PIECAL 520B & 521B

Thermocouple Source

- **Easy to use**
  With the PIECAL 520B or 521B you can check & calibrate all your thermocouple instruments. Connect via a miniature thermocouple jack on the top end of the source. Use your own thermocouple wire connectors or order one of the wire kits for easy operation out of the box.

- **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.

- **Source one or fourteen thermocouple types**
  Choose the PIECAL 520B if you have only one type of thermocouple connected to your instruments or the PIECAL 521B if you have multiple types of thermocouples.

- **Calibrate directly in temperature (°C & °F)**
  Stop carrying around a millivolt source and thermocouple tables. The PIECAL 520B/521B works with the thermocouples you use including types J, K, T, E, R, S, B, N, G, C, D, L (J-DIN), U (T-DIN) and P (Platinel II). 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 calibrate from -13.000 to +80.000 mV.

- **Compatible with *ALL* process instruments**
  No competitor's calibrator is compatible with as many process instruments! Connect directly to the thermocouple 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 between input channels.

- **Evolutionary design**
  PIECAL 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 PIECAL 520B/521B 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.

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

Actual Size (Shown with optional boot)

CE

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PIECAL 520B/521B 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 Reading + 0.009 mV)
Cold Junction Compensation	± 0.45°F (±0.25 °C)
Millivolt Range	-13.000 to 80.000 mV
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 60 V dc (rated for 30 seconds)

Display	High contrast graphic liquid crystal display. LED backlighting for use in low lit areas.

Source	
Output Impedance	< 0.3 Ohms
Source Current	> 20 mA (drives 80 mV into 10 Ohms)
Noise	≤ 4 microvolts p-p for frequencies of 10 Hz or below

Ranges & Accuracies

T/C	Degrees C Range	°C	Degrees F Range	°F	T/C Material
J	-200.0 to -180.0	±0.5°	-346.0 to -292.0	±0.9°	+Iron -Connstantan
	-180.0 to -50.0	±0.4°	-292.0 to -58.0	±0.7°	
	-50.0 to 500.0	±0.3°	-58.0 to 932.0	±0.5°	
	500.0 to 1200,0	±0.4°	932.0 to 2192.0	±0.7°	
K	-230.0 to -100.0	±0.8°	-382.0 to -148.0	±1.4°	+ Chromel® -Alumel®
	-100.0 to 1050.0	±0.4°	-148.0 to 1922.0	±0.7°	
	1050.0 to 1371.1	±0.5°	1922.0 to 2500.0	±0.9°	
T	-260.0 to -200.0	±1.2°	-436.0 to -328.0	±2.2°	+Copper -Constantan
	-200.0 to -50.0	±0.7°	-328.0 to -58.0	±1.3°	
	-50.0 to 0.0	±0.4°	-58.0 to 32.0	±0.7°	
	0.0 to 400.0	±0.3°	32.0 to 752.0	±0.5°	
E	-240.0 to -200.0	±0.6°	-400.0 to -328.0	±1.1°	+Chromel -Constantan
	-200.0 to -100.0	±0.4°	-328.0 to -148.0	±0.7°	
	-100.0 to 850.0	±0.3°	-148.0 to 1562.0	±0.5°	
	850.0 to 1000.0	±0.4°	1562.0 to 1832.0	±0.7°	
R	-13.3 to 250.0	±1.4°	-1.0 to 482.0	±2.5°	+Pt/13Rh -Platinum
	250.0 to 750.0	±0.8°	482.0 to 1382.0	±1.4°	
	750.0 to 1600.0	±0.7°	1382.0 to 2192.0	±1.3°	
	1600.0 to 1767.8	±0.8°	2192.0 to 3214.0	±1.4°	
S	-18.3 to 100.0	±1.4°	-1.0 to 212.0	±2.5°	+Pt/10Rh -Platinum
	100.0 to 400.0	±1.0°	212.0 to 752.0	±1.8°	
	400.0 to 1700.0	±0.8°	752.0 to 3092.0	±1.4°	
	1700.0 to 1767.8	±0.9°	3092.0 to 3214.0	±1.6°	
B	315.6 to 550.0	±2.0°	600 to 1022.0	±3.6°	+Pt/30Rh -Pt/6Rh
	550.0 to 900.0	±1.3°	1022.0 to 1652.0	±2.3°	
	900.0 to 1150.0	±0.9°	1652.0 to 2102.0	±1.6°	

T/C	Degrees C Range	°C	Degrees F Range	°F	T/C Material
N	-230.0 to -180.0	±1.2°	-382.0 to -292.0	±2.2°	+Nicrosil -Nisil
	-180.0 to -50.0	±0.7°	-292.0 to -58.0	±1.3°	
	-50.0 to 1100.0	±0.4°	-58.0 to 2012.0	±0.7°	
	1100.0 to 1300.0	±0.5°	2012.0 to 2372.0	±0.9°	
G (W)	100.0 to 150.0	±1.4°	212.0 to 302.0	±2.5°	+Tungsten -W26/Re
	150.0 to 400.0	±1.0°	302.0 to 752.0	±1.8°	
	400.0 to 1700.0	±0.6°	752.0 to 3092.0	±1.1°	
	1700.0 to 2320.0	±0.9°	3092.0 to 4208.0	±1.6°	
C (W5)	-1.1 to 1500	±0.7°	30.0 to 2372.0	±1.3°	+W5/Re -W26/Re
	1500 to 1900	±0.8°	2372.0 to 3452.0	±1.4°	
	1900.0 to 2100.0	±0.9°	3452.0 to 3812.0	±1.6°	
	2100.0 to 2320.0	±1.1°	3812.0 to 4208.0	±2.0°	
D	-1.0 to 50.0	±0.8°	30.0 to 122.0	±1.4°	+W3/Re -W25/Re
	50.0 to 1400.0	±0.6°	122.0 to 2552.0	±1.3°	
	1400.0 to 1800.0	±0.7°	2552.0 to 3272.0	±1.3°	
	1800.0 to 2320.0	±1.1°	3272.0 to 4208.0	±2.0°	
P	-217.8 to -150.0	±0.8°	-360.0 to -238.0	±1.4°	+Pd55/Pt31/ Au14 -Au65/Pd35
	-150.0 to -50.0	±0.6°	-238.0 to -58.0	±1.1°	
	-50.0 to 1000.0	±0.4°	-58.0 to 1832.0	±0.7°	
	1000.0 to 1395.0	±0.5°	1832.0 to 2543.0	±0.9°	
L J-DIN	-200.0 to -50.0	±0.4°	-328.0 to -58.0	±0.7°	+Iron -Connstantan
	-50.0 to 500.0	±0.3°	-58.0 to 932.0	±0.5°	
	500.0 to 750.0	±0.4°	932.0 to 1382.0	±0.7°	
U T-DIN	-200.0 to -75.0	±0.5°	-328.0 to -103.0	±0.9°	+Copper -Constantan
	-75.0 to 100.0	±0.4°	-103.0 to 212.0	±0.7°	
	100.0 to 600.0	±0.3°	212.0 to 1112.0	±0.5°	

Ordering Information

PIECAL 520B (Choose one of the ordering codes below):

PIECAL 520B-J	PIECAL 520B-G
PIECAL 520B-K	PIECAL 520B-C
PIECAL 520B-T	PIECAL 520B-D
PIECAL 520B-E	PIECAL 520B-N
PIECAL 520B-R	PIECAL 520B-L
PIECAL 520B-S	PIECAL 520B-U
PIECAL 520B-B	PIECAL 520B-P

PIECAL 521B:
Includes all fourteen T/C Types listed above

Accessories

Included:	**Part Number**
Four "AA" Alkaline batteries, Certificate of Calibration	
Evolution mV Wire Kit	020-0207
1 Red & 1 Black Lead with Retractable Shield Banana Plugs & Alligator Clips	

Optional:	**Part Number**
T/C Wire Kit 1 for Types J, K, T & E	020-0202
T/C Wire Kit 2 for Types B, R/S & K	020-0203
Individual T/C wire (for PIECAL 520B)	020-0210-*
*Insert T/C Type J, K, T, E, N, R/S or B	
Three feet (1 meter) of T/C extension wire, stripped on one end with a miniature T/C male connector on the other end.	
Rubber Boot	020-0209
Small Carrying Case with Logo (fits with or without boot)	020-0205
Ni-MH 1 Hour Charger with 4 Ni-MH AA Batteries (100-120 V AC input for North America Only)	020-0103

More Than A Simple Boot

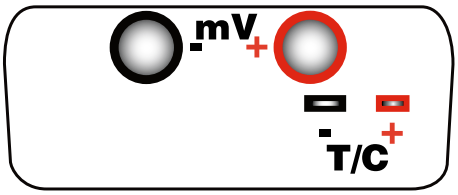
The optional boot provides more than just protection. Flip out the tilt stand and free up both hands for calibration adjustments.

Connections

Simulating thermocouples requires the use of thermocouple or extension grade thermocouple wire.

Plug thermocouple wires into the female miniature thermocouple connector mounted in the top end of the housing.

The PIECAL 520B/521B has two banana jacks mounted in the top end of the housing. These are not temperature compensated and are to be used only for millivolt signals.



Banana jacks and female thermocouple connector 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.

PIE
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