

Vernier EasyTemp[®]



(Order Code EZ-TMP)

Vernier EasyTemp is a USB temperature probe designed for use with TI-84 Plus calculators or TI-Nspire™ or TI-Nspire™ CAS handhelds.

This general-purpose temperature sensor can be used just like a thermometer for experiments in chemistry, physics, biology, Earth science, environmental science, and more. EasyTemp has a mini-A USB connector for direct connection to supported Texas Instruments calculators and handhelds.

Note: Vernier products are designed for educational use. Our products are not designed nor are they recommended for any industrial, medical, or commercial process such as life support, patient diagnosis, control of a manufacturing process, or industrial testing of any kind.

Compatible Software

Vernier EasyTemp works with the following TI calculator apps:

- Vernier EasyData[®] app
Included on all models of TI-84 calculators (Plus, Silver Edition, Plus C Silver Edition, CE, and Python)
- DataQuest™ App
Included on all models of TI-Nspire and TI-Nspire CAS handhelds (clickpad, touchpad, CX, and CX II)

Vernier EasyTemp works with the following computer software from Texas Instruments (requires Easy to Go! adapter, not included):

- TI-SmartView™ CE Emulator Software (version 5.2 or newer)
- TI-Nspire CX Premium Teacher Software
- TI-Nspire Student Software (Numeric and CAS)

Vernier EasyTemp works with the following software from Vernier (requires Easy to Go! adapter, not included):

- Vernier Graphical Analysis™ (computers and Chromebooks only)
- Logger Pro[®] 3
- LabQuest[®] App

Getting Started

TI-84 Plus Graphing Calculators (all models)

1. Turn on the calculator.
2. Connect EasyTemp to the USB port on the calculator. The calculator will automatically detect the sensor and launch EasyData app.
3. You are now ready to collect data.

If EasyData app is not on your calculator, it can be downloaded for free at www.vernier.com/tii/5078

For additional information on collecting sensor data with TI-84 Plus calculators, see the EasyData Guidebook at www2.vernier.com/manuals/easydata_guidebook.pdf

TI-Nspire™ and TI-Nspire™ CAS Handhelds (all models)

1. Turn on the handheld.
2. Connect EasyTemp to the USB port on the handheld. The handheld will automatically detect the sensor and launch DataQuest app.
3. You are now ready to collect data.

For additional information on collecting sensor data using DataQuest app see your TI-Nspire documentation or visit www.vernier.com/tii/5061

Using the Product

Connect the sensor following the steps in the Getting Started section of this user manual.

- Do not put directly into flames.
- Do not touch the tip to a hot plate.
- Do not immerse the handle in liquids above the stainless steel shaft.
- Do not wrap the cable tightly around the sensor for storage.
- Avoid prolonged exposure to acids and bases.
- Always wash the probe thoroughly after use.

Videos

View videos related to this product at www.vernier.com/ez-tmp

Calibrating the Sensor

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

Specifications

Temperature range	-20 to 115°C
Maximum temperature that the sensor can tolerate without damage	150°C
Resolution	0.07°C
Accuracy	±0.05°C
Response Time	4 s (to 90% of full reading in water)

Care and Maintenance

Overheating the sensor is the most common cause for this sensor to break. When used in chemistry labs, students will sometimes lay the sensor on a hot plate and effectively “cook” the unit. Unfortunately, these causes of breakage are considered misuse and are not covered by our warranty. In our experience, repair is not possible for this type of damage.

Do not wrap the cable tightly around the sensor for storage. Repeatedly doing so can irreparably damage the wires and is not covered under warranty.

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. The stainless steel portion of the probe can be left continuously in water at temperatures within the range of -20°C to 115°C . Continuous usage in saltwater will cause only minor discoloration of the probe, with no negative effect on performance.
3. 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 one hour.
4. 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.
5. The chart provides the maximum length of time recommend for probe exposure to some common acids. Probes left in an acid longer than these times may bubble and/or discolor, but will still be functional. We do not recommend probes be left to soak in any acid longer than 48 hours.

Maximum acid exposure time	
1 M HCl	20 min
2 M HCl	10 min
3 M HCl	5 min
1 M H ₂ SO ₄	48 hours
2 M H ₂ SO ₄	20 min
3 M H ₂ SO ₄	10 min
1 M HNO ₃	48 hours
2 M HNO ₃	48 hours
3 M HNO ₃	48 hours
1 M CH ₃ COOH	48 hours
2 M CH ₃ COOH	48 hours
3 M CH ₃ COOH	48 hours
1 M H ₃ PO ₄	48 hours
2 M H ₃ PO ₄	48 hours
3 M H ₃ PO ₄	48 hours

Troubleshooting

For troubleshooting and FAQs, see www.vernier.com/til/14699

Repair Information

If you have watched the related product video(s), followed the troubleshooting steps, and are still having trouble with your Vernier EasyTemp, contact Vernier Technical Support at support@vernier.com or call 888-837-6437. Support specialists will work with you to determine if the unit needs to be sent in for repair. At that time, a Return Merchandise Authorization (RMA) number will be issued and instructions will be communicated on how to return the unit for repair.

Accessories/Replacements

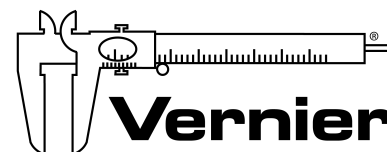
Item	Order Code
Easy to Go! Adapter	MINI-USB
Electrode Support	ESUP

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. This warranty covers educational institutions only.

Disposal

When disposing of this electronic product, do not treat it as household waste. Its disposal is subject to regulations that vary by country and region. This item should be given to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring that this product is disposed of correctly, you help prevent potential negative consequences on human health or on the environment. The recycling of materials will help to conserve natural resources. For more detailed information about recycling this product, contact your local city office or your disposal service.



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