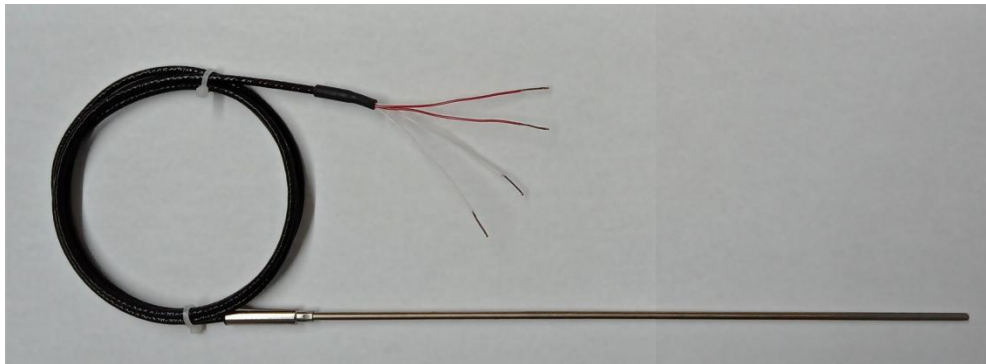


ATRP-L250

Precision Industrial Platinum Resistance Thermometer

User's Guide



WARNINGS:

Follow these guidelines to avoid personal injury:

1. Only use this instrument in the manufacturer specified temperature range.
2. The handle of this instrument can become hot when it is used to measure high temperatures for extended periods of time.
3. DO NOT submerge IPRT handle when taking measurement.
4. DO NOT use this instrument to measure the temperature of any hazardous live component.
5. Follow all other safety guidelines listed in this user's guide.

CAUTIONS:

Follow these guidelines to avoid possible damage to the instrument:

1. Avoid mechanical shocks. DO NOT drop or slam the probe in any way. This will cause damage to the probe internally and affect its calibration and accuracy.
2. Read Section entitled "Care and Handling Guidelines" before removing the IPRT from the shipping box. Incorrect handling can damage the IPRT and void the warranty.
3. Keep the shipping container in case it is necessary to ship the PRT. Incorrect packaging of the IPRT for shipment can cause irreparable damage.
4. Calibration Equipment should only be used by Trained Personnel.

1 INTRODUCTION**1.1 MAIN APPLICATION**

ATRP-L250 Precision Industrial Platinum Resistance Thermometer (IPRT) is an interpolating instrument converting temperature to resistance. It works together with readout device to measure temperature or change of temperature.

Main Features:

- High accuracy: 0.05 °C at 0°C
- Temperature range: -50 °C to 200 °C
- Durable and shock resistance
- Rugged, flexible Pt100 probe
- Suitable for many industrial applications including high pressure, vacuum, and vibration
- Pt100 4-wire connection
- Flexible stainless-steel sheath
- Probe can be bent to enable fitting in awkward locations
- 1 meter Teflon® insulated, screened lead, 7/0.2mm, 4-core

1.2 CALIBRATIONS

It is recommended to calibrate this IPRT annually over the full temperature range. In between annual calibrations, user can check the drift rate by comparing Rtpw against the last calibration results. Refer to specifications section for normal drift rate.

2 SPECIFICATIONS

2.1 SPECIFICATIONS

Temperature Range	-50 °C to 200 °C
Resistance at 0 °C	Nominal 100 Ω
Temperature Coefficient	Nominal 0.00385 $\Omega/\Omega/^{\circ}\text{C}$
Accuracy	± 0.05 °C
Long Term Drift	± 0.04 °C at 0 °C after 100 hours at 200 °C
Short Term Stability	± 0.01 °C
Hysteresis	≤ 0.01 °C
Response Time	5 seconds for 63% response to step change in water moving at 3 feet per second
Measurement Current	0.5 mA or 1 mA
Sensor Location	6 mm from tip
Insulation Resistance	>1000 M Ω at room temperature
Sheath Material	316 stainless steel
Dimension	3 mm x 250 mm
External Leads	1 meter Teflon® insulated, screened 7/0.2mm and tails
Handle Dimension	6.35 mm (OD) X 32.5 mm (L)
Handle Temperature Range	-50 °C to 180 °C
Optional Calibration	NIST traceable calibration and data available per request: ATRP-NIST-CAL

3 GENERAL OPERATIONS

3.1 CONNECTING TO THE READOUT DEVICES

The ATRP-L250 is equipped with a four-wire cable (see Figure 1). Four lead wires are used to cancel lead wire resistance. For best results, the readout device should be equipped to handle four-terminal resistors. Lead wire pairs attached to each end of the sensor are identified by red/white insulation.

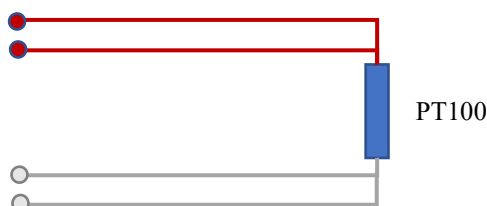


Figure1

3.2 DRIVE CURRENT

Alitek Control recommends 0.5mA or 1mA as drive current to ensure the best measurement.

3.3 STABILITY OF READING

To achieve the best accuracy, allow sufficient time for IPRT to stabilize before taking the readings

3.4 IMMERSION REQUIREMENTS

Stem effect can cause measurement errors due to heat lost or gained by the sensing element through the thermometer stem. To minimize the error, appropriate immersion depths are required. A practical way to determine the minimum immersion depths is to change the depth gradually until the readings have significant changes after stabilization. Do not submerge IPRT handle when taking measurement.

3.5 THERMAL EMF

Each Alitek Control's IPRT has gone through stability test to minimize the thermal EMF, which is caused by either impurities of sensing element or temperature differentials at lead wires connection points.

3.6 OVER HEATING

The sensing element of ATRP-L250 IPRT is sealed inside a stainless-steel sheath to ensure the best stability and repeatability. The seal can be breached if the PRT is over heated for an extended period

4 CARE AND HANDLING

4.1 DO NOT OVERHEAT

- Do not use IPRT above the manufacturer specified temperature range.
- Do not expose the IPRT handle and lead wires to extreme temperatures

4.2 DO NOT OVER-BENDING

- Do not bend the PRT in small bending radius, need to be >50mm.

5 LIMITED WARRANTY AND LIMITATION OF LIABILITY

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Each product from Alitek Control Corporation is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is 1 year for the Platinum Resistance Thermometer. The warranty period begins on the date of the shipment. Parts, product repairs, and services are warranted for 90 days. The warranty extends only to the original buyer or end-user customer of an Alitek Control Corporation authorized reseller. The warranty will not extended to products that have been misused, altered, neglected, or damaged by accident or abnormal conditions of operation or handling.

To obtain warranty service, contact Alitek Control Corporation at:

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