

# High Current Sensor

## (Order Code HCS-BTA)



The High Current Sensor is used to measure current in the range of  $-10$  to  $+10$  A. The sensor uses a Hall Effect chip, so that it does not add a resistive element to your circuit. A replaceable fuse protects the equipment and circuit. Use the sensor in experiments that involve currents larger than 1 A, such as solar panels, hand generators, etc.

**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

- High Current Sensor
- Extra 10 A fuse (1)

### Compatible Software

See [www.vernier.com/manuals/hcs-bta](http://www.vernier.com/manuals/hcs-bta) for a list of software compatible with the High Current Sensor.

### Getting Started

1. Connect the sensor to the interface (LabQuest Mini, LabQuest 3, etc.)
2. Start the appropriate data-collection software (Graphical Analysis, LabQuest App, Logger *Pro*) if not already running and choose New from the 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™, mobile device such as iPad® or Android™ tablet, or a Vernier wireless sensor or interface, please see the following link for up-to-date connection information:

[www.vernier.com/start/hcs-bta](http://www.vernier.com/start/hcs-bta)

### Videos

View videos related to this product at [www.vernier.com/hcs-bta](http://www.vernier.com/hcs-bta)

### Calibrating the Sensor

You should not have to perform a new calibration when using the High Current Sensor in the classroom. We have set the sensor to match our stored calibration before shipping it. You can simply use the appropriate calibration file that is stored in your data-collection program from Vernier. To improve the accuracy, you have a couple of options. (1) Connect the sensor's terminals with an alligator wire and simply use the data-collection software to zero the sensor. (2) Use the software to perform a two point calibration. This method is especially useful if you want to accurately measure current over a narrow range.

### Safety

Students need to use caution when performing experiments with voltages and currents produced by any voltage other than low voltage, e.g., voltages under 5 V. This sensor is designed for large current. Students need to exercise extra caution when dealing with high voltage and current which can cause serious injury. They should only subject the sensor and circuitry to the currents and voltages designed for the devices. Students should keep all equipment away from water and other liquids.

### Specifications

High Current Sensor range	$\pm 10$ A
Maximum voltage input	$\pm 40$ V
12-bit resolution	4.9 mA
Supply voltage	5 VDC
Output voltage range	0 – 5 V
Replaceable fuse	10 A
Current in amperes	slope: 451 A/V intercept: $-11.31$ A

### Care and Maintenance

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.

### How the Sensor Works

The High Current Sensor contains a Hall Effect chip that senses a magnetic field produced by the electric current. The magnetic field through a short section of wire is monitored. The strength of the field is directly related to the current. With this method no resistive element is placed in the circuit. A metal film around the sensor helps to shield the sensor from magnetic fields. The sensor reading can still be affected by external magnetic fields. It is best to keep strong magnets or sources of strong magnetic fields away from the sensor during data collection.

### Troubleshooting

For troubleshooting and FAQs, see [www.vernier.com/tit/2324](http://www.vernier.com/tit/2324)

### Replacing the Fuse

The sensor contains a replaceable 10 A fuse. If the sensor stops measuring current, you may need to replace a blown fuse. Turn the sensor over and remove the four screws on the back. The fuse can be seen from the top. Use a small screw-driver to remove the fuse. Insert a replacement. One replacement has been included with the sensor. Additional replacements in packs of five can be purchased from Vernier (order code FUSE-HCS).

## Repair Information

If you have watched the related product video(s), followed the troubleshooting steps, and are still having trouble with your High Current Sensor, contact Vernier Technical Support at [support@vernier.com](mailto: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.

## Warranty

Warranty information for this product can be found on the Support tab at [www.vernier.com/hcs-bta](http://www.vernier.com/hcs-bta)

General warranty information can be found at [www.vernier.com/warranty](http://www.vernier.com/warranty)

## Disposal

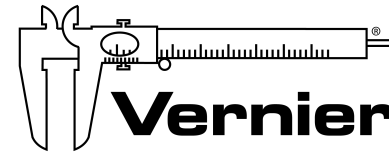
When disposing of this electronic product, do not treat it as household waste. Its disposal is subject to regulations that vary by country and region. This item should be given to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring that this product is 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.

Battery recycling information is available at [www.call2recycle.org](http://www.call2recycle.org)

Do not puncture or expose the battery to excessive heat or flame.



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



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