

# (±1V) Voltage Input Phidget

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# Getting Started

Welcome to the VCP1002 user guide! In order to get started, make sure you have the following hardware on hand:

- VCP1002 - ( $\pm 1V$ ) Voltage Input Phidget
- VINT Hub
- Phidget cable
- USB cable and computer
- something to use with the VCP1002 (e.g. a voltage source, a voltage output device, etc.)

Next, you will need to connect the pieces:



TO  
TOP

1. Connect the VCP1002 to the VINT Hub using the Phidget cable.
2. Connect the voltage source to the terminals of the Voltage Input Phidget (ground to the minus terminal, supply to the plus terminal).
3. Connect the VINT Hub to your computer with a USB cable.

Now that you have everything together, let's start using the VCP1002!

## Using the VCP1002

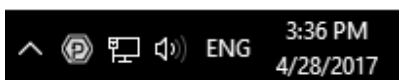
### Phidget Control Panel

In order to demonstrate the functionality of the VCP1002, the Phidget Control Panel running on a Windows machine will be used.


The Phidget Control Panel is available for use on both macOS and Windows machines.

### Windows

To open the Phidget Control Panel on Windows, find the  icon in the taskbar. If it is not there, open up the start menu and search for Phidget Control Panel



### macOS

To open the Phidget Control Panel on macOS, open Finder and navigate to the Phidget Control Panel in the Applications list. Double click on the  icon to bring up the Phidget Control Panel.

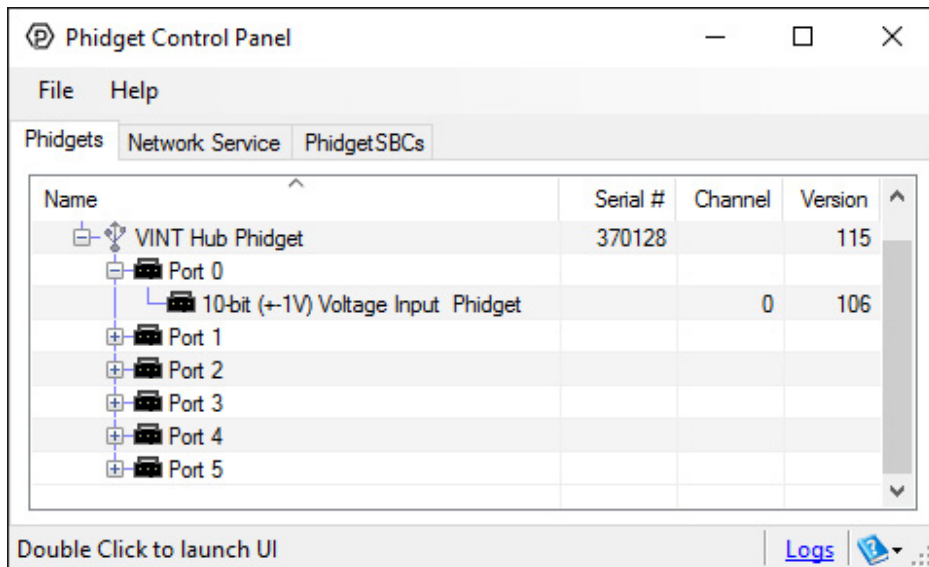
For more information, take a look at the getting started guide for your operating system:

- Getting started with Windows
- Getting started with macOS

Linux users can follow the getting started with Linux guide and continue reading here for more information about the VCP1002.

## First Look

After plugging the VCP1002 into your computer and opening the Phidget Control Panel, you will see something like this:



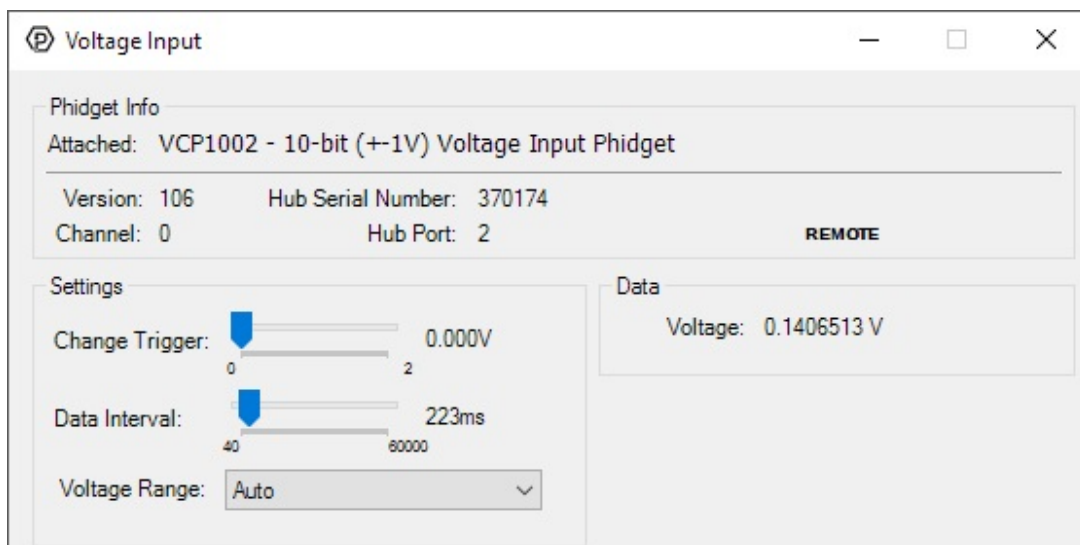
The Phidget Control Panel will list all connected Phidgets and associated objects, as well as the following information:

- **Serial number:** allows you to differentiate between similar Phidgets.
- **Channel:** allows you to differentiate between similar objects on a Phidget.
- **Version number:** corresponds to the firmware version your Phidget is running. If your Phidget is listed in red, your firmware is out of date. Update the firmware by double-clicking the entry.

The Phidget Control Panel can also be used to test your device. Double-clicking on an object will open an example.

## Voltage Input

Double-click on the Voltage Input object, labelled 10-bit ( $\pm 1V$ ) Voltage Input Phidget, in order to run the example:



General information about the selected object will be displayed at the top of the window. You can also experiment with the following functionality:

- Modify the change trigger and/or data interval value by dragging the sliders. For more information on these settings, see the data interval/change trigger page.

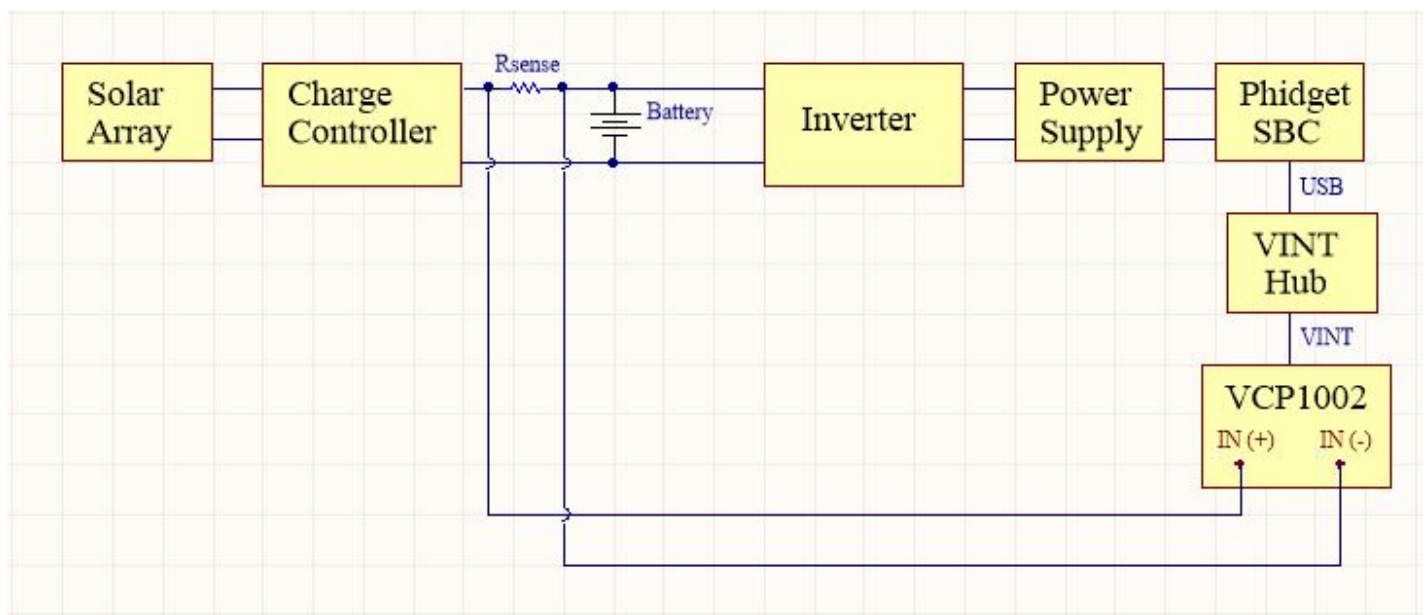
## Technical Details

### Isolation

The VCP1002 is electrically isolated, so a power surge in the circuit you're measuring would only damage the VCP1002- it won't damage your Hub or your computer. Having isolation also helps prevent the formation of ground loops in your system.

Another advantage of isolation on the VCP1002 is the capability to measure the voltage differential between two points of a circuit regardless of their relation to ground, as long as the voltage differential between those points is within the specification of the sensor.

For example, take the pictured battery charging circuit; there is sufficient complexity between the current sense resistor ( $R_{sense}$ ) and the VINT Hub that trying to directly measure the voltage with a non-isolated sensor could be a risky proposition. However, thanks to the isolated nature of the VCP1002, the voltage across the resistor may be measured directly, ignoring the circuits in between.



Measuring the voltage across "Rsense" in this circuit is made easy through isolation!

### Current Sense Resistors

The VCP1002 is made to measure small voltages anywhere in a circuit. This makes it the ideal candidate for use with current sense resistors to measure current.

For an in-depth look at how to use current sense resistors with the VCP1002, see our article about Current Sense Resistors.

### What to do Next

- Software Overview - Find your preferred programming language here to learn how to write your own code with Phidgets!
- General Phidget Programming - Read this general guide to the various aspects of programming with Phidgets. Learn how to log data into a spreadsheet, use Phidgets over the network, and much more.
- Phidget22 API - The API is a universal library of all functions and definitions for programming with Phidgets. Just select your language and device and it'll give you a complete list of all properties, methods, events, and enumerations that are at your disposal.