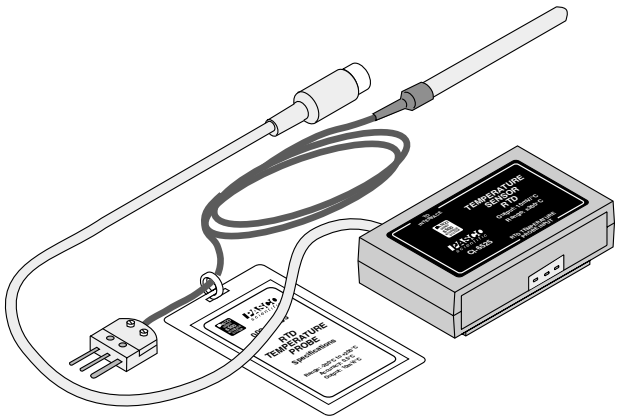
High-Accuracy Temperature Sensor

CI-6525



Included Equipment	Part Number
High-Accuracy Temperature Sensor	CI-6525

Additional Equipment Required	Part Number
PASCO CI computer interface or a PASPORT USB interface with an Analog Adapter	PS-2158

Introduction

The PASO Model CI-6525 RTD (Resistance Temperature Device) High-Accuracy Temperature Sensor is designed for use with a PASCO CI computer interface or a PASPORT USB interface with an Analog Adapter (PS-2158). The range of the RTD Temperature Sensor is ±200 °C with an accuracy better than 0.5 °C over the full range. The RTD temperature probe can be used in water and mild chemical solutions

The sensor consists of the RTD probe and the sensor box. The probe contains platinum wire. The resistance of the platinum wire increases with temperature in a very predictable way. The cable between the RTD probe and the sensor box is covered by flexible PVC tubing.

Equipment Setup

1. Attach the probe's three prong connector to the sensor box at the port marked RTD TEMPERATURE PROBE INPUT.

Note: The three prong connector can go into the port in only one way because one of the prongs is wider than the other two prongs.

2. Connect the 8-pin DIN plug from the sensor box to analog channel A, B, or C on a CI computer interface box or an Analog Adapter connected to a PASPORT USB interface.

3. Touch the end of the sensor to the object to be measured.

   Or

   Place the sensor end into the solution to be measured.

CAUTION: DO NOT place the RTD temperature probe in a direct flame or on a hot plate. To prevent damage to the internal components of the probe, do not exceed the maximum operating range of -200 °C to +200 °C.

Using the probe in Mild Chemical Solutions

The RTD Temperature Sensor is designed for measuring the temperature of liquids, such as water and mild chemical solutions. The RTD probe has been tested for several minutes in the following chemicals without damage:

acetone	sodium hydroxide (lye)
household bleach	ethylene glycol butyl ether
isopropyl alcohol	ethylene glycol (antifreeze)
naphtha	sulfuric acid (battery acid)
vinegar	glacial acetic acid
paradichlorobenzene	water

- Carefully rinse off any chemicals after each use.

Protecting the Probe with the optional Teflon Sensor Cover

A package of ten Teflon Sensor Covers is available from PASCO scientific (part number CI-6549). See the PASCO catalog for more information.

Use the optional Teflon FEP sensor cover when placing the RTD probe in strong chemical solutions that may damage the probe.

Calibrating the Sensor

The sensor is designed to produce 0 Volts at 0 °C and 10 milliVolts (0.010 V) per degree C. The sensor is very accurate and generally does not need to be calibrated.

However, you can calibrate the sensor using a thermometer and a two-point calibration process. To calibrate the sensor, you will need an accurate thermometer, ice water, and hot, boiling water.

Calibration with DataStudio

1. Connect the Temperature Sensor to an analog channel on the *ScienceWorkshop* interface.

2. Start the DataStudio program. Select “Setup” from the DataStudio toolbar. The interface and sensor should appear in the setup window.

3. Select “Calibrate Sensors…” from the Experiment Setup toolbar. Be sure that “2 point (Adjust Slope and Offset)” is selected under “Calibration Type”.



4. Calibration Point #1: Place the probe of the High-Accuracy Temperature Sensor in the ice water. Also put the thermometer in the ice water. The monitor screen will show the voltage value produced by the sensor. When the thermometer reading is almost zero, enter the reading in the “Standard Value” box for Calibration Point 1, then click the “Read From Sensor” button for Calibration Point 1.

5. Calibration Point #2: Place the sensor and thermometer in boiling water. The monitor screen will show the new voltage produced by the sensor. When the thermometer reading reaches a peak, enter the reading in the “Standard Value” box for Calibration Point 2, then click the “Read From Sensor” button for Calibration Point 2. Cilck “OK” at the bottom of the calibration screen and close the Experiment Setup window.

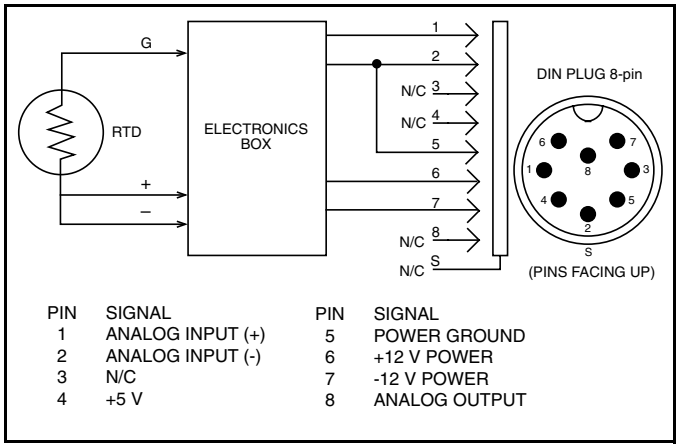
6. You can save your calibration as a DataStudio document by selecting “Save As…” from the File menu.

Note: *By default, the calibration is set for degrees C. To calibrate in other units, click on the Measurement tab and select the desired unit from the drop-down list. Then click on the Calibration tab and select the same unit from the drop-down list near the top of the screen.*

Specifications

Temperature range	-200 °C to +200 °C
Accuracy	0.5 °C or better
Response **time**	98% in 60 seconds
Output Voltage to Temperature	10 millivolts per degree Celsius
Output Range	+/- 2.000 Volts
Resolution	0.5 °C or better

Schematic



PIN	SIGNAL	PIN	SIGNAL
1	ANALOG INPUT (+)	5	POWER GROUND
2	ANALOG INPUT (-)	6	+12 V POWER
3	N/C	7	-12 V POWER
4	+5 V	8	ANALOG OUTPUT

Technical Support

For assistance with any PASCO product, contact PASCO at:

Address: PASCO scientific
10101 Foothills Blvd.
Roseville, CA 95747-7100

Phone: 916-786-3800 (worldwide)
800-772-8700 (U.S)

Fax: (916) 786-3292

Web: www.pasco.com

Email: support@pasco.com

Limited Warranty
For a description of the product warranty, see the PASCO catalog.

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