

# Current Probe

## (Order Code DCP-BTA)

The Current Probe is designed for exploring the basic principles of electricity. Use the Current Probe to measure currents in low voltage AC and DC circuits. With a range of  $\pm 0.6$  A, this sensor is ideal for use in most “battery and bulb” circuits.



**Note:** Vernier products are designed for educational use. Our products are not designed nor 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 and Interfaces

See [www.vernier.com/manuals/dcp-bta](http://www.vernier.com/manuals/dcp-bta) for a list of interfaces and software compatible with the Current Probe.

### Getting Started

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™, 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/dcp-bta](http://www.vernier.com/start/dcp-bta)

### Using the Product

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

The Current Probe was designed to look like it should be wired in series with the circuit. Currents in either direction can be measured. The current will be indicated as positive if current flows in the direction of the arrow on the small box (from the red terminal to the black terminal). The range is  $\pm 0.6$  A ( $\pm 600$  mA).

### Videos

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

### Calibration

You should not have to perform a new calibration when using the Current Probe in the classroom. A stored calibration is set for the sensor before it is shipped. Simply use the appropriate calibration file that is stored in the data-collection program from Vernier.

If you choose to calibrate the Current Probe for increased accuracy, use the standard, two-point calibration procedure. Another option to consider instead of calibrating is “zeroing” the sensor. This is done by shorting out the leads of the sensor, then choosing the Zero option in the data-collection software. This option adjusts the calibration offset but does not adjust the calibration gain.

### Specifications

Current Probe range	$\pm 0.6$ A
Maximum voltage on any input	$\pm 10$ V
Input impedance (between inputs)	$0.1 \Omega$
Input impedance (to ground)	$10 \text{ M}\Omega$
Linearity	0.01%
13-bit resolution	0.16 mA
12-bit resolution	0.31 mA
10-bit resolution	1.25 mA
Supply voltage	5 VDC
Supply current (typical)	9 mA
Output voltage range	0–5 V
Transfer function	$V_{\text{out}} = -4(I) + 2.5$
Current in amperes	slope: $-0.25 \text{ A/V}$ intercept: $0.625 \text{ A}$

### How the Sensor Works

The Current Probe contains a sensing element and signal conditioning amplifier. The sensing element is a  $0.1 \Omega$  resistor connected between the red and black terminals. As the current passes through the resistor, a small potential difference is measured across this resistor. This potential difference is input to the signal conditioning amplifier. The final result is that a voltage is produced from the amplifier that can be measured by the lab interface.

The output of the Current Probe is linear with respect to the measurement it is making. The built-in amplifier allows you to measure positive and negative currents on any Vernier interface. Since many lab interfaces can read voltages only in the range of 0 to 5 volts, the amplifier offsets and amplifies the incoming signal so that the output is always in the range of 0 to 5 volts. If an input is zero amperes, for example, the amplifier will produce an output of 2.5 volts. The output varies from this 2.5 volt level, depending on the input.

### Troubleshooting

If the Current Probe is not operating as expected, plug the probe into an interface and run the data-collection program. Use wire leads to connect the probe to a DC

power supply in series with a known resistance. Use a voltage probe or voltmeter to measure the voltage of the supply. Compare the measured current against the current calculated from Ohm's law. **Note:** We recommend a battery for this test, since some DC power supplies may not deliver clean DC voltage.

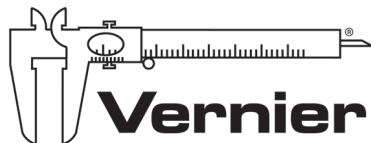
For additional troubleshooting and FAQs, see [www.vernier.com/til/1407](http://www.vernier.com/til/1407)

## Repair Information

If you have watched the related product video(s), followed the troubleshooting steps, and are still having trouble with your Current Probe, 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

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.



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