



Practical Instrument Electronics

Model 510/511 RTD Simulators Datasheet

Features

Simulate RTD Temperature Outputs

Calibrate directly in temperature for your RTD curve

Adjustable output for full temperature range

Several Manufacturers' RTD Curves Available

Platinum, Copper & Nickel

Accurate to $\pm 0.25^{\circ}\text{C}$ ($\pm 0.5^{\circ}\text{F}$) with up to 0.1° Resolution
Available on the Model 511

Works with a wide variety of transmitters including popular Rosemount and Honeywell Models

Compatible with devices using pulsed excitation currents including PLCs, DCS, recorders, and all others

EZ-Dial™ Knob

Easily adjust output by 0.1° (Model 511) or 1°F (Model 510)

Pressing down and turning will select a faster dialing speed

EZ-Check™ Switch

User settable EZ-Check™ for 0% and 100% span adjustments

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

Uses a standard 9V Alkaline Battery

Superior battery life of 45 hours under typical continuous usage

Easy access to battery compartment

Lightweight, Rugged and Reliable

Small, tough and protected to 60V



Models pictured above:

Model 510 – Single Curve, 1° , selectable $^{\circ}\text{C}$ or $^{\circ}\text{F}$

Model 511 – Multi-type 7 Curves, 0.1° with selectable $^{\circ}\text{C}$ or $^{\circ}\text{F}$ and Ω with 0.01Ω resolution

(Pt100: $\alpha=1.3850, 1.3902, 1.3916, 1.3926$ and Cu10, Ni110, Ni120, Ω)



Description

The Practical Instrument Electronics Models 510 and 511 RTD Simulators simulate standard RTD curves over the entire industrial temperature range. Choose between seven standard RTD curves. The Model 510 can also be supplied with a custom curve for your specific application such as Pt 200, 500, 1000 with up to 0.1° resolution. Contact the factory for details.

The Model 510/511 will simulate RTD resistances into all types of instruments such as transmitters, recorders, controllers, alarms, data acquisition, and computer systems. Rest easy knowing these calibrators are 100% compatible with pulsed systems and transmitters like the Rosemount 3144 Transmitter. The Model 510/511 is a superior replacement for decade boxes, so there is no need to lug a decade box around or be prone to error by reading RTD tables incorrectly. The Models 510 and 511 have better accuracy, functions and compatibility than many higher priced RTD calibrators.

The EZ-Check™ function allows the user to store three output temperatures for real convenience. This will save time for repetitive calibrations by instantly recalling the three stored temperature values. Three output settings can be stored, and all settings are saved, even with the power off.



Model 510/511 Specifications

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
Size	4.9 X 3.15 X 1.82 inches (125.5 X 80 X 46.2 mm)
Weight	9.1 oz (258 grams)
Battery	9V Alkaline provides 45 hours of continuous use
Miscellaneous	Low battery indication with nominal 1 hour of operation left Protection to 60V DC or AC peak up to 30 seconds in duration High contrast graphic liquid crystal display with 0.357" (9.07 mm) high digits

RTD Curve Simulation Specifications (ITS-90 Curves):

Accuracy	±(0.015% of Setting in Ω + 0.05Ω)
Typical accuracies for RTD curves are:	
Pt100	±0.25°C (±0.5°F)
Cu10	±1.5°C (±3°F)
Ni110, Ni 120Ω	±0.25°C (±0.5°F)
Allowable Excitation Current	100 μA to 10.2 mA, steady or pulsed/intermittent/smart
for accuracies below 100μA add	±10μV/Excitation Current (units are in Ω)
Pulsed Excitation Current Compatibility	DC to 0.01 second pulse widths
Output Dial Adjustment Resolution	0.1°F or 0.1°C Adjustment Resolution for Model 511 1°C or 1°F Adjustment Resolution for Model 510
Temperature Coefficient	±0.05Ω/°C Ambient

Available Options:

Carrying Case	Part Number: 020-0205
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Ordering Information

Model 510 - RTD Source (Single Type/1° resolution)	Order Code:	Model 510-Pt100-1 (α=1.3850)
		Model 510-Pt100-2 (α=1.3902)
		Model 510-Pt100-3 (α=1.3916)
		Model 510-Pt100-4 (α=1.3926)
		Model 510-Cu10
		Model 510-Ni110
		Model 510-Ni120

Model 511 - RTD Source (7 Types, Ω/0.1° resolution)	Order Code:	Model 511
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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.