nominal

Available Options:

Carrying Case	Part Number: 020-0205
T/C Wire Kits	Part Number: 020-0202 Wire kit 1 – includes J, T, E, K, leads with mini connectors
	Part Number: 020-0203 Wire kit 2 – includes B, R/S, N leads with mini connectors

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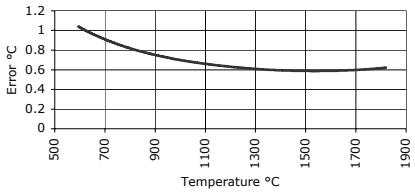
Other Products Available:

RTD Source (Single Type/1° resolution)	Model 510
RTD Source (7 Types, Ω/0.1° resolution)	Model 511
Pt100: α=1.3850, 1.3902, 1.3916, 1.3926	
Cu10: α=1.427	
Ni110: α=1.530	
Ni120: α=1.672	
RTD Calibrator (Source/Read 7 Types, Ω /0.1° resolution)	Model 512
RTD Calibrator (Source/Read 7 Types, Ω /0.1° resolution)	Model 512S
With Auto Stepping	
T/C Source (Single Type/1° resolution)	Model 520
T/C Source (8 Types, mV/0.1° resolution)	Model 521
B, E, J, K, N, R, S, T, mV	
Dual RTD – T/C Read & Source Calibrator	Model 525
With Auto Stepping	
4-20 Milliamp Loop Calibrator	Model 530
4-20 Pocket-Mate Milliamp Calibrator	Model 531
4-20 Milliamp/Voltage Loop Calibrator with Diagnostic	Model 532
4-20/10-50 Dual Range/Voltage Loop Calibrator	Model 535
Frequency Read & Source with Totalizer	Model 541

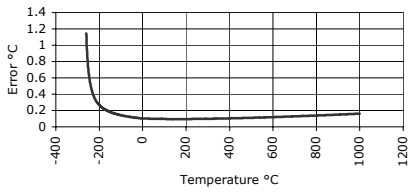
Temperature Accuracy

The following charts give worst-case temperature accuracy based on stated millivolt accuracy of ±(0.008 % of reading + 0.006mV). Temperature is uncompensated on the horizontal axis, referenced to 0 °C. Cold Junction calibration accuracy of 0.1 °C is not included in the temperature error.

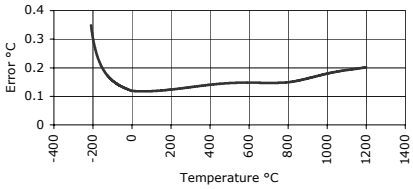
TYPE B
594 to 1820 °C



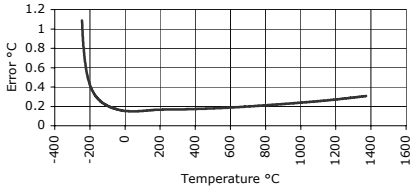
TYPE E
-260 to 1000 °C



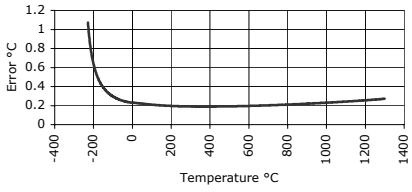
TYPE J
-210 to 1200 °C



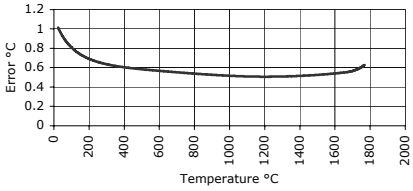
TYPE K
-245 to 1372 °C



TYPE N
-229 to 1300 °C



TYPE R
24 to 1768 °C



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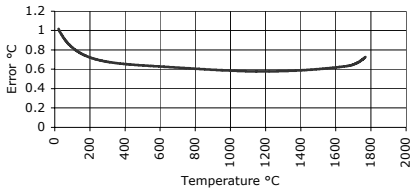
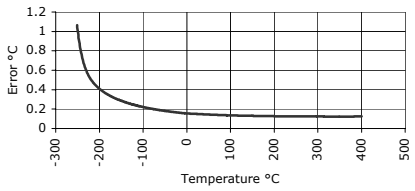
TYPE S
21 to 1768 °C



TYPE T
-251 to 400 °C



Warranty

Our equipment is guaranteed against defective material and workmanship (excluding batteries) for a period of three years from the date of shipment. Claims under guarantee can be made by returning the equipment prepaid to our factory. The equipment will be repaired, replaced or adjusted at our option. The liability of Practical Instrument Electronics (PIE) is restricted to that given under our guarantee. No responsibility is accepted for damage, loss or other expense incurred through sale or use of our equipment. Under no condition shall Practical Instrument Electronics, Inc. be liable for any special, incidental or consequential damage.

Your Local PIE Representative

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