

Model 525

T/C & RTD Dual Calibrator

With Auto Stepping

Datasheet

The most accurate and field compatible RTD and Thermocouple calibrator available!

Features

Combined RTD & Thermocouple Unit

***DIRECT REPLACEMENT TO HIGH RESOLUTION DECADE BOXES**

***Resolution to 0.01°, 0.001Ω or 0.001mV**

***"WIDEST" compatibility with field devices available**

***Guaranteed to work with ALL pulsed instruments including popular Rosemount and Honeywell models, PLCs, DCS, recorders and all others**

***In RTD mode automatic detection of 2, 3, or 4 wire connections**

No buttons or switches required, 2W, 3W, or 4W indicator is automatic

A valuable troubleshooting tool

***Auto Stepping** - To assist in remote calibrations

***Accurate to $\pm 0.1^\circ\text{C}$ ($\pm 0.2^\circ\text{F}$)¹**

Direct Temperature Input/Output

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

8 Standard T/C Types Available

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

Cold Junction Compensated

Millivolt accuracy of $\pm(0.004\% \text{ of reading} + 0.003 \text{ mV})^1$

8 RTD Curves Available

Pt100 a=3850, Pt100 a=3902, Pt100 a=3916, Pt100 a=3926, Cu10 a=427, Cu50 a=428, Ni110 Bristol, Ni120 a=672, Ω

Resistance accuracy of $\pm(0.008\% \text{ of reading} + 0.03\Omega)^1$
Custom types and ranges are available

EZ-Dialä Knob

Easily adjust output by 0.1°, 0.01Ω or 0.001mV

Pressing down and turning will select a faster dialing speed

¹ 90 day spec

EZ-Checkä Switch

User selectable EZ-Checkä for 0 % and 100 % span adjustment

Store new EZ-Checkä values by pressing the EZ-Dialä 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

Protected to 60 V

mA READ & DIFFERENTIAL T/C FEATURES AVAILABLE – Contact your local Rep or the Factory for ordering information



Description

The Practical Instrument Electronics Model 525 T/C & RTD calibrator provides direct temperature calibration to all types of instruments such as transmitters, recorders, controllers, alarms, data acquisition, and computer systems. Also, the Model 525 reads RTD & T/C outputs and displays temperature. It is compatible with pulsed systems and transmitters (like the Rosemount 3144). Automatic detection of 2, 3, or 4 wire connections when reading resistance/RTD's. The Model 525 is a superior replacement for decade boxes, and eliminates the need for lugging around large equipment and the possibility of misreading RTD tables.

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

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The Practical Instrument Electronics Model 525 offers the highest performance and functions in its class by exceeding the accuracy and functions of many higher priced T/C & RTD calibrators. It is a low cost solution for checkout and calibration of all T/C & RTD instruments in the field, shop or control room. Contact Practical Instruments Electronics for custom T/C & RTD curves, ranges, or special requirements not provided by the Model 525.

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)	8.3 oz (235 grams)
Battery	9V Alkaline provides 45 hours of continuous use Low battery indication with nominal 1 hour of operation left
Overload Protection	Overload protected to 60 volts for up to 30 seconds in duration
Display	High-contrast graphic liquid crystal display with 0.357" (9.07 mm) high digits
Maximum Resolution	0.01°, 0.001Ω or 0.001mV

Thermocouple Specifications:

Accuracy	±(0.004 % of mV reading + 0.003 mV) in mV (at 90 days) ±(0.008 % of mV reading + 0.006 mV) in mV (at 1 year)
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)
Output Range	-13.000 to +80.000 mV
Output Noise	±5 µV pp from 0.1 Hz to 10 Hz
Output Impedance	0.2 W (200 nV/µA)
Output Source Current	< 8 mA
Input Noise	< ±1 LSD from 0.1 Hz to 10 Hz
Input Impedance	> 10 MW
Open T/C Test Pulse	< 10µA for 300 ms
Open T/C Response Time	< 3 seconds
Open T/C Threshold	10 kW nominal

RTD Specifications:

Accuracy	±(0.008 % of reading + 0.03Ω) in Ohms (at 90 days) ±(0.015 % of reading + 0.05 Ω) in Ohms (at 1 year)
Range (in Ohms)	0.000 to 400.000 Ω
Temperature Coefficient	10 ppm/°C
Allowable Excitation Current	100 mA to 10.2 mA, steady or pulsed/intermittent/smart
for excitation currents below 100µA add	±10mV/Excitation Current (units are in Ω)
Pulsed Excitation Current Compatibility	DC to 0.01 second pulse widths
Read Mode Excitation Current	620µA nominal

Available Options:

Carrying Case	Part Number: 020-0205 case with logo
T/C Wire Kit	Part Number: 020-0202 (J, T, E, K thermocouple leads with mini plug)

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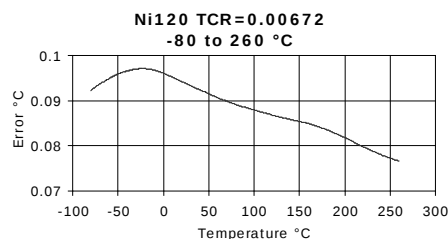
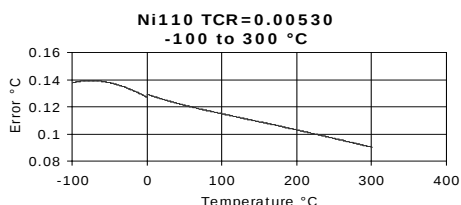
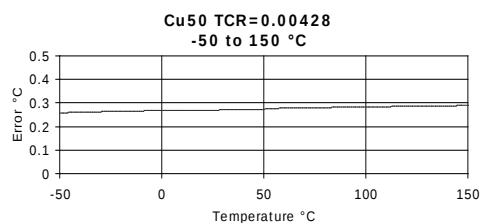
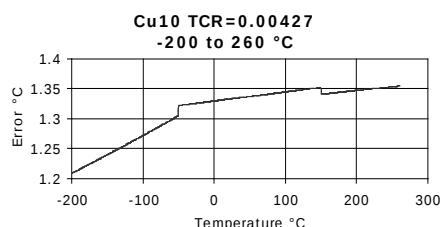
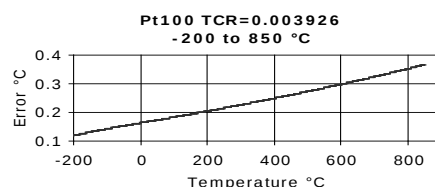
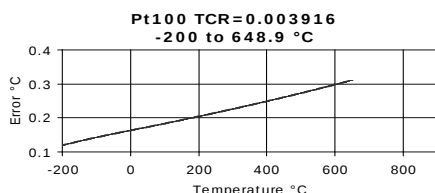
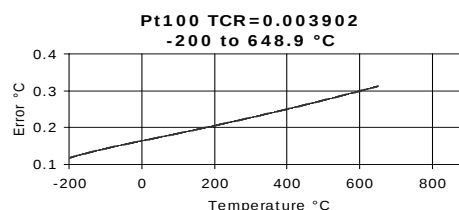
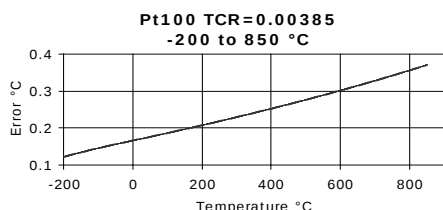


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Part Number: 020-0203 (B, R/S, N thermocouple leads with mini plug)

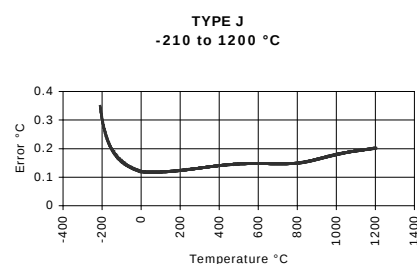
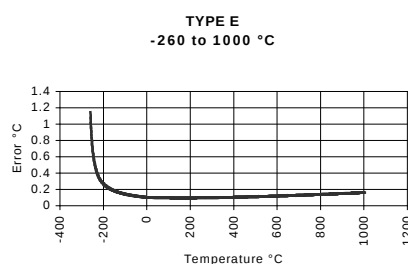
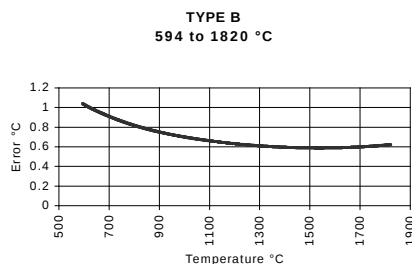
RTD Temperature Accuracy

The following charts give *worst-case* temperature accuracy based on stated resistance accuracy at 1 year.
Excitation current 100 μ to 10.2 mA



Thermocouple Temperature Accuracy

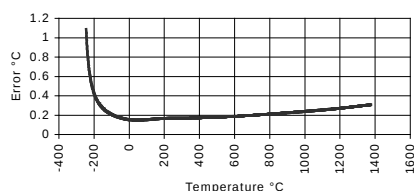
The following charts give *worst-case* temperature accuracy based on stated millivolt accuracy at 1 year. Temperature is uncompensated on the horizontal axis, referenced to 0 °C. Cold Junction calibration accuracy of 0.1 °C is not included in the temperature error.



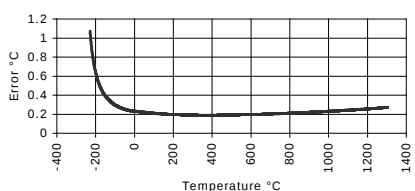


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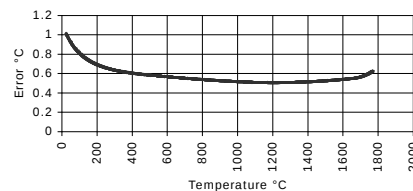
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-245 to 1372 °C



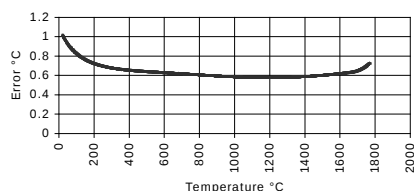
TYPE N
-229 to 1300 °C



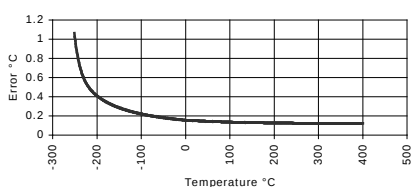
TYPE R
24 to 1768 °C



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

