Vernier EasyTemp®

(Order Code EZ-TMP)

The Vernier EasyTemp is a rugged, general-purpose temperature sensor that you can use just like a thermometer. Its durability and temperature range make it perfect for a variety of activities in science and math. Typical uses are monitoring temperature in:

- weather studies
- chemical reactions
- cooling curves
- insulation studies
- specific heat experiments
- heat of fusion experiments

EasyTemp has a mini-A USB connector that allows you to attach the temperature probe directly to the USB port of a TI-84 Plus, TI-84 Plus Silver Edition, TI-Nspire, or TI-Nspire CAS calculator. You can then take temperature measurements directly with the calculator.

NOTE: This product is to be used for educational purposes only. It is not appropriate for industrial, medical, research, or commercial applications.

Using the Vernier EasyTemp with TI-84 Plus and TI-84 Plus Silver Edition Graphing Calculators

Here is the general procedure to follow when using the EasyTemp with the TI-84 Plus family of calculators.

1. You will need the Vernier EasyData® program on your calculator.
   a. EasyData has been preinstalled on TI-84 Plus and TI-84 Plus Silver Edition calculators. You can determine if EasyData is installed by pressing APPS and scrolling through the alphabetical list of apps to see if EasyData is listed. If the app is present, proceed to Step 2. If the app is not present, continue with this step.
   b. If your calculator does not have EasyData, you will need to install the program onto your calculator. EasyData can be downloaded for free from our web site (www.vernier.com/easy/easydata.html). Download the program to your computer and then use a TI Connectivity cable and TI Connect™ software to send the program from the computer to the calculator.

      NOTE: Your calculator will also need operating system version 2.30 or newer. If necessary, download the operating system from the TI web site (education.ti.com) and install it on your calculator before running EasyData.
2. Make sure that you are on the calculator's home screen. To do this, it may be necessary to press 2nd [Quit].
3. Connect EasyTemp to the USB port on the calculator. The calculator will automatically detect the sensor and launch EasyData.
4. You are now ready to collect data. Sample experiments using EasyTemp with EasyData are available on our web site at www.vernier.com/ez-temp. If you are interesting in learning more about the EasyData program, you can download the *EasyData Guidebook* at www.vernier.com/easy/easydata.html.

Using EasyTemp with TI-Nspire and TI-Nspire CAS Handhelds

If your TI-Nspire or TI-Nspire CAS is running software version 1.2 or newer, all you have to do is connect the probe to the handheld, and a data-collection tool or application will launch automatically. See your TI-Nspire documentation for additional information on collecting sensor data using TI-Nspire.

Specifications

- Temperature range: –20 to 115°C
- Maximum temperature that the sensor can tolerate without damage: 150°C
- Resolution: 0.07°C
- Accuracy: ±0.5°C
- Response time: 4 s (to 90% of full reading in water)

This sensor is equipped with circuitry that supports auto-ID. When used with the TI-84 Plus calculators or TI-Nspire handhelds or TI-Nspire, Logger *Pro*, or Logger Lite software on a computer[1], the data-collection software identifies the sensor and uses pre-defined parameters to configure an experiment appropriate to the recognized sensor. This greatly simplifies the setup procedure for many experiments.

Probe Chemical Tolerance

The EasyTemp probe is constructed of high-grade stainless steel, which provides a high level of corrosion resistance for use in the science classroom. Here are some general guidelines for usage:

1. The probe handle is molded plastic. While this material is chemical resistant, we recommend that you avoid submerging the probe beyond the stainless steel portion.
2. Always wash the probe thoroughly after use.
3. The probe can be left continuously in water at temperatures within the range of –40°C to 150°C. Continuous usage in saltwater will cause only minor discoloration of the probe, with no negative effect on performance.
4. You can leave the probe continuously in most organic compounds, such as methanol, ethanol, 1-propanol, 2-propanol, 1-butanol, n-hexane, lauric acid, paradichlorobenzene, phenyl salicylate, and benzoic acid. The probe should not be left in n-pentane for more than 1 hour.
5. The probe can be left in strong basic solutions, such as NaOH, for up to 48 hours, with only minor discoloration. We do not recommend usage in basic solutions that are greater than 3 M in concentration.

[1] With the appropriate adapter (order code MINI-USB), EasyTemp can also connect to the USB port of a computer or LabQuest.

Do I Need to Calibrate This Probe? No

The Vernier EasyTemp does not need to be calibrated. It is calibrated extremely well before it ships.

Warranty

Vernier warrants this product to be free from defects in materials and workmanship for a period of five years from the date of shipment to the customer. This warranty does not cover damage to the product caused by abuse or improper use.

Vernier

Measure. Analyze. Learn.™

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