



Evolutionary Calibrators

Accurate • Rugged • Reliable • Easy to Use
Troubleshoot Loops - Automatic Diagnostics
World Wide Support - Made in USA



Practical Instrument Electronics

841 Holt Road #1 • Webster, NY 14580 USA Tel: 585.872.9350 • Fax: 585.872.2638
sales@piecal.com • www.piecal.com

Milliamp Loop Diagnostic Calibrators



PIECAL Model 334 - Just Like an Old Friend

- **Calibrate Milliamp Instruments**
Source 0.00 to 24.00 mA & -25.0 to 125.0% of 4-20 mA; Read 0.00 to 52.00 mA, -99.99 to 99.99 V
Simulate 2-Wire Transmitters; Power & Read 2-Wire Transmitters
- **Calibrate with Confidence** - Accurate to $\pm 0.025\%$ of Span at 4.000 & 20.000 EZ-CHECK outputs
- **Easy-to Read Backlit Display - Use in the Plant, Field or Shop**
Includes Rubber Boot and Attached Test Leads; Low profile switches resist accidental damage
- **Simple Battery Changes**
Separate compartment for no-tool battery changes with four inexpensive "AA" batteries
- **Optional Accessories**
AC Adaptor 120 V (020-0101); 240 V (020-0100); NiMh Batteries & Charger 120 VAC/12V DC (020-0103)
Improvements over 334s from other manufacturers include better long term stability, accuracy, reliability & ruggedness *plus* improved battery life. *PIECAL 334 is the perfect replacement for your worn out mA calibrators!*



Locate hidden loop problems with the PIECAL 334Plus and get tighter calibrations with the Evolutionary PIECAL 434!

- **Calibrate Milliamp Instruments**
Source & Read 0.000 to 24.000 mA & -25.00 to 125.00% of 4-20 mA with five digit display
Read -99.99 to 99.99 V; Simulate 2-Wire Transmitters, Power & Read Transmitters
Menu Selectable 250 Ω resistor for HART compatibility
- **Calibrate with Lab Accuracy** -
PIECAL 334Plus accurate to $\pm(0.05\%$ of Span) - within 0.01 mA
PIECAL 434 accurate to $\pm(0.01\%$ of Reading + 0.002 mA)
PIECAL 434 is **more accurate than similar calibrators** - within ± 0.004 mA at 20 mA output!
- **Easy-to-Read Backlit Display - Includes Rubber Boot & Test Leads**
- **Locate Loop Current Leakages** - Automatic indication of Loop Current and Leakage Current. Measure ground current leakage from faulty wiring, flooded conduit and corrosion bridges. Leakage typically appears as a *Zero Shift* and helps you decide if the transmitter needs calibration or if there is a problem in the loop wiring.
- **Faster Calibrations** - Three output EZ-CHECK switch. 2 speed EZ-DIAL; Stepping & Ramping
- **Optional Accessories** - AC Adaptor 120 V (020-0101); 240 V (020-0100)
NiMh Batteries & Charger 120 VAC/12V DC (020-0103)



Calibrate & Troubleshoot Loop Problems with the Model 532

- **Calibrate Milliamp & Voltage Instruments**
Source to 24.000 mA & 24.000 Volts DC; Read 0.000 to 24.000 mA, 0.000 to 24.000 V, 24.01 to 30.00 V
Simulate 2-Wire Transmitters, Power & Read 2-Wire Transmitters; 250 Ω resistor - HART compatibility
- **Calibrate with Confidence**
Current: Accurate to $\pm(0.012\%$ of Reading + 0.002 mA); Voltage: Accurate to $\pm(0.012\%$ of Reading + 0.004 V)
- **Troubleshoot Loops & Find Ground Faults**
Patented loop diagnostics take dynamic loop readings under operating conditions. Automatic indication of Loop Current, DC Voltage, Resistance and Leakage Current. Displays AC Voltage & presence of HART.
- **Locate Loop Current Leakages** - Find ground current leakage - faulty wiring, flooded conduits & corrosion bridges.
- **Faster Calibrations** - Select 3 outputs with EZ-CHECK switch. 2 speed EZ-DIAL plus Stepping & Ramping
- **Includes Attached Test Leads & Carrying Case (020-0204)**
- **Optional Accessories** - AC Adaptor for 120 VAC (020-0101); AC Adaptor for 240 VAC (020-0100)



Evolutionary PIECAL I34 - Small Size, Big Performance

- **Calibrate Milliamp Instruments**
Source & Read 0.00 to 24.00 mA & -25.00 to 125.0% of 4-20 mA; Simulate 2-Wire Transmitters
Power & Read 2-Wire Transmitters; Selectable 250 Ω resistor for HART compatibility
- **Calibrate with Confidence** - Accurate to $\pm(0.05\%$ of Reading + 0.01 mA)
- **Compact & Affordable** - Pocket sized with built-in belt clip & attached test leads. Includes two "AA" batteries.
- **Faster Calibrations** - Instantly select three outputs with EZ-CHECK switch & two speed EZ-DIAL knob
- **Optional Accessories** - Carrying case with belt clip (020-0200)



High Accuracy T/C & RTD Calibrators



Evolutionary PIECAL 322-I & 422 Automated T/C Calibrators

- **PIECAL 422 - Source and Read Fourteen T/C Types plus mV**
J, K, T, E, R, S, B, N, G, C, D, L (J DIN), U (T DIN) & P (Platinel); -13.000 to 80.000 mV
- **PIECAL 322-I - Source and Read Four T/C Types plus mV**
J, K, T, & E; -13.000 to 80.000 mV
- **Calibrate with Confidence** - Resolution of 0.1° F & C; Accurate to 0.2°
- **Faster Calibrations** - Instantly select three outputs with EZ-CHECK switch
Easily find trip points with two speed EZ-DIAL & Automatic Stepping.
- **Easily Change T/C Types & Scale** - Double click to select T/C type & °F & C
- **Easy-to-Read Display** - Turn on the backlight to read in dark areas of the plant
- **Use in the Plant, Field or Shop** - Includes Rubber Boot and mV Test Leads
Low profile switches resist accidental damage
- **Simple "No Tool" Battery Changes** - four inexpensive "AA" batteries
- **Verify Cold Junction Temperature & Output (422 Only)**
Secondary display of compensated millivolt setting and cold junction temperature
- **Optional Accessories**
Wire & Mini T/C Plug: J, T, E, K (020-0202); B, R/S, K (020-0203)



Evolutionary PIECAL 211 & 311 Automated RTD Calibrators

- **Calibrate with Ease** - Resolution to 0.1° F & C; Accurate to 0.2°
- **Source and Read Multiple RTD Curves plus Ohms**
Platinum 100 Ω: $\alpha=1.3850, 1.3902, 1.3926$; Platinum 1000 Ω: $\alpha=1.3850, 1.3750$
Copper 10 & 50 Ω; Nickel 110 & 120 Ω; 0.00 to 4001.0 Ω (PIECAL 211 limited to 2001.0 Ω)
Custom ranges available - consult factory
- **Automatically Detect 2, 3 & 4 Wire Connections**
Troubleshoot sensor connections & find broken wires with patented technology
- **Guaranteed Compatible with all Instrumentation**
Works with Rosemount & Honeywell Smart Transmitters, PLCs, DCSs, Multi-Channel Recorders and other pulsed excitation devices
- **Faster Calibrations** - Instantly select three outputs with EZ-CHECK switch
Easily find trip points with two speed EZ-DIAL knob & Automatic Stepping
- **Easily Change RTD Types & Scale** - Double click to select RTD Type & °F & °C
- **Verify RTD Temperature & Output (311 Only)** - Secondary display of Ohms
- **Easy-to-Read Display** - Turn on the backlight to read in dark areas of the plant
- **Simple "No Tool" Battery Changes** - four inexpensive "AA" batteries
- **Use in the Plant, Field or Shop** Includes Rubber Boot and RTD Wire Kit (020-0208)



High Resolution & Accuracy 525 Thermocouple & RTD Calibrator

- **Calibrate with Precision** - High resolution to 0.1° and 0.01° F & °C; Accurate to 0.2°
- **Source and Read Multiple Thermocouple Types plus mV**
J, K, T, E, R, S, N and B; -13.000 to 80.000 mV
- **Source and Read Multiple RTD Curves plus Ohms**
Platinum 100Ω: $\alpha=1.3850, 1.3902, 1.3926$; Copper 10 & 50Ω; Nickel 110 & 120Ω; 0.000 to 400.000 Ohms
- **Automatically Detect 2, 3 & 4 Wire Connections**
Troubleshoot sensor connections & find broken wires with patented technology
- **Guaranteed Compatible with all Instrumentation**
Works with Rosemount & Honeywell Smart Transmitters, PLCs, DCSs, Multi-Channel Recorders and other pulsed excitation devices
- **Faster Calibrations** - Instantly select 3 outputs with EZ-CHECK switch; 2 speed EZ-DIAL; Auto Stepping
- **Includes Carrying Case (020-0205) and RTD Wire Kit (020-0206)**
- **Optional Accessories** - Wire & Mini T/C Plug: J, T, E, K (020-0202); B, R/S, K (020-0203)



T/C & RTD Calibrators / Frequency Calibrator

Thermocouple Calibrator

Model 522

- **Source and Read Multiple Thermocouple Types plus mV**
J, K, T, E, R, S, N and B; -13.000 to 80.000 mV
- **Calibrate with Confidence**
Resolution of 0.1° F & C; Accurate to 0.2°
- **Faster Calibrations**
Instantly select three outputs with EZ-CHECK switch
Easily find trip points with two speed EZ-DIAL & Automatic Stepping
- **Optional Accessories for 522, 521 & 520**
Carrying case (020-0205)
Wire & Mini T/C Plug - Types J, T, E, K (020-0202)
Wire & Mini T/C Plug - Types B, R/S, K (020-0203)



Model 521 (not pictured)

- **Source Only - Multiple Thermocouple Types plus mV**
Same ranges as Model 522

Model 520 (not pictured)

- **Source Only - One T/C Type**

RTD Calibrator

Model 512

- **Source and Read Multiple RTD Curves plus Ohms**
Platinum 100 Ω : $\alpha=1.385, 1.3902, 1.3926$
Copper 10 & 50 Ω ; Nickel 110 & 120 Ω ; 0.000 to 400.000 Ohms
- **Calibrate with Confidence**
Resolution of 0.1° F & C; Accurate to 0.2°
- **Faster Calibrations**
Instantly select three outputs with EZ-CHECK switch
Easily find trip points with two speed EZ-DIAL knob
Automatic Stepping with selectable step size (Model 512S)
- **Includes Attached Test Leads**
- **Optional Accessories for 512, 511 & 510:** Carrying case (020-0205)



Model 511 (not pictured)

- **Source Only - Multiple RTD Curves plus Ohms**
Same ranges as Model 512

Model 510 (not pictured)

- **Source Only - One RTD Curve**

Frequency Calibrator

- **Calibrate Flow Meters and Frequency Instruments**
Generate Sine Waves, Zero based & Zero crossing Square Waves; Adjust amplitude from 100 mV to 12V p-to-p
- **Read with Built-in Frequency counter** - Measures waveforms from 0.1V-120V peak-to-peak
- **Calibrate with confidence** - Accurate to $\pm 0.005\%$ of Range
- **Compatible with Process Signal Ranges**
0.001 kHz to 20.000 kHz; 0.1 Hz to 2000.0 Hz; 0.01 Hz to 200.00 Hz
0.1 CPM (Counts-per-minute) to 2000.0 CPM; 1 CPH (Counts-per-hour) to 20000 CPH
- **Calibrate Totalizers** - Totalize Inputs/Outputs from 1 to 99999 counts in 0.1 to 100.0 minutes
- **Includes Attached Leads & Carrying Case**
- **Optional Accessories** - AC Adaptor for 120 VAC (020-0101); AC Adaptor for 240 VAC (020-0100)



Evolutionary Design

PIECAL Calibrators are designed and built by members of the same team that designed and built the calibrators now manufactured by Fluke* under the Altek* label.

Improvements over other brands include rubber boot with tilt stand, backlit displays with larger digits, rugged switches and battery compartments for fast battery changes.



Available From:

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