



PIECAL 510B & 511B

RTD Simulator

- **Easy to use**

With the PIE 510B or 511B you can check & calibrate all your RTD instruments. Includes four detachable leads with spade lugs for easy connection to your RTD instruments.

- **Take it into the shop, plant or field**

Carry it without worry - protect it with an optional rubber boot and rugged, low profile switch. Easy to operate even in the dark areas of the plant with the backlit display.

- **Simulate one or ten RTD types**

Choose the PIE 510B if you have only one type of RTD connected to your instruments or the PIE 511B if you have multiple types of RTDs.

- **Calibrate directly in temperature (°C & °F)**

Stop carrying around a decade box and RTD resistance tables. The PIE 510B/511B simulates the RTDs you use including Platinum 100 (alpha = 3850, 3902, 3916, 3926) & 1000 (alpha = 3850, 3750) Ohm, Copper 10 & 50 Ohm, Nickel 110 and 120 Ohm. Easily set any value quickly to within 0.1° with the adjustable digital potentiometer "DIAL" plus store any three temperatures for instant recall with the EZ-CHECK™ switch. Or use like a decade box from 0.00 to 410.00 and from 410.0 to 4001.0 Ohms.

- **Compatible with ALL process instruments**

No competitor's calibrator is compatible with as many process instruments! Connect directly to the RTD inputs of smart transmitters, PLCs, DCS and multichannel recorders and verify their outputs or displays. Works with older instruments and newer multichannel instruments that switch the excitation current between input channels.

- **Evolutionary design**

PIE Calibrators are designed and built by members of the same team that designed and built the calibrators manufactured by Fluke* under the Altek* label. The PIE 510B/511B improves upon other brands by including backlit display with larger digits, rugged switches and a battery compartment for fast battery changes. Add an optional rubber boot with tilt stand for extra protection on the plant floor or in the field.



* PIE Calibrators are not manufactured or distributed by Fluke Corp or Altek Industries Inc, manufacturers of Altek Calibrators.

Actual Size (Shown with optional boot)



Practical Instrument Electronics

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PIECAL 510B/511B Specifications

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

General	
Accuracy	±(0.015% of Setting in Ohms + 0.05 Ohms)
Temperature Drift	± 0.05 Ohms/°C
Operating Temp. 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 With Boot	4.96 x 2.73 x 1.79 in, 126 x 69 x 45 mm (LxWxH)
	5.67 x 3.06 x 2.05 in, 144 x 78 x 52 mm (LxWxH)
Weight With Boot	8.4 ounces, 0.24 kg (including batteries)
	11 ounces, 0.32 kg (including batteries)
Batteries	Four "AA" Alkaline 1.5V (LR6)
Battery Life	50 Hours; Low Battery indication with 1 hour life left
Optional NiMh Rechargeable battery kit	120 VAC for North America Only; charger, four NiMh batteries, AC & DC cords [Part # 020-0103]
Protection against misconnection	Over-voltage protection to 60V dc (rated for 30 seconds)
Display	High contrast graphic liquid crystal display. LED backlighting for use in low lit areas.

Simulate	
Accuracy	±(0.015% of Setting + 0.05 Ohms)
From 1 to 10.2 mA External Excitation Current	±(0.015% of Setting + 0.05 Ohms)
Below 1 mA of External Excitation Current	±(0.015% of Setting + $\frac{0.025 \text{ mV}}{\text{mA Excitation Current}} + 0.05 \text{ Ohms}$)
2 Wire accuracy	Add 0.1 Ohms to 3 Wire & 4 Wire Accuracy
Resistance Ranges	0.00 to 410.00, 410.1 to 4001.0 Ohms
Allowable Excitation Current Range	<410 Ohms: 10.2 mA max; steady or pulsed/intermittent
	410 to 4001 Ohms: 1 mA max; steady or pulsed/intermittent

Ranges & Accuracies

RTD Type	Alpha	Degrees C Range	°C	Degrees F Range	°F
Pt 100 Ohm DIN/IEC/JIS 1989 Based on ITS-90	1.3850 (0.00385)	-200.0 to 200.0	±0.2°	-328.0 to 392.0	±0.4°
		200.0 to 600.0	±0.3°	392.0 to 1112.0	±0.6°
		600.0 to 850.0	±0.4°	1112.0 to 1562.0	±0.7°
Pt 100 Ohm (Burns)	1.3902 (0.003902)	-195.6 to 200.0	±0.2°	-320.0 to 392.0	±0.4°
		200.0 to 648.9	±0.3°	392.0 to 1200	±0.6°
Pt 100 Ohm (Old JIS 1981)	1.3916 (0.003916)	-200.0 to 200.0	±0.2°	-328.0 to 392.0	±0.4°
		200.0 to 648.9	±0.3°	392.0 to 1200	±0.6°
Pt 100 Ohm (US Lab)	1.3926 (0.003926)	-200.0 to 100.0	±0.2°	-328.0 to 212.0	±0.4°
		100.0 to 700.0	±0.3°	212.0 to 1292.0	±0.6°
		700.0 to 850.0	±0.4°	1292.0 to 1562.0	±0.7°
Pt 1000 Ohm DIN/IEC/JIS 1989	1.3850 (0.00385)	-200.0 to 200.0	±0.2°	-328.0 to 392.0	±0.4°
		200.0 to 600.0	±0.3°	392.0 to 1112.0	±0.6°
		600.0 to 850.0	±0.4°	1112.0 to 1562.0	±0.7°
Pt 1000 Ohm Hy-Cal HVAC	1.3750 (0.00375)	-200.0 to 200.0	±0.2°	-328.0 to 392.0	±0.4°
		200.0 to 600.0	±0.3°	392.0 to 1112.0	±0.6°
		600.0 to 850.0	±0.4°	1112.0 to 1562.0	±0.7°
Copper 10 Ohm (Minco)	1.4274 (0.004274)	-200.0 to 260.0	±2.0°	-328.0 to 500.0	±4.0°
Copper 50 Ohm	1.4280 (0.00428)	-50.0 to 150.0	±1.0°	-58.0 to 302.0	±1.6°
Ni 120 Ohm (Pure)	1.6720 (0.00672)	-80.0 to 260.0	±0.1°	-112.0 to 500.0	±0.2°
Ni 110 (Bristol 7 NA)	1.5801 (0.005801)	-100.0 to 260.0	±0.2°	-148.0 to 500.0	±0.3°

Ordering Information

PIECAL 510B (Choose one of the ordering codes below):

PIE 510B Pt100-1.3850
PIE 510B Pt100-1.3902
PIE 510B Pt100-1.3916
PIE 510B Pt100-1.3926
PIE 510B Pt1000-1.3850
PIE 510B Pt1000-1.3750
PIE 510B Cu10
PIE 510B Cu50
PIE 510B Ni110
PIE 510B Ni120

PIECAL 511B:

Includes all ten RTD Types listed above

Accessories

Included:	Part Number
Four "AA" Alkaline batteries, Certificate of Calibration	
Evolution RTD Wire Kit	020-0208
2 Red & 2 Black Leads with Retractable Shield Banana Plugs & Spade Lugs	
Optional:	Part Number
Red Rubber Boot	020-0212
Two pocket hands free carrying case	020-0211
Ni-MH 1 Hour Charger with 4 Ni-MH AA Batteries (100-120 V AC input for North America Only)	020-0103
Magnet strap	020-0236

More Than A Simple Boot

The optional boot provides more than just protection. Flip out the tilt stand and free up both hands for calibration adjustments.



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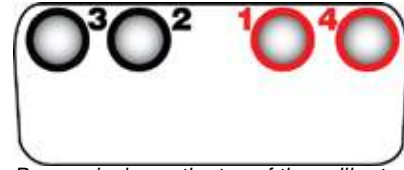
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Connections

Two, Three and Four Wire connections

Two red and two black leads are included with the calibrator. Each lead has a retractable shield banana plug on the calibrator end and a spade lug on the end which will connect to the RTD input of the device being calibrated.



Banana jacks on the top of the calibrator

Additional Information

PIE Calibrators are manufactured in the USA. This product is calibrated on equipment traceable to NIST and includes a Certificate of Calibration. Test Data is available for an additional charge.

Practical Instrument Electronics recommends a calibration interval of one year. Contact your local representative for recalibration and repair services.

Warranty

Our equipment is warranted against defective material and workmanship (excluding batteries) for a period of three years from the date of shipment. Claims under warranty 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 warranty. 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.



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