PIECAL 422

Automated Thermocouple Calibrator

Actual Size

- **Easy to use**
  With the PIECAL 422 you can check & calibrate all your thermocouple instruments and measure thermocouple sensors. Plug in any thermocouple via a miniature thermocouple jack.

- **Take it into the shop, plant or field**
  Carry it without worry - it comes protected with a rubber boot and rugged, low profile switch. Easy to operate even in the dark areas of the plant with the backlit display.

- **Calibrate directly in temperature (°C & °F)**
  Stop carrying around a millivolt source and thermocouple tables. The PIECAL 422 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.

- **Fast calibration with automatic output stepping**
  Choose between 2, 3, 5, 11 and 21 steps to automatically increment the output in 100%, 50%, 25%, 10% or 5% of span. Select the step time to match your system from 5, 6, 7, 8, 10, 15, 20, 25, 30 and 60 seconds.

- **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.

- **Measure thermocouple sensors**
  Trouble shoot sensor connections and find broken wires or corroded connections. Connect your thermocouple with a miniature thermocouple connector and the PIECAL 422 measures the probe in degrees C or F. Secondary display shows the millivolt value corresponding to the thermocouple temperature as well as the cold junction temperature measured by the calibrator.

- **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 422 improves upon other brands by including a rubber boot, tilt stand, backlit display with larger digits, rugged switches and a battery compartment for fast battery changes.

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

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PIECAL 422 Specifications

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

General	
Accuracy	±(0.008% of Reading + 0.006 mV)
Cold Junction Compensation	± 0.16°F (±0.1 °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	L=5.63 x W=3.00 x H=1.60 inches
Weight	12.1 ounces (including boot & 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.

Read	
Input Impedance	> 10 Megohms
Open Thermocouple	
Threshold	10,000 Ohms nominal
Pulse	< 10 microamp pulse for 300 milliseconds
Normal Mode Rejection	50/60 Hz, 50 dB
Common Mode Rejection	50/60 Hz, 120 dB

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	±0.3°	-346.0 to -292.0	±0.5°	+Iron -Connstantan Jacket
	-180.0 to -50.0	±0.2°	-292.0 to -58.0	±0.4°	
	-50.0 to 500.0	±0.1°	-58.0 to 932.0	±0.2°	
	500.0 to 1200,0	±0.2°	932.0 to 2192.0	±0.4°	
K	-230.0 to -100.0	±0.6°	-382.0 to -148.0	±1.1°	+ Chromel® -Alumel® Jacket
	-100.0 to 1050.0	±0.2°	-148.0 to 1922.0	±0.4°	
	1050.0 to 1371.1	±0.3°	1922.0 to 2500.0	±0.5°	
T	-260.0 to -200.0	±1.0°	-436.0 to -328.0	±1.8°	+Copper -Constantan Jacket
	-200.0 to -50.0	±0.5°	-328.0 to -58.0	±0.9°	
	-50.0 to 0.0	±0.2°	-58.0 to 32.0	±0.4°	
	0.0 to 400.0	±0.1°	32.0 to 752.0	±0.2°	
E	-240.0 to -200.0	±0.4°	-400.0 to -328.0	±0.7°	+Chromel -Constantan Jacket
	-200.0 to -100.0	±0.2°	-328.0 to -148.0	±0.4°	
	-100.0 to 850.0	±0.1°	-148.0 to 1562.0	±0.2°	
	850.0 to 1000.0	±0.2°	1562.0 to 1832.0	±0.4°	
R	-13.3 to 250.0	±1.2°	-1.0 to 482.0	±2.2°	+Pt/13Rh -Platinum Jacket
	250.0 to 750.0	±0.6°	482.0 to 1382.0	±1.1°	
	750.0 to 1600.0	±0.5°	1382.0 to 2192.0	±0.9°	
	1600.0 to 1767.8	±0.6°	2192.0 to 3214.0	±1.1°	
S	-18.3 to 100.0	±1.2°	-1.0 to 212.0	±2.1°	+Pt/10Rh -Platinum Jackrt
	100.0 to 400.0	±0.8°	212.0 to 752.0	±1.4°	
	400.0 to 1700.0	±0.6°	752.0 to 3092.0	±1.1°	
	1700.0 to 1767.8	±0.7°	3092.0 to 3214.0	±1.3°	
B	315.6 to 550.0	±1.8°	600 to 1022.0	±3.2°	+Pt/30Rh -Pt/6Rh Jacket
	550.0 to 900.0	±1.1°	1022.0 to 1652.0	±2.0°	
	900.0 to 1150.0	±0.7°	1652.0 to 2102.0	±1.3°	
	1150.0 to 1820.0	±0.6°	2102.0 to 3308.0	±1.1°	

T/C	Degrees C Range	°C	Degrees F Range	°F	T/C Material
N	-230.0 to -180.0	±1.0°	-382.0 to -292.0	±1.8°	+Nicrosil -Nisil Jacket
	-180.0 to -50.0	±0.5°	-292.0 to -58.0	±0.9°	
	-50.0 to 1100.0	±0.2°	-58.0 to 2012.0	±0.4°	
	1100.0 to 1300.0	±0.3°	2012.0 to 2372.0	±0.5°	
G (W)	100.0 to 150.0	±1.2°	212.0 to 302.0	±2.2°	+Tungsten -W26/Re Jacket
	150.0 to 400.0	±0.8°	302.0 to 752.0	±1.4°	
	400.0 to 1700.0	±0.4°	752.0 to 3092.0	±0.7°	
	1700.0 to 2320.0	±0.7°	3092.0 to 4208.0	±1.3°	
C (W5)	-1.1 to 1500	±0.5°	30.0 to 2372.0	±0.9°	+W5/Re -W26/Re Jacket
	1500 to 1900	±0.6°	2372.0 to 3452.0	±101°	
	1900.0 to 2100.0	±0.7°	3452.0 to 3812.0	±1.3°	
	2100.0 to 2320.0	±0.9°	3812.0 to 4208.0	±1.6°	
D	-1.0 to 50.0	±0.6°	30.0 to 122.0	±1.1°	+W3/Re -W25/Re Jacket
	50.0 to 1400.0	±0.4°	122.0 to 2552.0	±0.7°	
	1400.0 to 1800.0	±0.5°	2552.0 to 3272.0	±0.9°	
	1800.0 to 2320.0	±0.9°	3272.0 to 4208.0	±1.6°	
P	-217.8 to -150.0	±0.6°	-360.0 to -238.0	±1.1°	+Pd55/Pt31/ Au14 -Au65/Pd35 Jacket
	-150.0 to -50.0	±0.4°	-238.0 to -58.0	±0.7°	
	-50.0 to 1000.0	±0.2°	-58.0 to 1832.0	±0.4°	
	1000.0 to 1395.0	±0.3°	1832.0 to 2543.0	±0.5°	
DIN Colors					
L J-DIN	-200.0 to -50.0	±0.2°	-328.0 to -58.0	±0.4°	+Iron -Connstantan Jacket
	-50.0 to 500.0	±0.1°	-58.0 to 932.0	±0.2°	
	500.0 to 750.0	±0.2°	932.0 to 1382.0	±0.4°	
U T-DIN	-200.0 to -75.0	±0.3°	-328.0 to -103.0	±0.5°	+Copper -Constantan Jacket
	-75.0 to 100.0	±0.2°	-103.0 to 212.0	±0.4°	
	100.0 to 600.0	±0.1°	212.0 to 1112.0	±0.2°	

Accessories

Included:

Rubber Boot, Four "AA" Alkaline batteries, Certificate of Calibration
Small Carrying Case with PIE Logo — Part No. 020-0205

Optional:

Ni-MH 1 Hour Charger with 4 Ni-MH AA Batteries — Part No. 020-0103
(100-120 V AC input for North America Only)
T/C Wire Kit 1 for Types J, K, T & E — Part No. 020-0202
T/C Wire Kit 2 for Types B, R/S & K — Part No. 020-0203
Three feet (1 meter) of T/C extension wire, stripped on one end with a miniature T/C male connector on the other end.

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.

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.

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