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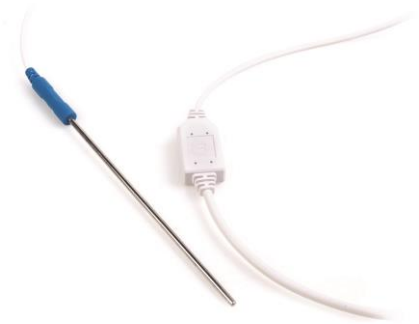
PT -100 TEMPERATURE (-200 to 400°C) Sensor

Product Number: ENTMP027



Overview

One of the qualities of platinum is that its electrical resistance increases linearly with the temperature. The PT-100 Temperature sensor uses this quality to produce highly accurate readings in a wide temperature range (-200 °C to 400 °C). It is ideal for temperature measurement in chemical solutions and for experiments where great stability, accuracy and repeatability are critical.

The sensor is ideal for use in Chemistry and Physics. The PT-100 Temperature sensor can be connected to einstein™ LabMates™ and einstein™ Tablets.

Typical experiments

Chemistry

- Measuring the Temperature of Liquid Gases

- Determining the boiling point of different materials

How it works

This sensor measures temperature based on the electrical resistance of the platinum core. Its name derives from the fact that at 0 °C the platinum's resistance is 100 Ohms. This resistance changes linearly as the temperature changes - at 100 °C the resistance is 138.4 Ohms. The sensor uses a small electric current of 1.7 mA to measure this resistance which is then amplified to a range of 0-5 Volts and then calculated by the data logger as a Temperature measurement.

Sensor specification

Range:	- 200 °C to 400 °C - 328 °F to 752 °F 73.15 K to 673.15 K
Accuracy:	±2 % over entire range
Resolution (12-bit):	0.15 °C
Recommended Sampling Rate:	10 samples per second
Response Time (for 90% change in reading):	20 seconds in liquid 40-60 seconds in air

Note: The Temperature sensor was designed only for educational purposes and shouldn't be used for industrial, medical, or research applications.
Note: For use in mild chemical solutions only
Note: Do not place the sensor's cable in liquid
Note: Do not place sensor in a flame or on a hot plate

Calibration

The Temperature PT-100 sensor is shipped fully calibrated.

Data logging and analysis

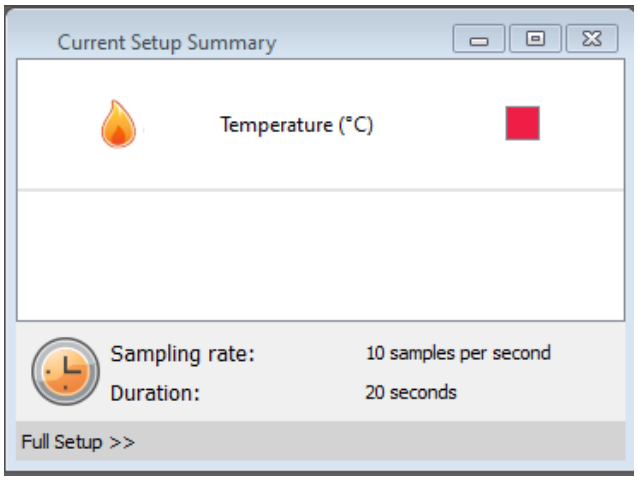
MiLAB™

1. Take your einstein™ Tablet OR pair your einstein™LabMate with your Android or iOS tablet via Bluetooth
2. Insert the sensor cable into one of the sensor ports
3. Launch MiLAB
4. MiLAB will automatically detect the sensor and show it in the Launcher View
5. Check the icon next to the sensor ( ) to enable it for logging

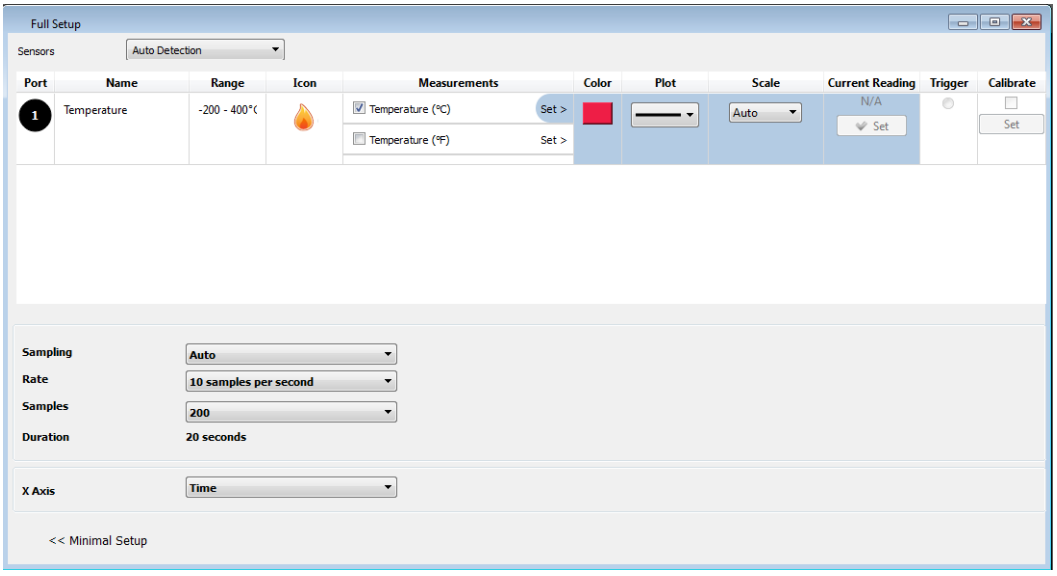
MultiLab™4

1. Pair your einstein™LabMate with your PC, MAC, or Linux machine via Bluetooth, or connect it via the USB cable (found in the einstein™LabMate™ box).
2. Insert the sensor cable into one of the sensor ports
3. Launch MultiLab4

4. MultiLab4 will automatically detect the sensor and show it in the Current Setup Summary window



5. Click Full Setup, located at the bottom of the Current Setup Summary window to program the data logger's sample rate, number of samples, units of measurement, and other options



6. Click the Run button ( )on the main toolbar of the Launcher View to start logging

Troubleshooting

If the sensor isn't automatically recognized by MultiLab4/ MiLAB, please contact Fourier Education's technical support.

Technical support

For technical support, you can contact the Fourier Education's technical support team at:
Web: www.einsteinworld.com/support
Email: support@fourieredu.com
Phone (in the US): (877) 266-4066

Copyright and Warranty

All standard Fourier Systems sensors carry a one (1) year warranty, which states that for a period of twelve months after the date of delivery to you, it will be substantially free from significant defects in materials and workmanship.
This warranty does not cover breakage of the product caused by misuse or abuse.
This warranty does not cover Fourier Systems consumables such as electrodes, batteries, EKG stickers, cuvettes and storage solutions or buffers.