Spatial Phidget

Required Hardware

- A MOT1101 Spatial Phidget
- A VINT Hub
- A 3-wire Phidget cable
- A USB cable
- A computer

Connecting the Pieces

1. Connect the MOT1101 to the VINT Hub using the Phidget cable.
2. Connect the VINT Hub to your computer with a USB cable.

Testing Using Windows

Phidget Control Panel

In order to demonstrate the functionality of the MOT1101, 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
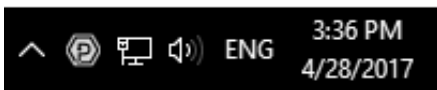
macOS

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 MOT1101.

First Look

After plugging the MOT1101 into your computer and opening the Phidget Control Panel, you will see something like this:
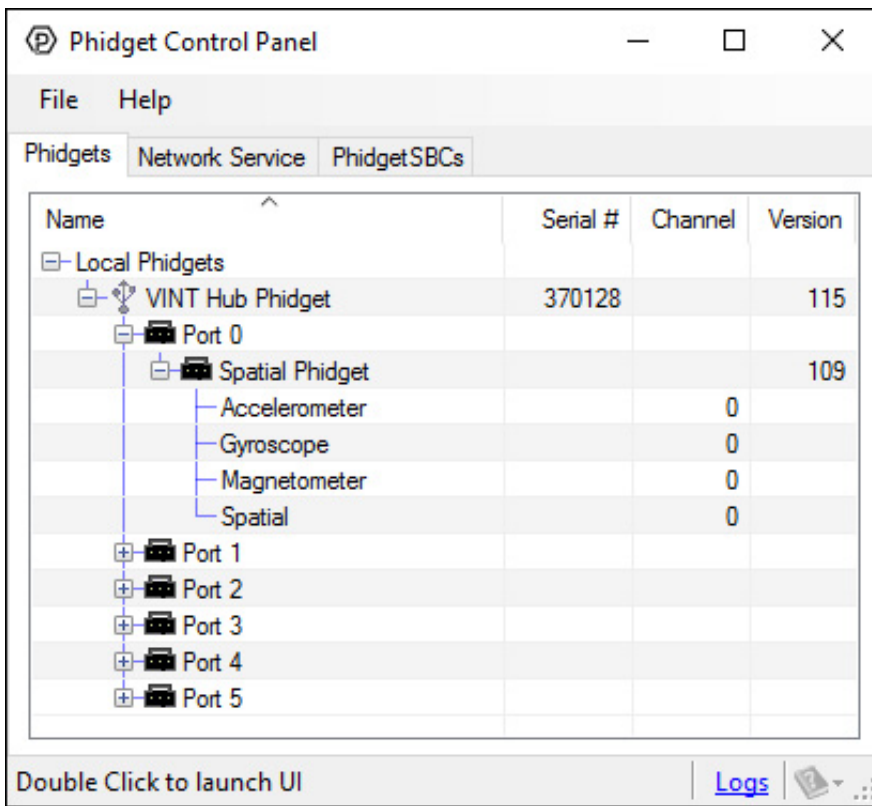
The Phidget Control Panel will list all connected Phidgets and associated objects, as well as the following information:

- **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 If your Phidget is listed in red, your firmware is out of date.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 "3-Axis Accelerometer" in order to run the example:
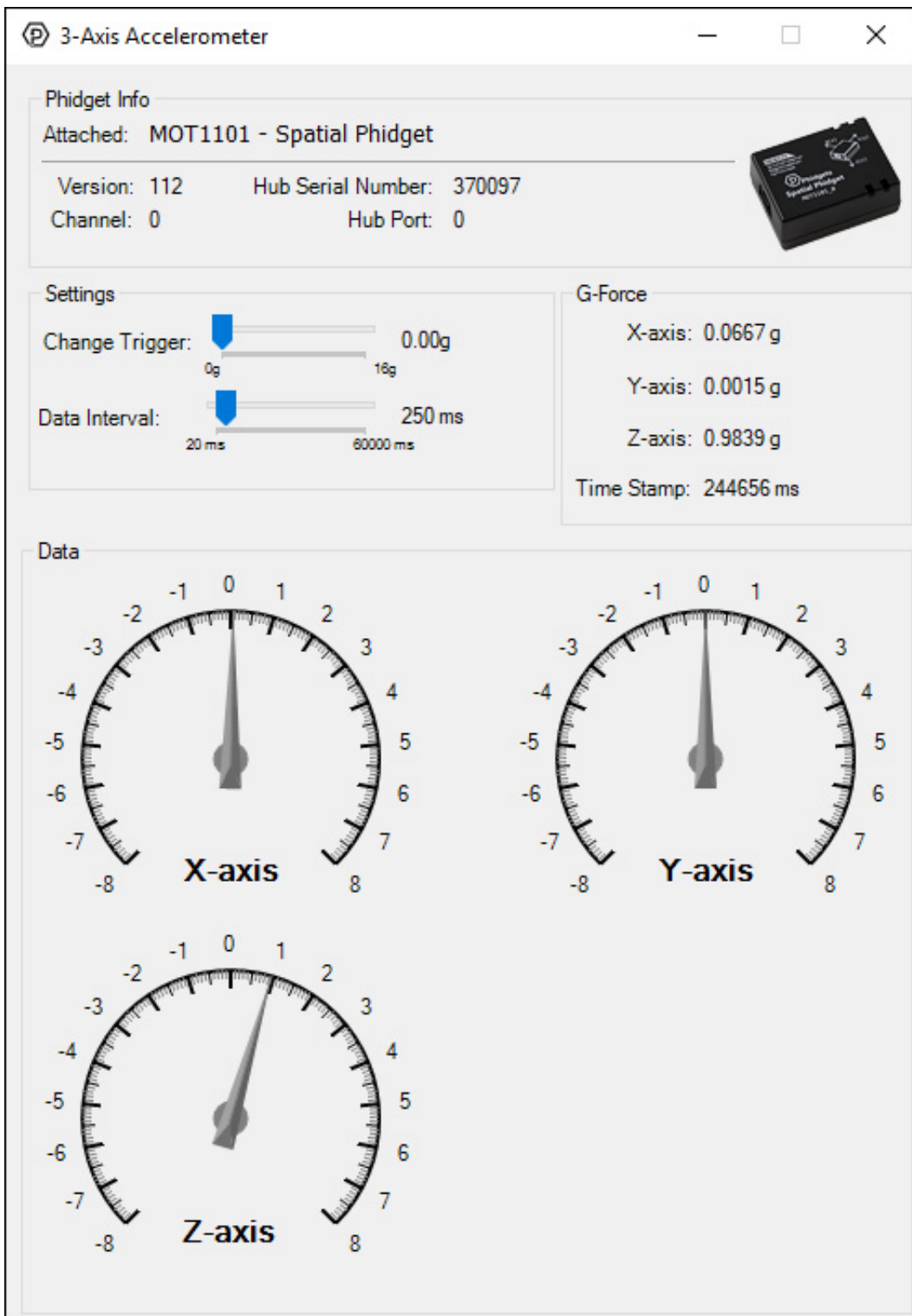
General information about the selected object will be displayed at the top of the window. You can also experiment with the following functionality:

- 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 MOT1101 in different directions to see the labels and graphics change.
- An extremely accurate timestamp is also reported with the g-force values.

Gyroscope

Double-click on the Gyroscope object in order to run the example:

3-Axis Gyroscope

Phidget Info

Attached: MOT1101 - Spatial Phidget

Version: 112   Hub Serial Number: 370097
Channel: 0   Hub Port: 0

Settings

Data Interval: |————————————| 32
              20   60000

Data

X-axis: 0.71167 °/s
Y-axis: -0.09917 °/s
Z-axis: 0.58625 °/s
Time Stamp: 301290 ms

Angular Positions

X-position

Y-position

Z-position

Zero Gyro

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 Zero Gyro button is used to compensate for the drift that is inherent to all gyroscopes. The gyroscope primer has more information about this subject.
- The measured values reported in degrees per second can be seen via labels as well as graphical dials. Try rotating the MOT1101 in different directions to see the labels and graphics change.
- An extremely accurate timestamp is also reported with the g-force values.

Magnetometer

Double-click on the Magnetometer object 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.
- Use the Set Params... button to set the calibration parameters. For more information about calibration, see the technical section.
- The measured values reported in Gauss can be seen via labels as well as a graphical diagram. The diagram can help you visualize the magnetic field vector.
- An extremely accurate timestamp is also reported with the Gauss values.

Spatial

Double-click on the Spatial object in order to run the example:

The Spatial example demonstrates that you can receive data from the accelerometer, gyroscope, and magnetometer all at once by using the Spatial object rather than the other three objects individually.

Testing Using Mac OS X

1. Go to the Quick Downloads section on the Mac OS X page.
2. Download and run the Phidget OS X Installer
3. Click on System Preferences >> Phidgets (under Other) to activate the Preference Pane
4. Make sure your device is properly attached
5. Double click on your device's objects in the listing to open them. The Preference Pane and examples will function very similarly to the ones described above in the Windows section.

Testing Using Linux

For a general step-by-step guide on getting Phidgets running on Linux, see the Linux page.
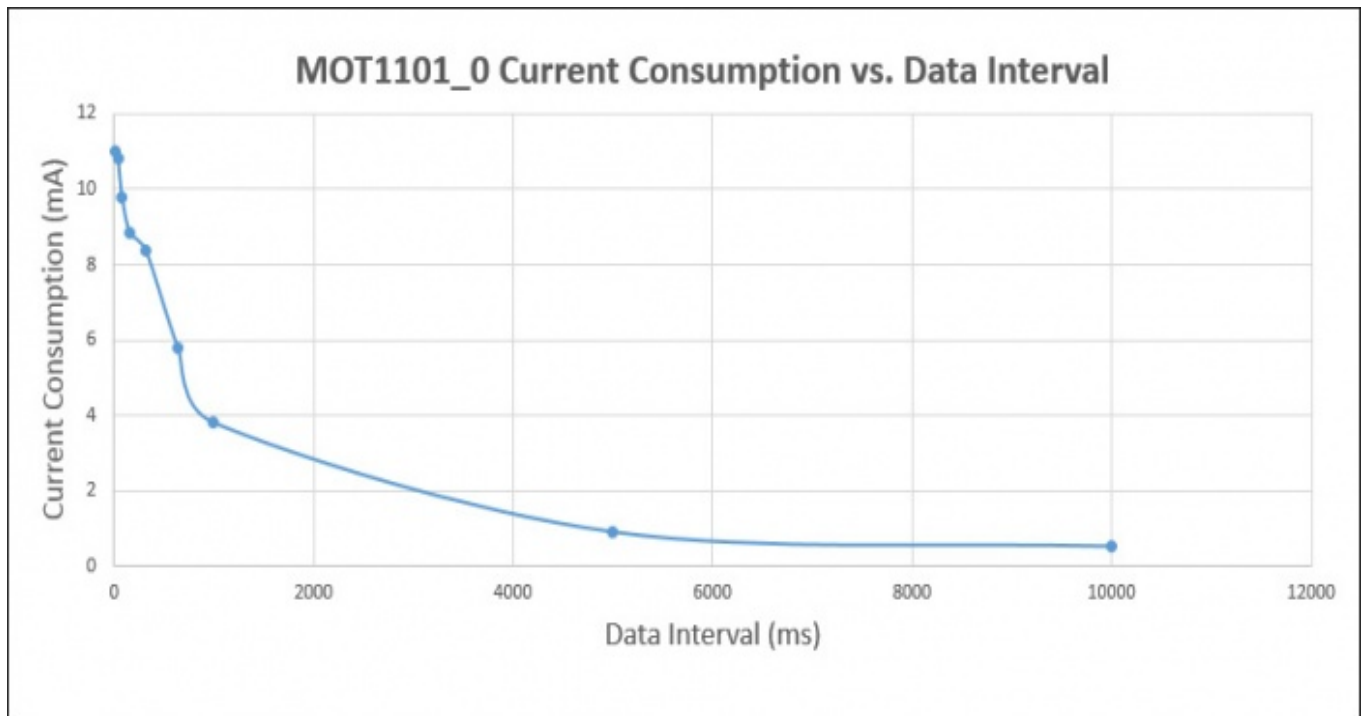
Using a Remote OS

We recommend testing your Phidget on a desktop OS before moving on to remote OS. Once you've tested your Phidget, you can go to the PhidgetSBC, or iOS pages to learn how to proceed.

Technical Details

Current Consumption

The current consumption of this device depends on what the data interval is set to.

Gyroscope Resolution

Due to the way the gyroscope chip on the MOT1101 switches internal gain values to measure a wide range of angular rates, the resolution varies depending on the angular rate currently being measured.

Angular Rate (°/s)	Resolution (°/s)
0 - 250	0.00875
251 - 500	0.0175
501 - 2000	0.07

Further Reading

For more information on how to use the data from the objects on the Spatial Phidget, refer to the appropriate primer:

- Accelerometer Primer
- Gyroscope Primer
- Magnetometer 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.