

Hand-Grip Heart Rate Monitor

(Order Code HGH-BTA)



The Hand-Grip Heart Rate Monitor measures a person's heart rate. Data can be wirelessly transmitted to a Vernier interface using the Heart Rate Receiver. Sensors purchased after May 2015 can also transmit data directly to devices using Bluetooth® wireless technology, such as LabQuest 2, without the receiver. This sensor is ideal for continuously monitoring heart rate before, during, and after exercise or while a person is stationary.

Note: Information in this user manual is for data collection using the Heart Rate Receiver. The preferred method for data collection is wireless data collection using Bluetooth wireless technology. For more information about collecting data wirelessly, see www.vernier.com/manuals/gw-hr

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.

What's Included

- Heart Rate Hand Grips
- Polar Transmitter Module (battery included)
- Heart Rate Receiver

Compatible Software and Interfaces

See www.vernier.com/manuals/hgh-bta for a list of interfaces and software compatible with the Hand-Grip Heart Rate Monitor.

Assembly

The Polar Transmitter Module simply snaps onto the hand grips.

Getting Started (with a Heart Rate Receiver)

1. Connect the sensor to the interface (LabQuest Mini, LabQuest 2, etc.).
2. Start the appropriate data-collection software (Logger Pro, Logger Lite, LabQuest App) if not already running, and choose New from File menu.

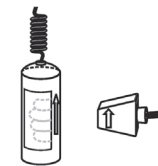
The software will identify the sensor and load a default data-collection setup. You are now ready to collect data.

If you are collecting data using a Chromebook™, please see the following link for up-to-date connection information: www.vernier.com/start/hgh-bta

If you are collecting data on a mobile device such as iPad® or Android™ tablet, please see the following link for up-to-date connection information: www.vernier.com/start/gw-hr

Using the Product (with a Heart Rate Receiver)

1. Ensure that the Polar Transmitter Module is securely attached to the Heart Rate Hand Grips.
2. Connect the sensor following the steps in the Getting Started section of this user manual.
3. The Heart Rate Receiver is marked with an alignment arrow. When collecting data using the receiver, align the arrow on the receiver with the hand grip, as shown here



4. When using the receiver, make sure that the receiver is held close to the hand grips. The maximum reception range of the plug-in receiver is approximately one meter.

Note: The subject's heart rate will not be displayed on the Meter screen when using the Heart Rate Receiver. Heart rate will be calculated and then graphed during data collection after a short delay.

Videos

View videos related to this product at www.vernier.com/hgh-bta

Specifications

Battery type	CR 2025 (user-replaceable)
Battery lifetime	200 hours
Operating temperature	-10 to 50°C
Radios	Bluetooth and 5 kHz RF transmission
RF transmission wireless range	0 to ~1 m
Bluetooth wireless range	10 m or more unobstructed

Care and Maintenance

Dirty electrodes on the hand grips can cause poor readings. Between uses, it is a good idea to gently wipe the electrodes clean using alcohol wipes. Do not immerse the hand grips in solution; simply spray or wipe alcohol onto them.

How the Sensor Works

The Hand-Grip Heart Rate Monitor measures a person's heart rate by registering the small electrical signals carried across the surface of a person's skin each time his or her heart contracts. The Polar Transmitter Module detects each electrical signal from the heart through the electrodes on the hand grips. The heart rate information is then wirelessly transmitted using the Heart Rate Receiver or a Bluetooth radio to supported devices.

Troubleshooting

- Make sure that the Heart Rate Receiver is aligned with the hand grips.
- Hold the receiver within 80–100 cm of the hand grips when using the receiver. This is the maximum transmission range of the transmitter when using the receiver.
- The Heart Rate Receiver can receive signals from other hand grips if they are within range; be sure to maintain a distance of at least 2 m between other individuals that are monitoring heart rate.
- Interference from electrical devices, such as cell phones, power supplies, and electronic exercise equipment can result in poor readings when using the Heart Rate Receiver. Keep the Heart Rate Receiver as far away as possible from such equipment
- With certain individuals, readings from the Hand-Grip Heart Rate Monitor may take a minute or two to stabilize. In such cases, allow the readings to stabilize before performing an experiment.
- If you are using the Heart Rate Receiver, you must start data collection to see heart rate. Live readouts do not display heart rates because that value comes from a calculated column that must be populated.
- If you have a device that supports Bluetooth wireless technology, such as LabQuest 2, use the Bluetooth option for data collection. See www.vernier.com/start/gw-hr

For additional troubleshooting and FAQs, see www.vernier.com/til/1417

Repair Information

If you have watched the related product video(s), followed the troubleshooting steps, and are still having trouble with your Hand-Grip Heart Rate Monitor 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
Heart Rate Hand Grips	HR-GRIP
Polar Transmitter Module	HR-TRANS
Heart Rate Receiver	HR-REC
Exercise Heart Rate Strap	HR-STRAP

Warranty

Vernier warrants the Hand Grips to be free from defects in materials and workmanship for a period of five years from the date of shipment to the customer. The Polar Transmitter Module and Heart Rate Receiver are warranted for two years. This warranty does not cover the battery or 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.

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

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

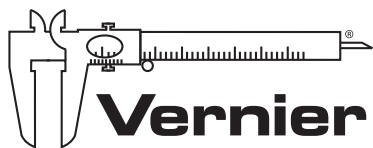
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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 émise (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.*



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