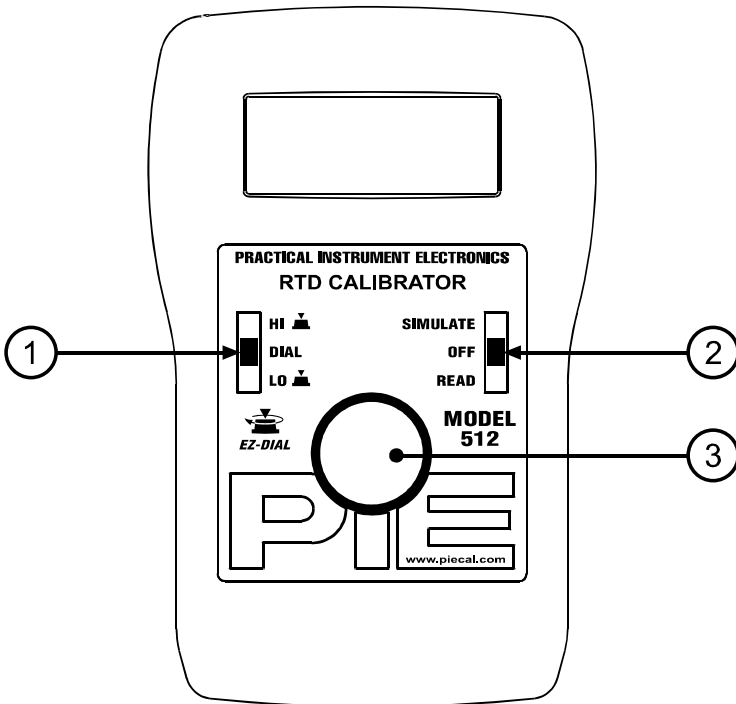


## Basic Keypad Operations

### ① EZ-Check™ Switch

Slide the switch to select from three user stored values for the desired calibration points. The user can select HI, DIAL, and LO positions. These values can easily be changed to suit the calibration requirements.



### ② SIMULATE/OFF/READ Switch

Turn the Model 512 on to SIMULATE to output a resistance corresponding to temperature. Turn the unit to READ to read RTD resistance directly in temperature.

### ③ EZ-Dial™ Knob

Turn the knob to change temperature in 0.1° increments. Push and turn for faster dialing. Push without turning to store new EZ-Check™ HI/LO points in SIMULATE mode, or to clear EZ-Check™ HI/LO points in READ mode.

## Model 512 Configuration

### Instructions for Enabling and Disabling the Configuration Options

1. Turn the Model 512 on to SIMULATE or READ.
2. Press the EZ-Dial™ Knob while the "PRESS EZ-DIAL KNOB FOR CONFIGURATION" message is displayed.
3. Select options by turning the EZ-Dial™ Knob until the arrow points to the desired option.
4. The option can be enabled or disabled by tapping the EZ-Dial™ Knob.

The Model 512 configuration menu will exit automatically after 5 seconds of inactivity and go to normal operation with the options selected. These options are recalled at turn on until they are changed again.

PRESS EZ-DIAL KNOB  
FOR CONFIGURATION

AUTO OFF      ON  
DISPLAY UNITS   °C  
RTD Pt100 α=3350

### Model 512 Configuration Menu

#### Auto Off

ON/OFF

If Auto Off is ON, the unit will turn off after 30 minutes to save battery life, if there is no user activity. If Auto Off is OFF the unit will stay on until it is turned off from the keypad. This is typically useful for manual loading or continuous use.

#### Display Units

°C/°F

Pressing the EZ-Dial™ Knob to toggles between °C or °F

#### RTD

Pt100 α=3850, Pt100 α=3902, Pt100 α=3916, Pt100 α=3926,  
Cu10 α=427, Ni110 Bristol, Ni120 α=672, Ω

To change RTD type, press the EZ-Dial™ Knob. Turn the EZ-Dial™ Knob to scroll through the list of available types. Press again to save and return to the configuration menu.



# Model 512 Operating Instructions

## Read Mode

Slide the SIMULATE/OFF/READ switch to READ for direct RTD input. The Model 512 displays temperature corresponding to resistance input for the selected thermocouple type.

**Automatic 2, 3, or 4 wire detect:** Connect 2, 3, or 4 wires to the RTD sensor. Follow the connection diagrams. The Model 512 indicates "2W", "3W", or "4W" in the lower left corner of the display. Use this feature for troubleshooting broken leads or sensors.

Slide the EZ-Check™ Switch to HI and LO to recall maximum and minimum saved readings. Press and hold the EZ-Dial™ Knob to clear saved readings. The display flashes "CLEARED" as a confirmation.

Be sure the switch is in the DIAL position to monitor input. Observe the "HI" and "LO" switch position indicators in the display.

Double-click the EZ-Dial™ Knob to return to the configuration menu.

Turning the EZ-Dial™ Knob has no effect in read mode.

Display Indications:

<b>OVERRANGE</b> or <b>UNDERRANGE</b>	The resistance input exceeds the range of the selected RTD type.
<b>OPEN RTD</b>	No RTD is connected.
<b>MISCONNECT</b>	The Model 512 is incorrectly connected for a 3-wire reading. Both black leads are required.

## Source Mode

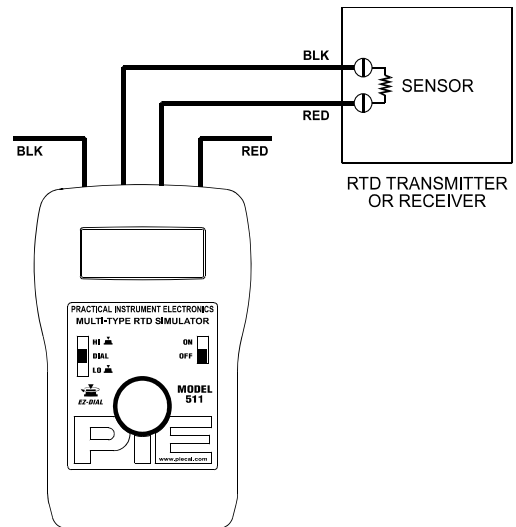
Slide the SIMULATE/OFF/READ switch to SIMULATE for direct RTD output. The Model 512 outputs resistance corresponding to temperature for the selected thermocouple type.

Turn the EZ-Dial™ Knob to change temperature, push and turn for faster dialing.

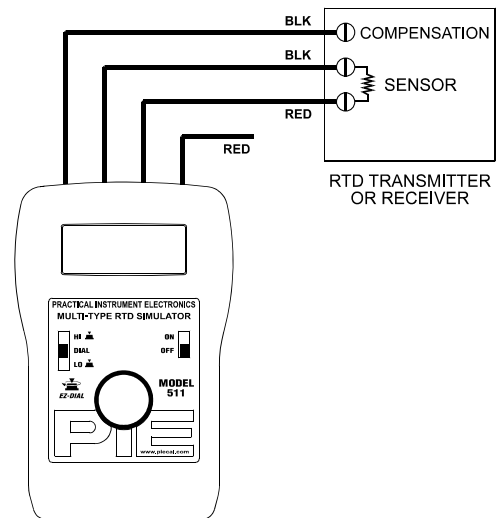
Slide the EZ-Check™ Switch to HI or LO to recall stored settings. While in the HI or LO position, dial a new setting and press the EZ-Dial™ Knob to store. The DIAL position always holds the last setting dialed there.

Double-click the EZ-Dial™ Knob to return to the configuration menu.

## Connection Diagrams



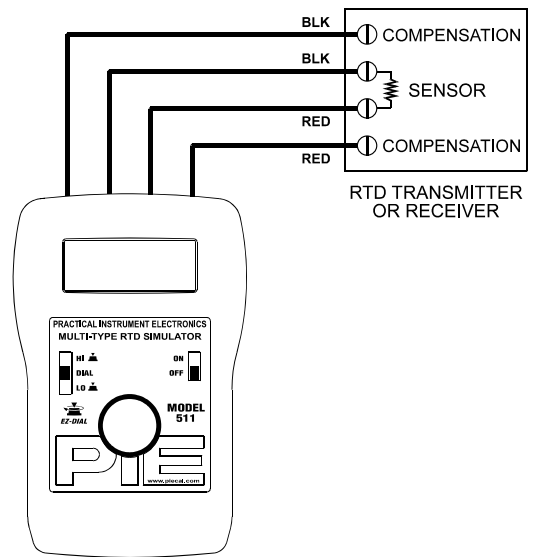
Two Wire Connection to Transmitter



Three Wire Connection to Transmitter

## Connection Diagrams

### Four Wire Connection to Transmitter



## Specifications

### General Specifications:

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

Temperature 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	4.9 X 3.15 X 1.82 inches (125.5 X 80 X 46.2 mm)
Weight	9.1 oz (258 grams)
Battery	9V Alkaline provides 45 hours of continuous use
Miscellaneous	Low battery indication with nominal 1 hour of operation left Protection to 60V for up to 30 seconds in duration High contrast graphic liquid crystal display with 0.357" (9.07 mm) high digits
Resolution	°C or °F / 0.01 Ω
Span	0.00-410.00 Ω
Accuracy	±(0.015 % of Ω + 0.05) Ω (see accuracy tables for temperature error)
Temperature Coefficient	±0.01 % of span in Ω/°C ambient

### RTD Simulation Specifications:

Allowable Excitation Current	100 μA to 10.2 mA, steady or pulsed/intermittent/smart
for accuracies below 100μA add	±10μV/Excitation Current (units are in Ω)
Pulsed Excitation Current Compatibility	DC to 0.01 second pulse widths

### RTD Read Specifications:

Excitation Current	1.0 mA nominal
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### Available Options:

Carrying Case	Part Number: 020-0201
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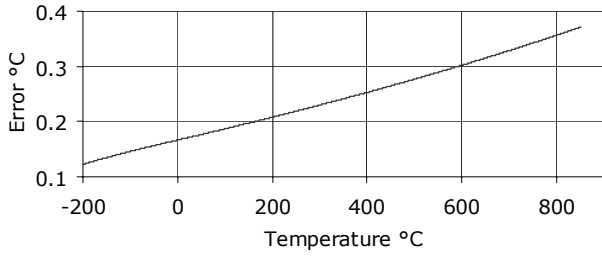


# Model 512 Operating Instructions

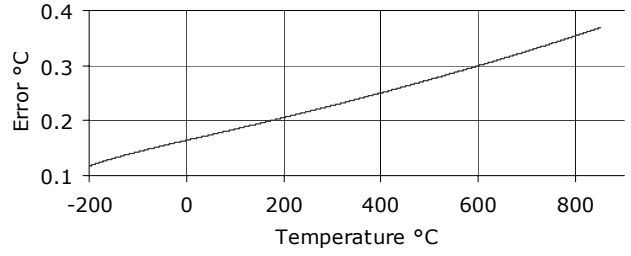
## Temperature Accuracy

The following charts give worst-case temperature accuracy based on stated resistance accuracy of  $\pm(0.015\% + 0.05)\ \Omega$ .

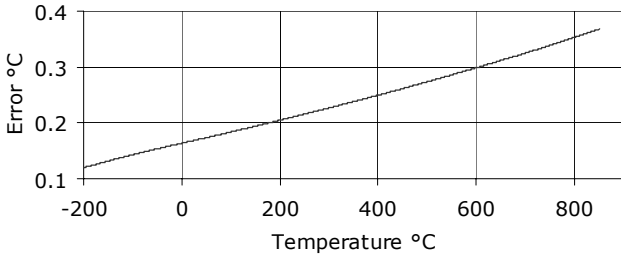
**Pt100 TCR=0.00385**  
**-200 to 850 °C**



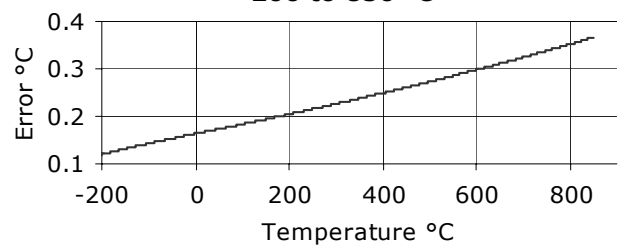
**Pt100 TCR=0.003902**  
**-200 to 850 °C**



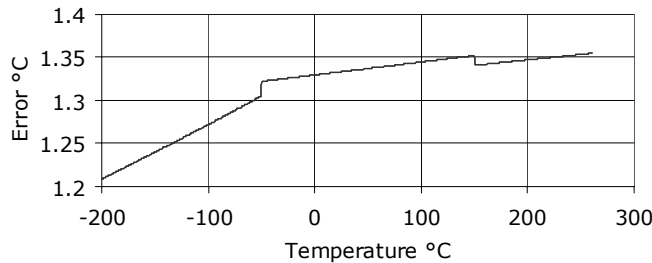
**Pt100 TCR=0.003916**  
**-200 to 850 °C**



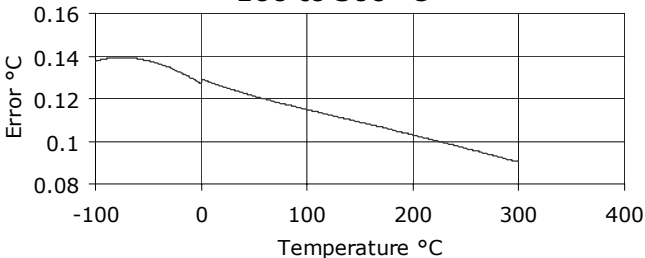
**Pt100 TCR=0.003926**  
**-200 to 850 °C**



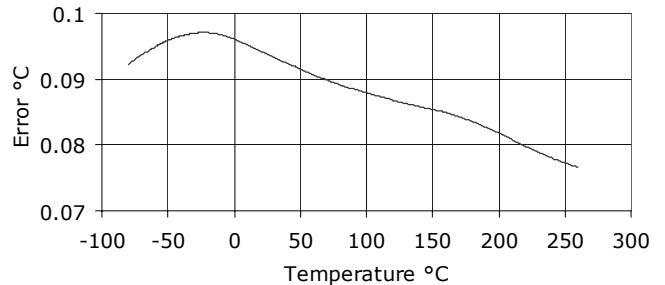
**Cu10 TCR=0.00427**  
**-200 to 260 °C**



**Ni110 TCR=0.00530**  
**-100 to 300 °C**



**Ni120 TCR=0.00672**  
**-80 to 260 °C**



## Warranty

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