

PIE Temperature Calibrators

PIE (Practical Instrument Electronics) offers replacements for discontinued Altek models

RTD Calibrators

- Simulate and Read 9 RTD Types Plus Ohms
- 0.1° and 0.01Ω Resolution
- Calibrate Directly in °C/°F
- Easy Dial Setting
- Automatic Output Stepping
- Automatic Configuration Detection
- Backlit Graphical LCD



PIECAL 311

PIECAL RTD Calibrators handle 9 RTD types. Calibrate directly in temperature (°C/°F) or use like a decade box to 410.00 or 2001.0 ohms. Connect a 2, 3 or 4 wire RTD and the calibrator automatically detects the configuration and measures the RTD. For automatic verification, choose 2, 3, 5, 11 or 21 steps and select a step time of 5-60 seconds to match the system response.

Choose the **PIECAL 211** for ±0.25% basic accuracy or the **PIECAL 311** for ±0.15% basic accuracy.

Thermocouple Calibrators

- Source and Read Modes
- 0.1° and 0.001mV Resolution
- Calibrate Directly in °C/°F
- Automatic Output Stepping
- Easy Dial Setting
- Large Backlit LCD

Simulate and measure the most popular thermocouple types with the **PIECAL 322**. Use the **PIECAL 422** with 14 different types. Each model accepts miniature thermocouple connectors and direct thermocouple wires.

Use automatic output stepping to speed tests. Choose 2, 3, 5, 11 or 21 steps and a step time of 5, 6, 7, 8, 9, 10, 15, 20, 25, 30 or 60 seconds

The **PIECAL 422plus** adds the functions of a diagnostic mA calibrator in one compact unit. Source and measure to 24mA with 1mA resolution. Quickly diagnose ground faults and current leakage.



PIECAL 322



PIECAL 422plus

All models include batteries, tilt stand, rubber boot, hands-free carrying case, test leads, Certificate of Calibration and 3 year warranty. Made in U.S.A.

SPECIFICATIONS

RTD Type	Alpha	Range
Pt100 (ITS-90)	3850	-200.0 to 850.0°C (-328.0 to 1562.0°F)
Pt100 (Burns)	3902	-195.6 to 648.9°C (-320.0 to 1200.0°F)
Pt100 (JIS 1981)	3916	-200.0 to 648.9°C (-328.0 to 1200.0°F)
Pt100 (US lab)	3926	-200.0 to 850.0°C (-328.0 to 1584.0°F)
Pt1000 (DIN/IEC/JIC)	3850	-200.0 to 850.0°C (-328.0 to 1562.0°F)
Pt1000 (HVAC)	3750	-184 to 275°C (-300 to 527°F)
Cu10 (Minco)	4274	-200 to 260°C (-328 to 500°F)
Cu50	4280	-50.0 to 150°C (-58 to 302°F)
Ni120	6720	-80.0 to 273.0°C (-112.0 to 524.0°F)
Ohms		0.00 to 410.00, 0.0 to 2010.0
Basic Accuracy		PIECAL 211 PIECAL 311
	Pt100	±0.2°C (±0.4°F) ±0.1°C (±0.2°F)
	Pt1000 (1989)	±0.1°C (±0.3°F) ±0.1°C (±0.2°F)
	Pt1000 (HVAC), Cu50	±0.3°C (±0.6°F) ±0.2°C (±0.4°F)
	Cu10	±1.2°C (±2.2°F) ±1.2°C (±2.2°F)
	Ni120	±0.1°C (±0.2°F) ±0.1°C (±0.2°F)
	Ohms (3 or 4 wire)	±0.025% rdg ±0.05Ω ±0.015% rdg ±0.05Ω
		Add 0.1Ω for 2 wire configuration
Read Current:	0.9mA to 401Ω, 0.4mA to 2010Ω. nominal	
External Excitation (max):	400Ω range: 10.2mA, 2000Ω range: 1mA (steady or pulsed)	
Pulsed Excitation:	DC to 0.01 second pulse width	
Overvoltage Protection:	60VDC for 30 seconds	
Operating Temperature:	-25 to 60°C (<90% RH up to 35°C)	
Battery / Life (nominal):	4 AA alkaline / 50 hrs (NiMH batteries & charger available)	
Dimensions:	5.63" x 3.0" x 1.6" (143x76x41mm)	

SPECIFICATIONS

Input/Output (PIE 322):	Type J, K, T, E and mV	
Input/Output (PIE 422):	Type J, K, T, E, R, S, B, N, G, C, P, L, U, D and mV	
Range:		Best Accuracy
J	-210.0 to 1200.0°C (-328.0 to 2192.0°F)	±0.1°C (±0.2°F)
K	-230.0 to 1371.1°C (-382.0 to 2500.0°F)	±0.2°C (±0.4°F)
T	-260.0 to 400.0°C (-436.0 to 752.0°F)	±0.1°C (±0.2°F)
E	-240.0 to 1000.0°C (-400.0 to 1832.0°F)	±0.1°C (±0.2°F)
R, S	-18.3 to 1767.8°C (-1.0 to 3214.0°F)	±0.6°C (±1.1°F)
B	315.6 to 1820.0°C (600.0 to 3308.0°F)	±0.6°C (±1.1°F)
N	-230.0 to 1300.0°C (-382.0 to 2372.0°F)	±0.2°C (±0.4°F)
G	100.0 to 2320.0°C (212.0 to 4208.0°F)	±0.4°C (±0.7°F)
C, D	-1.1 to 2320.0°C (30.0 to 4208.0°F)	±0.5°C (±0.9°F)
P	0.0 to 1395.0°C (32.0 to 2543.0°F)	±0.2°C (±0.4°F)
L	-200.0 to 900.0°C (-328.0 to 1652.0°F)	±0.1°C (±0.2°F)
U	-200.0 to 600.0°C (-328.0 to 1112.0°F)	±0.1°C (±0.2°F)
mV	-13.000 to 80.000mV	±0.008% rdg ±0.006mV
Cold Junction Error:	±0.1°C for PIECAL 311, ±0.05°C for PIECAL 422	
Impedance:	Input Read >10MΩ, Output Source <0.3Ω	
Open Thermocouple:	10kΩ threshold, pulse <10μA for 400msec	
Source Current:	>20mA (drives 80mV into 10Ω)	
Overvoltage Protection:	60VDC for 30 seconds	
Operating Temperature:	-25 to 60°C (<90% RH up to 35°C)	
Battery / Life (nominal):	4 AA alkaline / 50 hrs (NiMH batteries & charger available)	
Dimensions:	5.63" x 3.0" x 1.6" (143x76x41mm)	

ORDERING INFORMATION

PIECAL211	RTD Calibrator (9 types)
PIECAL311	High Accuracy RTD Calibrator (9 types)
PIECAL322	Thermocouple Calibrator (Type J, K, T, E)
PIECAL422	Automated Thermocouple Calibrator (14 types)
PIECAL422plus	Automated Thermocouple & mA Calibrator (14 types)