



## DESCRIPTION

The PT174 is a plug-in signal conditioning module for use with either platinum or nickel temperature resistance probes of any reference value from 50 to 2500 ohms. It supplies constant current probe excitation and sense leads to minimize lead resistance errors. It is factory-set for a 100-ohm probe resistance, but can easily be changed for use with any value between 50 and 2500 ohms. Output is normally 1V/100T, with front panel zero and range controls for vernier adjustment of the PT174 to the RTD used.

## Front Panel Controls & Test Points

### Range -

Adjusts the output to correspond to the calibration curve of the RTD, adjustment range is approximately  $\pm 5\%$  of the standard output of 1V/100T for either platinum or nickel probes.

### Zero -

Adjusts the zero output to correspond to the calibration curve of the RTD used. Adjustment range is approximately  $\pm 4\%$  of the standard OT probe resistance.

### Calibration Switch -

Substitutes a known internal calibration resistance for the RTD. The value of the RTD is chosen to represent a known resistance value of the RTD for a selected point in the operating temperature range, span adjustment only.

### DC Test Jack -

to monitor the DC output of the PT174 during setup and calibration.

**NOTE: All adjustments and switches are screw-driver actuated. Ground jack for all test points is an MC170 power supply panel.**

## Features

- Linearized for platinum and Nickel RTD's
- Constant Current RTD Excitation
- Four Wire Lead Configuration
- Front Panel Calibration Switch
- Output 1V/100°F

## Specifications

|                                 |  |
|---------------------------------|--|
| <b>Sensitivity:</b>             | $\pm 1V$ per $+100^\circ F$  |
| <b>Range:</b>                   | $-300^\circ F$ to $+1000^\circ F$ for $-3V$ to $+10V$ Output.  |
| <b>Zero Range:</b>              | $\pm 10^\circ F$ minimum may be excited to $-300^\circ F$ to $+1000^\circ F$ by internal modifications.  |
| <b>Output Current:</b>          | 2mA maximum  |
| <b>Probe Material:</b>          | Platinum or Nickle alloy   |
| <b>Probe Connections:</b>       | Standard 4-wire connections  |
| <b>Probe Resistance:</b>        | 100 ohms, standard. Any value between 50 and 2500 ohms may be used by changing one internal resistor.  |
| <b>Probe Current:</b>           | 1mA with 100 ohm probe.<br>For other probe resistances:<br>$I = 0.1/R$ (Probe) for Platinum Probes (mA).<br>$I = 0.11/R$ (Probe) for Nickel Probes (mA). |
| <b>Calibration:</b>             | Internal resistor, front panel selected.   |
| <b>Linearity:</b>               | (Vout vs. Temp.) Better than $\pm 0.1\%$ using standard RTD curves.  |
| <b>Frequency Responses:</b>     | 10Hz (tr = 35m sec.)   |
| <b>Temperature Sensitivity:</b> | Operating range $0^\circ$ to $150^\circ F$ .<br>Zero/T( $^\circ F$ ): $0.02^\circ F/F$<br>Range/T( $^\circ F$ ): $0.01^\circ F/F$                        |
| <b>Size:</b>                    | $\pm 15Vdc$ supplied by MC170 case.<br>2.76"H X 0.45"W X 7.5"D<br>(7.01cmH X 1.14cmW X 19.05cmD)   |

## INPUT OUTPUT CONNECTIONS

The PT174 can be used in any module position of the MC170 case, as the case is internally wired to provide the proper operating voltages to all positions. Signal input-output connections are made at the terminals on the rear of the MC170 case. If these are wire-wrap terminals, connections should be made in accordance with the connector information in the PT174 Instruction Manual. If the MC170 case is to be supplied with screw-terminal strips, the PT174 should be installed only in module slots with terminal wiring per MC170T Option A.