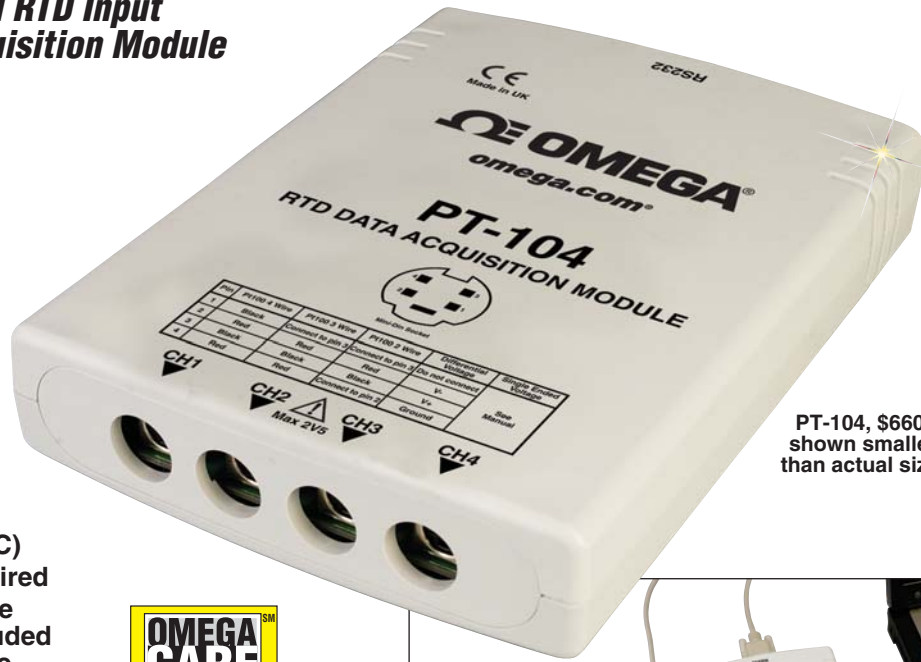




## 4-Channel RTD Input Data Acquisition Module

PT-104  
**\$660**



PT-104, \$660, shown smaller than actual size.

- ✓ Measures Temperature (RTDs), Resistance and Voltage
- ✓ High Accuracy (0.01°C) and Resolution (0.001°C)
- ✓ No Power Supply Required
- ✓ RS-232 or USB Interface (USB Interface via Included RS-232 to USB Interface Converter)
- ✓ For Use with Pt100 and Pt1000 RTD Sensors



OMEGACARE<sup>SM</sup> extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE<sup>SM</sup> covers parts, labor and equivalent loaners.

The PT-104 is a four-channel, high-resolution temperature data acquisition module for use with Pt100 and Pt1000 RTD sensors. It can also be used to measure resistance (375 Ω and 10,000 Ω ranges) and voltage (115 mV or 2.5 V ranges).

In Pt100/Pt1000/resistance mode, the unit uses a four-wire circuit. In voltage mode, the input connector can be treated as a differential input with ground, or two single-ended inputs. Both inputs must be 0 V or above, though it does not matter which input has the higher voltage. For the 115 mV voltage range, the accuracy may vary by 2%, and the temperature co-efficient will be 100 ppm/°C.

Although accurate temperature sensors are widely available, it has been difficult to take advantage of them due to errors caused by the measuring device.

The PT-104, however, is designed to be inherently accurate. Rather than relying on voltage references (which tend to be temperature sensitive) it uses 'reference' resistors which are extremely stable (low temperature co-efficient and drift).

The exact value of each resistor is stored in an EEPROM to provide the ultimate in accuracy (yearly re-calibration is recommended). To achieve the 0.001°C resolution a highly-advanced ADC is used that can resolve to better than 1 part in 16 million.

### Temperature

The PT-104 measures temperature using platinum resistance temperature sensors (RTDs). Both common industry standards (Pt100 and Pt1000) are supported. The unit is compatible with 2, 3 and 4 wire sensors (4 wire Pt100 sensors are recommended for accurate measurements).

### Resistance

When measuring resistance, the unit uses a four-wire circuit to give the greatest possible accuracy. Two resistance ranges are available (0 to 375 Ω and 0 to 10,000 Ω). The unit is calibrated for 0 to 375 Ω so this range should be used for accurate measurements.

### Voltage

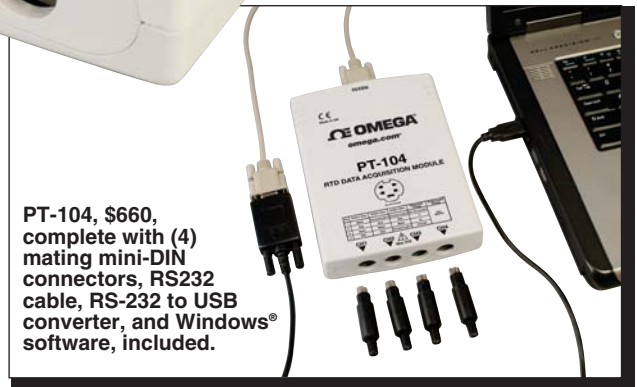
For voltage measurements, each input connector can be treated as a differential input with ground, or two single-ended inputs. Both inputs must be zero volts or above, though it does not matter which input has the higher voltage. Two voltage ranges are available (0 to 115 mV and 0 to 2500 mV). For the most accurate measurements use the 0 to 2500 mV range.

### Remote Data Collection

The PT-104 is normally connected directly to a PC, but it is also possible to communicate with the PT-104 using a modem (radio or telephone) so that you can collect data from a remote site.

### Software

The PT-104 is supplied with Windows<sup>®</sup> Logging and Player Software. The software will automatically detect which sensor is connected and will display readings in the correct units. Also supplied is a software development kit (SDK).



PT-104, \$660, complete with (4) mating mini-DIN connectors, RS232 cable, RS-232 to USB converter, and Windows<sup>®</sup> software, included.

The SDK contains a range of software drivers and example code that you can use to write your own software or to use your PT-104 data logger with third party software.

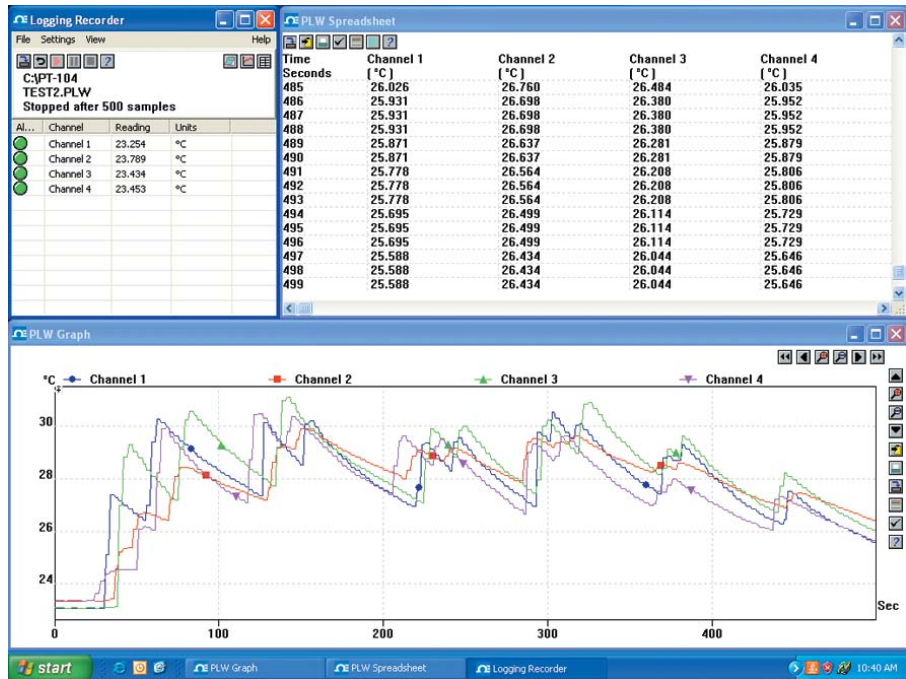
With the included Logging Software you can set the sampling interval from 1 second to several hours and set the maximum number of readings.

You can also tell PT-104 data acquisition module what do to when the temperature readings have been taken - either: stop; repeat immediately (start again); scroll (oldest recordings disappear); or repeat after delay (where the delay is set by the user).

Multiple PT-104 modules can be used simultaneously with the Logging Software. Also, PT-104 modules can be mixed with TC-08 thermocouple input modules and used at the same time. Up to 20 units of any kind (PT-104 or TC-08) can be connected.

Using the PT-104 Logging Software, data can be viewed in a spreadsheet and/or in a graph as it

is being recorded. Data collected from previous recordings can also be viewed using the Player.



PT-104 logging software, displays data in graphical or tabular format.

## Specifications

PT-104 Platinum Resistance Data Logger			
	Temperature	Resistance	Voltage
Sensor	Pt100 <sup>1</sup> , Pt1000	N/A	N/A
Range	-200 to 800°C (-328 to 1472°F)	0 to 375 Ω <sup>1</sup> 0 to 10 kΩ	0 to 115 mV 0 to 2.5V <sup>1</sup>
Linearity	10 ppm	10 ppm	10 ppm
Accuracy @ 25°C	0.01°C <sup>1</sup>	20 ppm <sup>1</sup>	0.2% <sup>1</sup>
Temperature Co-efficient	3 ppm/°C	3 ppm/°C	100 ppm/°C
RMS Noise (Using Filter)	0.01°C	10 ppm	10 ppm
Resolution	0.001°C	1 μΩ	0.156 μV
Conversion Time Per Channel	720 mS <sup>2</sup>	720 mS <sup>2</sup>	180 mS
Number of Inputs	4		
Connectors	4-pin mini-DIN		
Input Impedance	>>1 MΩ		
Overvoltage Protection	±100V		
Environmental	20 to 30°C (68 to 86°F) for stated accuracy, 0 to 70°C (32 to 158°F) overall, 20 to 90% RH		
Software	Logging Software for 32-bit editions of Windows XP (SP2) and Vista software Development Kit containing drivers and example code for C, C++, Visual Basic, Delphi, Agilent VEE and LabView.		
Computer Interface	RS-232 (or USB via included RS-232 to USB interface converter)		
Dimensions	35 H x 140 W x 200 mm D (1.4 x 5.5 x 7.9")		
Weight	500 g (1.1 lb)		

<sup>1</sup>Quoted accuracy

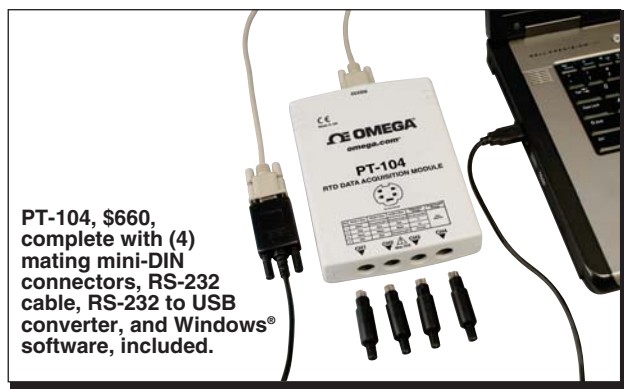
<sup>2</sup> For 4-wire temperature and resistance measurement



# DATA ACQUISITION SYSTEMS



All models shown smaller than actual size.



PT-104, \$660, complete with (4) mating mini-DIN connectors, RS-232 cable, RS-232 to USB converter, and Windows® software, included.

## Compatible RTD Probes

PR-11-2-100-1/8-6-E, \$72, for more information, visit [omega.com/pr-11](http://omega.com/pr-11)



- ✓ Probe Transition Includes Strain Relief Spring at the Cable Exit
- ✓ Available in Standard and Metric Sizes
- ✓ Temperature Range -200 to 600°C (Transition and Cable to 260°C Max)
- ✓ High-Accuracy, Wire Wound 100 Ω, Class "A" DIN Platinum Elements per IEC 751 (alpha = 0.00385 Ω/Ω°C)
- ✓ 2-, 3-, and 4-Wire Constructions Available

RTD-2-F3105-36-T, \$45, for more information, visit [omega.com/rtd-2-f3105](http://omega.com/rtd-2-f3105)



- ✓ Thermal Response (63%) Less Than 75 Milliseconds in Water Flowing at 3 Feet per Second
- ✓ High-Accuracy Class "A", 100 Ω DIN Platinum Elements Standard
- ✓ Ultra Precise Accuracy 1/3 and 1/10 DIN, and Economical Class "B" Also Available
- ✓ Operating Range Up to 480°C (900°F) Available
- ✓ 1 m (40") Long 2-, 3-, or 4-Wire #26 AWG Cables for Connecting to Most Handheld Instruments

SA1-RTD, \$50, for more information, visit [omega.com/sa1-rtd](http://omega.com/sa1-rtd)



- ✓ 100 Ω DIN Class A (±0.06 Ω or ±0.15°C at 0°C) Accuracy Standard
- ✓ Easy-Installation Silicone-Based, Self-Adhesive Backing Rated to 260°C (500°F)
- ✓ Sensor Can be Re-applied
- ✓ 290°C (554°F) Short-Term Operation When Used as a "Cement-On" (OMEGABOND® Air Set Cements)
- ✓ Stripped 3-Wire or 4-Wire Leads Standard (Connectors Optional)
- ✓ Stocked in 1 m (40") Lengths; Also Available in 2 and 3 m (80 and 120") and Custom Length Lead Wires
- ✓ Other Resistances/Accuracies Available on Request

**AVAILABLE FOR FAST DELIVERY!**

## To Order (Specify Model Number)

Model No.	Price	Description
PT-104	\$660	4-channel RTD input data acquisition module
HH804-CONNECTOR	10	Spare mating mini-DIN connector
OM-CONV-USB	15	Spare RS-232 to USB interface converter

Comes complete with 4 mating mini-DIN connectors, RS-232 interface cable, RS-232 to USB interface converter and Windows software and operator's manual on CD.

**Ordering Example:** PT-104, 4-channel RTD input data acquisition module and OMEGACARE<sup>SM</sup> 1 year extended warranty for PT-104 (\$80) (adds 1 year to standard 2 year warranty), \$660 + 66 = \$726.



#### UNITED STATES

[www.omega.com](http://www.omega.com)  
1-800-TC-OMEGA  
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### • pH and Conductivity

Conductivity Instrumentation, Dissolved Oxygen Instrumentation, Environmental Instrumentation, pH Electrodes and Instruments, Water and Soil Analysis Instrumentation

### • Data Acquisition

Auto-Dialers and Alarm Monitoring Systems, Communication Products and Converters, Data Acquisition and Analysis Software, Data Loggers Plug-in Cards, Signal Conditioners, USB, RS232, RS485 and Parallel Port Data Acquisition Systems, Wireless Transmitters and Receivers

### • Pressure, Strain and Force

Displacement Transducers, Dynamic Measurement Force Sensors, Instrumentation for Pressure and Strain Measurements, Load Cells, Pressure Gauges, Pressure Reference Section, Pressure Switches, Pressure Transducers, Proximity Transducers, Regulators, Strain Gages, Torque Transducers, Valves

### • Heaters

Band Heaters, Cartridge Heaters, Circulation Heaters, Comfort Heaters, Controllers, Meters and Switching Devices, Flexible Heaters, General Test and Measurement Instruments, Heater Hook-up Wire, Heating Cable Systems, Immersion Heaters, Process Air and Duct, Heaters, Radiant Heaters, Strip Heaters, Tubular Heaters