

# Watts Up Pro

(order code WU-PRO)



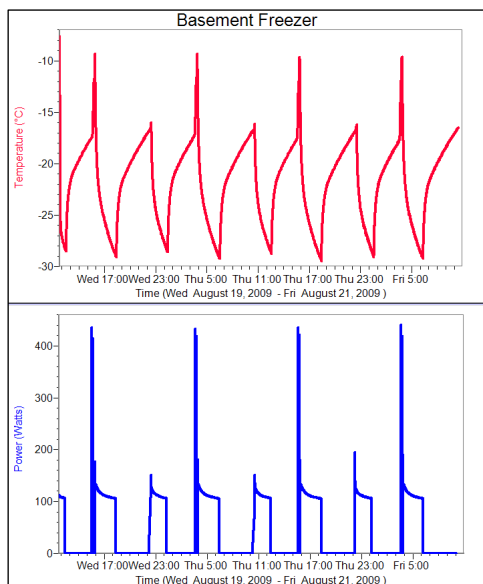
Watts Up Pro is a device that can be used with Logger Pro<sup>®</sup> 3.8 or LabQuest App 1.3 and newer to monitor real-time electricity usage and cost. It is auto-ID and connects to a USB port on your computer, LabQuest<sup>®</sup> 2 or LabQuest<sup>®</sup>.

**Note:** Only use the included blue USB cable with the Watts Up Pro.

Watts Up Pro can be used at the same time as a LabQuest 2, LabQuest, LabPro<sup>®</sup>, or Go! Link<sup>®</sup>. This allows you to collect data about electricity usage in combination with data from other sensors, such as, temperature, light, or relative humidity.

## Suggested Experiments

**Long-term data collection.** Monitor the energy used by a freezer, heater, or air conditioner overnight. You can also use Watts Up Pro in combination with other sensors. For example, use a Temperature Probe and Watts Up Pro at the same time to see how the temperature changes when household items are turned on or off.

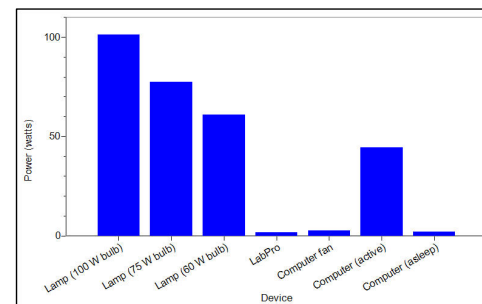


Temperature and energy use data for a freezer during 48 hours

**How can I save money?** Open a “Watts Up detail” experiment file in Logger Pro that will calculate costs and help you explore the long-term costs of electricity based on different usage patterns.

**Investigate phantom load.** How much energy is used by a plasma TV? When it is turned off, is it really off? What about the microwave? Some experts believe that a significant percentage of electricity is used by devices that are not truly turned off.

**Compare different light bulbs or other devices.** Compare the energy use of different wattage light bulbs or different types of bulbs. Do compact fluorescent bulbs use less energy than incandescent bulbs? How much electricity is your computer using when it is “asleep”?



Energy use data for multiple devices

**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.

## Collecting Data with Watts Up Pro

1. Plug the Watts Up Pro into a 110-120 volt (220-240 volt for the international version) wall outlet.
2. Plug an electrical device into the Watts Up Pro outlet.
3. The power used by the device will be displayed on the Watts Up Pro. When logging data with a computer, LabQuest 2, or LabQuest, you will not need to use the buttons on the Watts Up Pro.
4. Start Logger Pro (version 3.8 or newer) or LabQuest App (version 1.3 or newer).
5. Connect Watts Up Pro to the computer, LabQuest 2, or LabQuest using the included blue USB cable. **Note:** When using LabQuest 2 or LabQuest with a computer, connect Watts Up Pro to the computer's USB port, not the USB port on LabQuest 2 or LabQuest.
6. Choose New from the File menu.  
Optional: In Logger Pro, you can also open one of the template files for common Watts Up Pro uses in the following folder: Experiments/Probes & Sensors/Watts Up
7. You are now ready to collect data.

## What Types of Data Can I Collect with Watts Up Pro?

Watts Up Pro calculates a wide variety of data including maximum potential, current, power, and cumulative costs. Logger *Pro* collects data on the following four channels:

### Real Power

The power currently being consumed by the device that is plugged into Watts Up Pro, measured in watts.

### Potential

The root mean squared (RMS) potential present on the power line.

### Current

The RMS current being drawn by the device that is plugged into Watts Up Pro, measured in amperes.

### Apparent Power

The product of the RMS potential and the RMS current.

In addition, an experiment file available in Logger *Pro* contains calculated columns that will allow you to explore cost and other variables including Energy, maximum and minimums of all data, and power factor. You can use these files to collect more detailed data and perform more complex analysis.

## Specifications

Voltage: 120 V (100–277 V for the international version)

Frequency: 60 Hz (50/60 Hz for the international version)

Maximum current: 15 amperes

Maximum sampling speed: 1 sample per second

Accuracy:  $\pm 1.5\%$ , + 3 counts of the displayed value

Below 60 watts, current and power factor decrease in accuracy

Minimum measureable power: 0.5 watts

Note: at 0.5 watts, the accuracy is  $\pm 0.3$  watts

Mains supply voltage fluctuations not to exceed  $\pm 10\%$  of the nominal voltage

Input is via 6' electric cord, output is via outlet on top of meter

Indoor use only

Dimensions: 7"  $\times$  4"  $\times$  2" (18cm  $\times$  10cm  $\times$  5cm)

Weight: 1.5 lbs (0.7 kg)

UL listed to standard UL 610010-1, and CAN CAS/C22.2 61010-1

Altitude: up to 2000 meters

Temperature: 5°C to 40°C

Maximum relative humidity: 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C

Installation Category II

**Note:** The Watts Up Pro has internal memory that can be used to log data without using Logger *Pro* or LabQuest App. At present, set up and retrieval of data using the

stand-alone feature is not supported by Vernier software. Software to support this feature is available from the manufacturer at [www.wattsupmeters.com](http://www.wattsupmeters.com)

This sensor is equipped with circuitry that supports auto-ID. When used with LabQuest 2, LabQuest, or a computer, the data-collection software identifies the sensor and uses pre-defined parameters to configure appropriate experiment parameters.

## Troubleshooting

**Problem:** Display (in watts) on the Watts Up Pro does not match the display in the Logger *Pro* or LabQuest software.

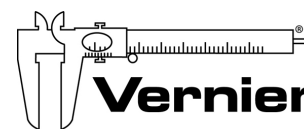
**Solution:** Press the Mode button on the device to toggle the units until watts are displayed.

**Problem:** Displayed data are incorrect.

**Solution:** Devices that turn on and off at high loads can cause the calibration data in the meter to become corrupt. If this happens, unplug and plug back in the meter. This resets the calibration. If power cycling does not help, the meter may need to be recalibrated at the factory. Contact Vernier to arrange a repair.

## Warranty

Vernier warrants this product to be free from defects in materials and workmanship for a period of one year from the date of shipment to the customer. This warranty does not cover damage to the product caused by abuse or improper use.



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