

# PhidgetSpatial Precision 0/0/3 High Resolution

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# Getting Started

Welcome to the 1043 user guide! In order to get started, make sure you have the following hardware on hand:

- 1043 PhidgetSpatial 0/0/3
- USB cable and computer

Next, you will need to connect the pieces:



1. Connect the PhidgetSpatial to your computer using the USB cable.

Now that you have everything together, let's start using the 1043!

## Using the 1043

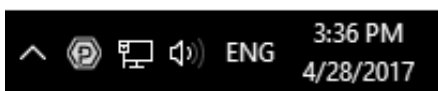
### Phidget Control Panel

In order to demonstrate the functionality of the 1043, 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:

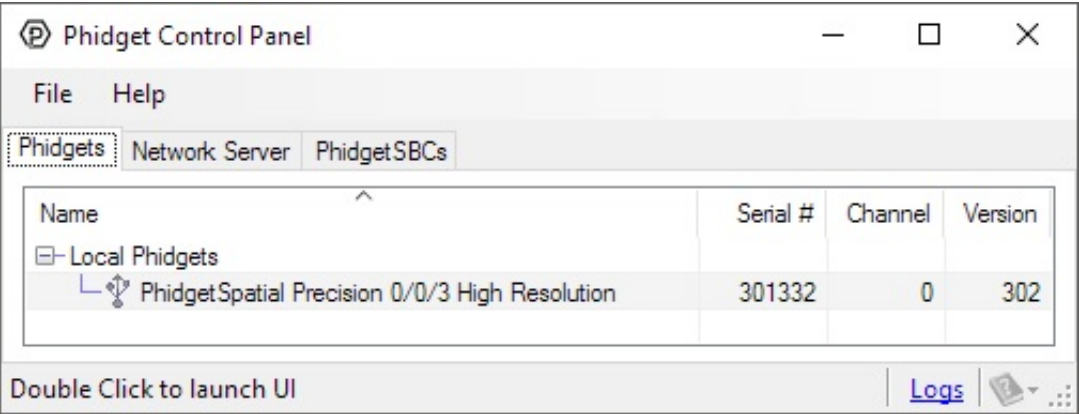
- [Getting started with Windows](#)
- [Getting started with macOS](#)

TO  
TOP

Linux users can follow the getting started with Linux guide and continue reading here for more information about the 1043.

## First Look

After plugging the 1043 into your computer and opening the Phidget Control Panel, you will see something like this:



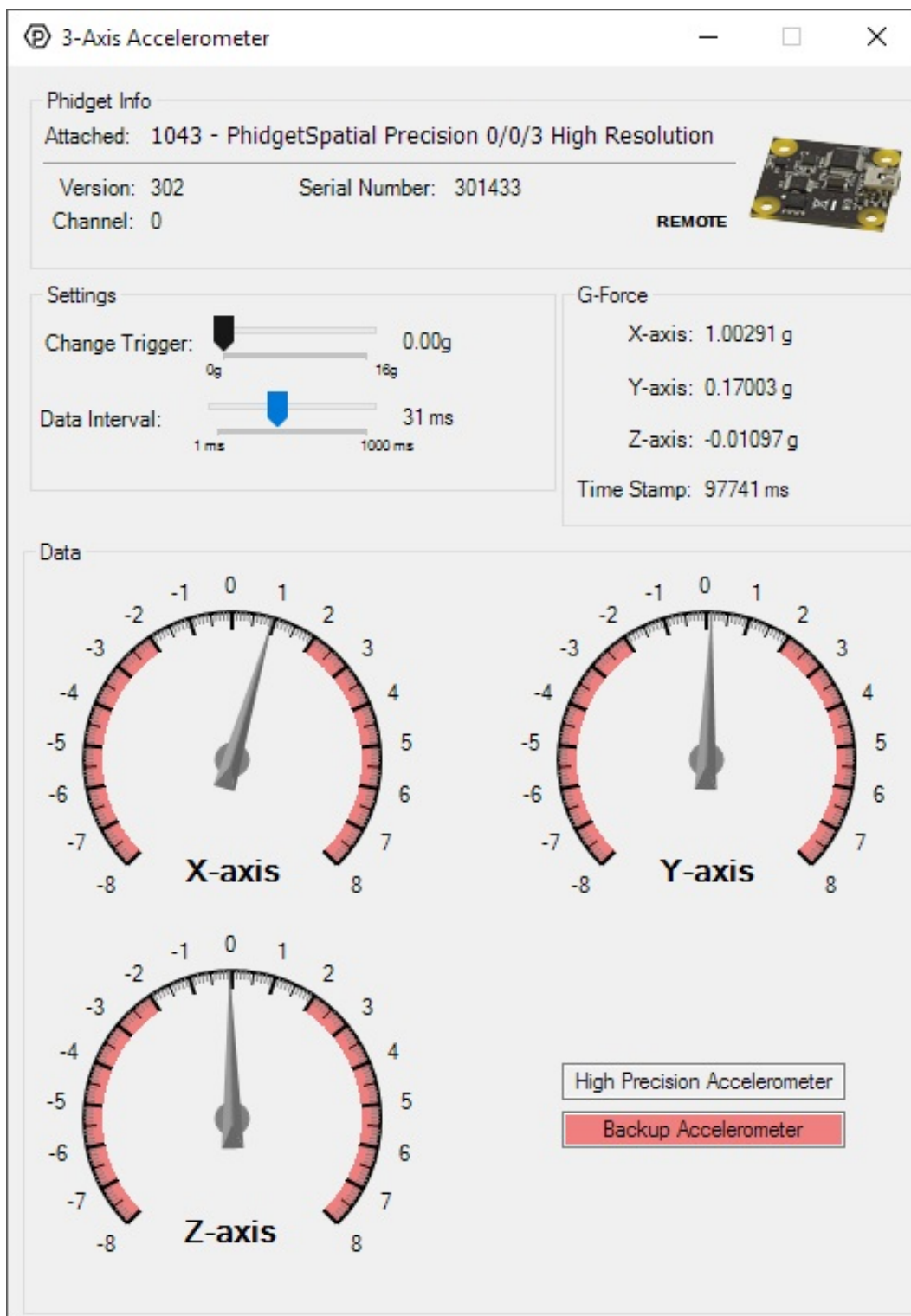
The Phidget Control Panel will list all connected Phidgets and associated objects, as well as the following information:

- **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.

## Accelerometer

Double-click on the Accelerometer object , labelled 'PhidgetSpatial Precision 0/0/3 High Resolution' 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.
- The measured values reported in g-force can be seen via labels as well as graphical dials. Try tilting the 1043 in different directions to see the labels and graphics change.
- An extremely accurate timestamp is also reported with the g-force values.

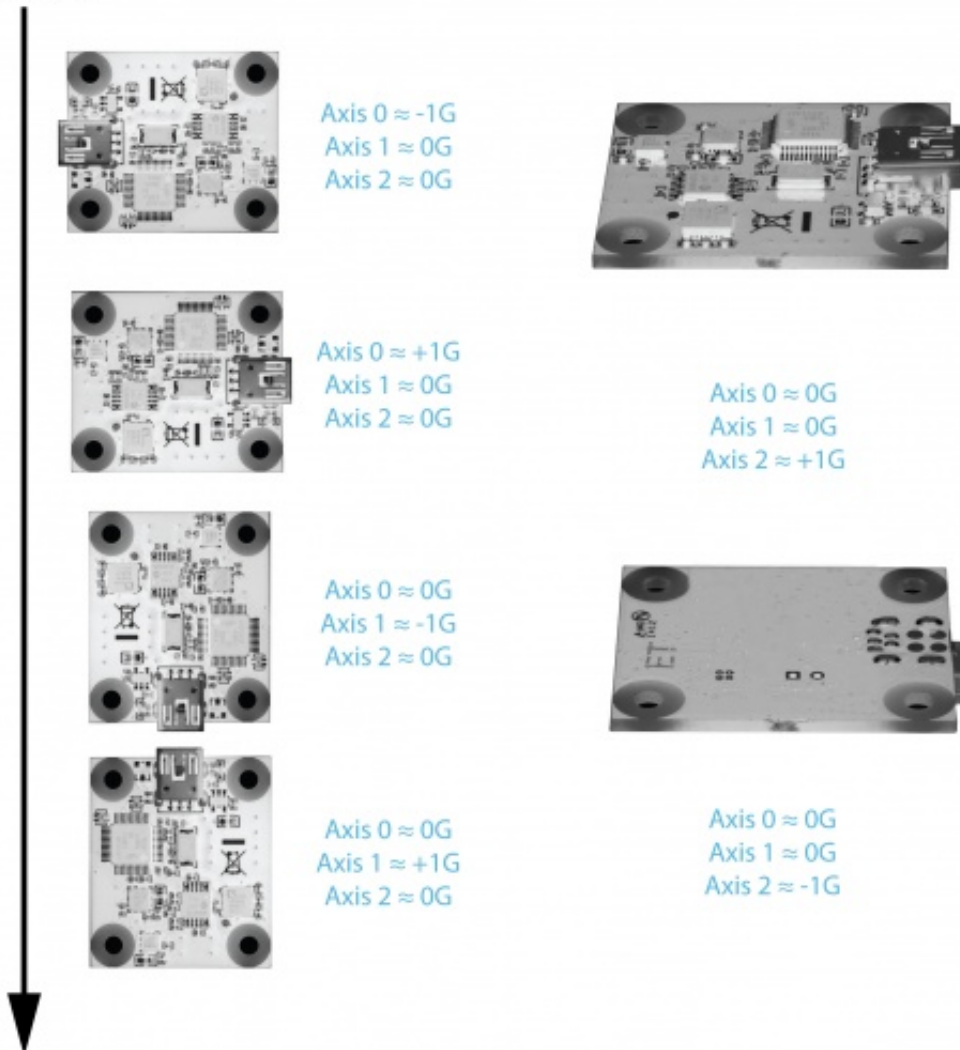
## Technical Details

### General

The 1043 has a 3-Axis accelerometer that can measure  $\pm 8 \text{ g's}$  ( $\pm 78 \text{ m/s}^2$ ) per axis. It will measure both dynamic acceleration (change in velocity) and static acceleration (gravity vector). The Phidgetspatial 3-Axis 0/0/3 is internally calibrated.

## Orientation

### GRAVITY



When working with an accelerometer it is important to know which is the positive and negative direction on each of the axes. This can be determined by orienting the accelerometer along each axis and checking the output. The above image shows what the axis readings should be for each orientation of the 1043.

## High Resolution Mode

When the PhidgetSpatial High Resolution 0/0/3 measures an acceleration value with magnitude less than 2g, it will acquire its data from a higher precision accelerometer chip. For these measurements, the average white noise on each axis will be reduced by approximately a factor of ten, and the resolution will increase from 976  $\mu\text{g}$  to 76  $\mu\text{g}$ . The transition from normal to high precision or vice-versa is seamless, with no additional code or equations needed.

## Further Reading

For more information on testing and calibrating this device, check the Accelerometer Primer.

## 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.