

# Vernier Go Wireless<sup>®</sup> Temp

## Order Code GW-TEMP

The Vernier Go Wireless Temp is a rugged, general-purpose, wireless temperature sensor that you can use just like a thermometer. Its durability, temperature range, and wireless capability make it perfect for a variety of uses, including:

- Science fair projects
- Monitoring environmental conditions
- Monitoring the temperature in your fish tank or greenhouse
- Measuring the efficiency of a Thermos<sup>™</sup>
- Measuring the temperature of the air coming from your air conditioner or furnace

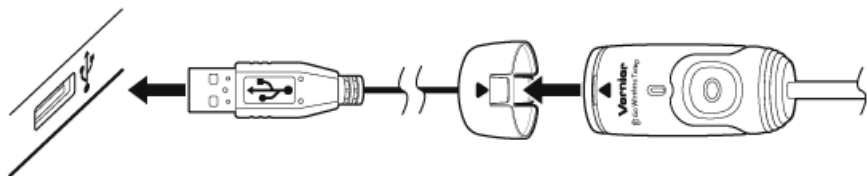


## What is Included with Go Wireless Temp

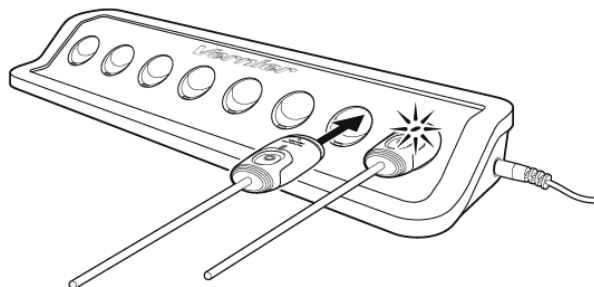
- Go Wireless Temp
- USB Charging Cable
- Quick-start guide
- Graphical Analysis app (free download from the App Store or Google Play)

## Charging Go Wireless Temp

Connect Go Wireless Temp to the included USB Charging Cable and any USB device for two hours.



You can also charge up to eight Go Wireless Temp probes using our Go Wireless Charging Station, sold separately (order code: GW-CRG). An LED on each Go Wireless Temp indicates charging status.



## Supported Devices

Go Wireless Temp can be used with a supported Bluetooth<sup>®</sup> Smart Ready mobile device\* running one of our apps.

- iPad<sup>®</sup> (3rd generation or newer), iPad mini<sup>™</sup>, and iPad Air<sup>®</sup>
- iPhone<sup>®</sup> (4S or newer)
- iPod<sup>®</sup> touch (5th generation or newer)
- LabQuest 2 (for support requirements, see [www.vernier.com/til/3134/](http://www.vernier.com/til/3134/))
- For Android<sup>™</sup> devices, see [www.vernier.com/ga-app](http://www.vernier.com/ga-app)

## Data-Collection Apps

Go Wireless Temp can be used with one of the following apps:

- **Graphical Analysis for iOS devices (version 2.0 or newer)**  
Available as a free download on the App Store, use this app for advanced data collection and analysis. For more information, see [www.vernier.com/ga-app](http://www.vernier.com/ga-app)
- **Graphical Analysis for Android (version 2.0 or newer)**  
Available as a free download on the Google Play, use this app for advanced data collection and analysis. For more information, see [www.vernier.com/ga-app](http://www.vernier.com/ga-app)
- **LabQuest 2 app (version 2.3.1 or newer)**  
For more information, see [www.vernier.com/labq2](http://www.vernier.com/labq2)

**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.

## Specifications

Temperature range	-40 to 125°C (handle: -10 to 45°C)
Maximum temperature that the sensor can tolerate without damage	150°C
Minimum temperature that the sensor can tolerate without damage:	-55°C
Resolution	0.07°C
Accuracy	±0.5°C
Response time	20 s (to 90% of full reading in water)
Maximum wireless range	30 m unobstructed

## Warning

Do not put in flame.

\* For a full list of supported mobile devices, see [www.vernier.com/ga-app](http://www.vernier.com/ga-app)

## How Go Wireless Temp Works

This probe uses a solid state temperature sensor, located at the tip of the probe, to measure temperature. The sensor outputs a count with each increment of the count representing 0.0625°C. This information is passed to the host application over the wireless connection.

Go Wireless Temp has one button and three LEDs.

### Button

- Press the button once to turn on Go Wireless Temp. A red LED indicator flashes when the unit is on.
- Press and hold the button for more than three seconds to put Go Wireless Temp into sleep mode. The red LED indicator stops flashing when sleeping.
- Press and hold the button for more than eight seconds to reset the system. This should not be necessary in normal operation.

### Blue LED

Indicates charging status when Go Wireless Temp is connected to the Charging Cable or Charging Station.

- On – charging in progress
- Off – charging is complete

### Red LED Flashing

Indicates Go Wireless Temp is awake and ready to connect.

### Green LED Flashing

Indicates Go Wireless Temp is connected and taking data.

### Red and Green LED Off

Indicates Go Wireless Temp is in the lowest power sleep mode.

## Collecting Data

Press the power button on Go Wireless Temp to turn it on. The LED on Go Wireless Temp will flash red.

### Collecting Data with Graphical Analysis App

1. Open Graphical Analysis.
2. Tap Create Experiment and choose Wireless Sensors.
3. Select Go Wireless Temp from the list of available sensors. When paired with the software, the LED on Go Wireless Temp will flash green.
4. Collect data as desired.

### Collecting Data with LabQuest 2 App

1. Choose New from the File menu.
2. On the Meter screen, choose Go Wireless Setup from the Sensors menu.
3. Select Go Wireless Temp from the list of available sensors. When paired with the software, the LED on Go Wireless Temp will flash green.
4. Collect data as desired.

## Calibration Information

There is not an option to calibrate Go Wireless Temp. Each device is carefully calibrated as part of the manufacturing process.

## Battery Information

Go Wireless Temp contains a small lithium-ion battery in the handle. The system is designed to consume very little power and not put heavy demands on the battery. Although the battery is warranted for one year, the expected battery life should be several years. Replacement batteries are available from Vernier (order code: GW-BAT-100).

Use only the Vernier Go Wireless Charging Cable or Go Wireless Charging Station to charge the battery.

## Storage and Maintenance of Go Wireless Temp

To store Go Wireless Temp for extended periods of time, put the device in sleep mode by holding the button down for at least three seconds. The red LED will stop flashing to show that the unit is in sleep mode. Over several months, the battery will discharge but not be damaged. After such storage, charge the device for a few hours and the unit will be ready to go.

Exposing the battery to temperatures over 35°C (95°F) will reduce its lifespan. If possible, store Go Wireless Temp in an area that is not exposed to temperature extremes.

## Water Resistance

Go Wireless Temp can be submerged in water for limited periods of time. It has been tested to a depth of 1 m for up to 30 minutes. However, submerging the sensor impacts the radio operation by absorbing much of the energy. This may make it difficult or impossible to connect to the sensor while submerged, particularly if there are electrically noisy signals nearby such as pumps or motors.

## Chemical and Water Tolerance

The metal shaft is constructed from grade 316 stainless steel.<sup>‡</sup> This high-grade stainless steel provides a high level of corrosion resistance for use in the science classroom. Here are some general guidelines for usage:

- The probe handle is constructed of molded plastic. While this material is chemical resistant, we recommend that you avoid submerging the probe beyond the stainless steel portion in anything but water.
- Always wash the probe thoroughly after use.
- The probe shaft can be left continuously in water at temperatures within the range of -40°C to 125°C. Continuous usage in saltwater will cause only minor discoloration of the probe shaft, with no negative effect on performance.

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

<sup>‡</sup> Grade 316 stainless steel has a composition of 0.08% carbon, 2.0% manganese, 0.75% silicon, 0.04% phosphorus, 0.03% sulfur, 16-18% chromium, 10-14% nickel, 2-3% molybdenum, and 0.1% nitrogen.

- You can leave the probe shaft 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 shaft should not be left in n-pentane for more than 1 hour.
- The probe shaft 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.
- The chart provides the maximum length of time we recommend for probe shaft 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.

## Replacement Parts

### Vernier Software & Technology

Part	Order code
Go Wireless Charging Cable	GW-CB
Go Wireless Temp (sensor only)	GW-TEMP-NP
Go Wireless Battery	GW-BAT-100

## Related Products

### Go Wireless Charging Station (order code: GW-CRG)

Multi-sensor charging capability for your Go Wireless Temp probes. The Go Wireless Charging Station is the perfect solution for charging and storing your Go Wireless Temp probes. For more information, see [www.vernier.com/gw-crg](http://www.vernier.com/gw-crg)

### Go Wireless Temp Teacher Pack (order code: GW-TEMP-TP)

Includes eight Go Wireless Temp probes and one Go Wireless Charging Station. For more information, see [www.vernier.com/gw-temp](http://www.vernier.com/gw-temp)

## Disposal Instruction

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.

The symbol, shown here, indicates that this product must not be disposed of in a standard waste container.



## 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. The battery is covered by a one-year w

## Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### FCC Caution

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference and
- (2) this device must accept any interference received, including interference that may cause undesired operation

### RF Exposure Warning

The equipment complies with RF exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

### IC Statement

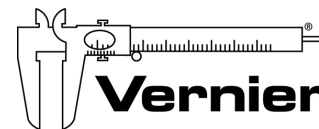
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

**Industry Canada - Class B** This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

**RF exposure warning:** The equipment complies with RF exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter toute interférence radioélectrique, même si cela résulte à un brouillage susceptible d'en compromettre le fonctionnement.*

*Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel interférant-brouilleur: "Appareils Numériques," NMB-003 édictée par Industrie Canada. L'utilisation est soumise aux deux conditions suivantes: (1) cet appareil ne peut causer d'interférences, et (2) cet appareil doit accepter toutes interférences, y comprises celles susceptibles de provoquer un dysfonctionnement du dispositif. Afin de réduire les interférences radio potentielles pour les autres utilisateurs, le type d'antenne et son gain doivent être choisis de telle façon que l'équivalent de puissance isotrope émis (e.i.r.p.) n'est pas plus grand que celui permis pour une communication établie. **Avertissement d'exposition RF:** L'équipement est conforme aux limites d'exposition aux RF établies pour un environnement non supervisé. L'antenne (s) utilisée pour ce transmetteur ne doit pas être jumelée ou fonctionner en conjonction avec toute autre antenne ou transmetteur.*



Measure. Analyze. Learn.™  
Vernier Software & Technology

13979 S. W. Millikan Way • Beaverton, OR 97005-2886

Toll Free (888) 837-6437 • (503) 277-2299 • FAX (503) 277-2440

[info@vernier.com](mailto:info@vernier.com) • [www.vernier.com](http://www.vernier.com)

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