

Getting To Know Myo

Myo's Physical Characteristics

The following image illustrates the main components of Myo Alpha:



Myo is designed to be "wear and play", requiring minimal physical interaction. The eight segments of **expandable casing** house Myo's components and are connected using stretchable material that allows them to expand and contract relative to each other, so that Myo can comfortably fit each user's unique physiology. The **electrical sensors** measure electrical signals traveling across the user's arm, which Myo translates into poses and gestures.

The **USB charging port** allows you to charge Myo's internal battery using a USB power adapter or a conventional USB port on a computer.

Myo Alpha provides two additional features. The **status LED** lights up in green when Myo is ready to be connected to a device. Once Myo is connected, it lights up in blue instead. The **pinhole reset button** can be used to reset Myo in case of a device malfunction.



Myo Alpha LED colors and their meanings

Myo is connected to a device (e.g. a computer, tablet, or smartphone) using Bluetooth 4.0 Low Energy. The SDK takes care of all of the low level details related to Bluetooth connections and data transmission.

Note

The pictures and description above depict Myo Alpha. Production Myo will be similar but differ in shape and specific characteristics.

A Developer's View Of Myo

At its core, Myo provides two kinds of data to an application, *spatial data* and *gestural data*.

Spatial data informs the application about the orientation and movement of the user's arm. The Myo SDK provides two kinds of spatial data:

- An **orientation** represents which way Myo is pointed. In the SDK this orientation is provided as a quaternion that can be converted to other representations, like a rotation matrix or Euler angles.
- An **acceleration vector** represents the acceleration Myo is undergoing at any given time. The SDK provides this as a three-dimensional vector.

Gestural data tells the application what the user is doing with their hands. The Myo SDK provides gestural data in the form of one of several preset **poses**, which represent a particular configuration of the user's hand. For example, one pose represents the hand making a fist, while another represents the hand being at rest with an open palm.

An application can provide feedback to the wearer of Myo by issuing a **vibration command**. This causes Myo to vibrate in a way that is both audible and sensed through touch.

Running The Bundled Apps

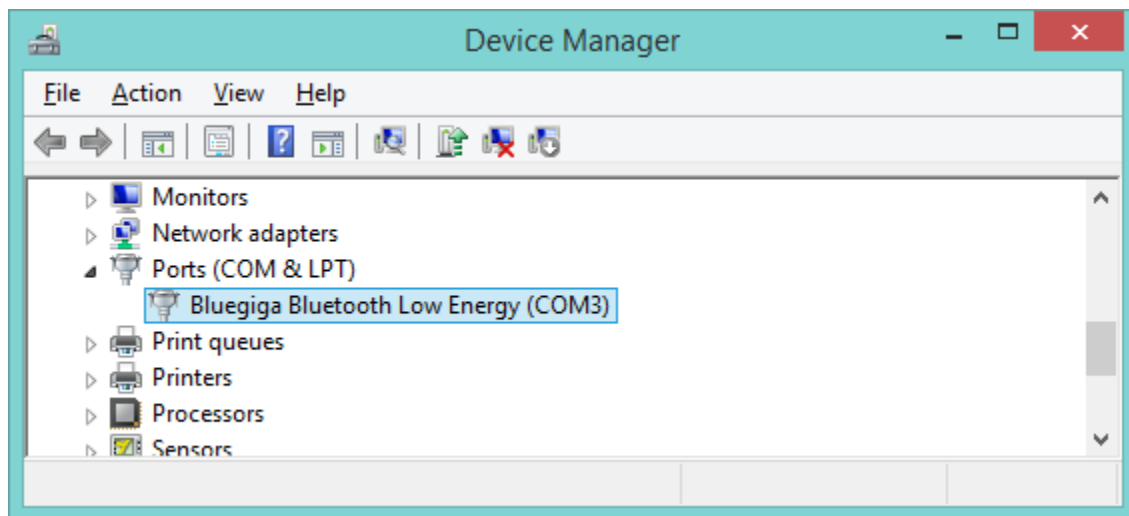
The best way to start exploring Myo is by running the apps bundled with the SDK. You can find all bundled Myo apps in the `bin/` directory of the SDK.

Apps can only be run when the Myo has previously been trained on the system.

Installing The Bluetooth Dongle Driver

If you are using Windows, you may need to install a driver for the Bluetooth 4.0 Low Energy dongle provided with Myo. On many computers, the drivers will install automatically when you first plug in the dongle. If they do not, you can manually install the driver bundled with the SDK in the `drivers/BluetoothDongle/` directory. Follow the instructions in the vendor-provided README to perform the installation.

One way to verify that the Bluetooth dongle drivers are installed is to open Device Manager and check that the dongle appears under the "Ports (COM & LPT)" device group. Make sure the Bluetooth dongle is plugged in before you check the device manager.



On Mac OS X, no additional drivers need to be installed.

Training Myo

The first app you will want to run is the Myo Trainer. The trainer allows you to demonstrate each pose supported by the SDK to Myo so that it can recognize them later on.

On Windows, the Myo Trainer is launched by running the `MyoTrainer.exe` file. If you encounter an error launching the trainer, you may need to first install the .NET Framework. You can find an installer for the .NET framework in the `drivers/` directory of the SDK.

On Mac OS X, the Myo Trainer is launched by running the `myo-trainer` application at the root of the SDK.

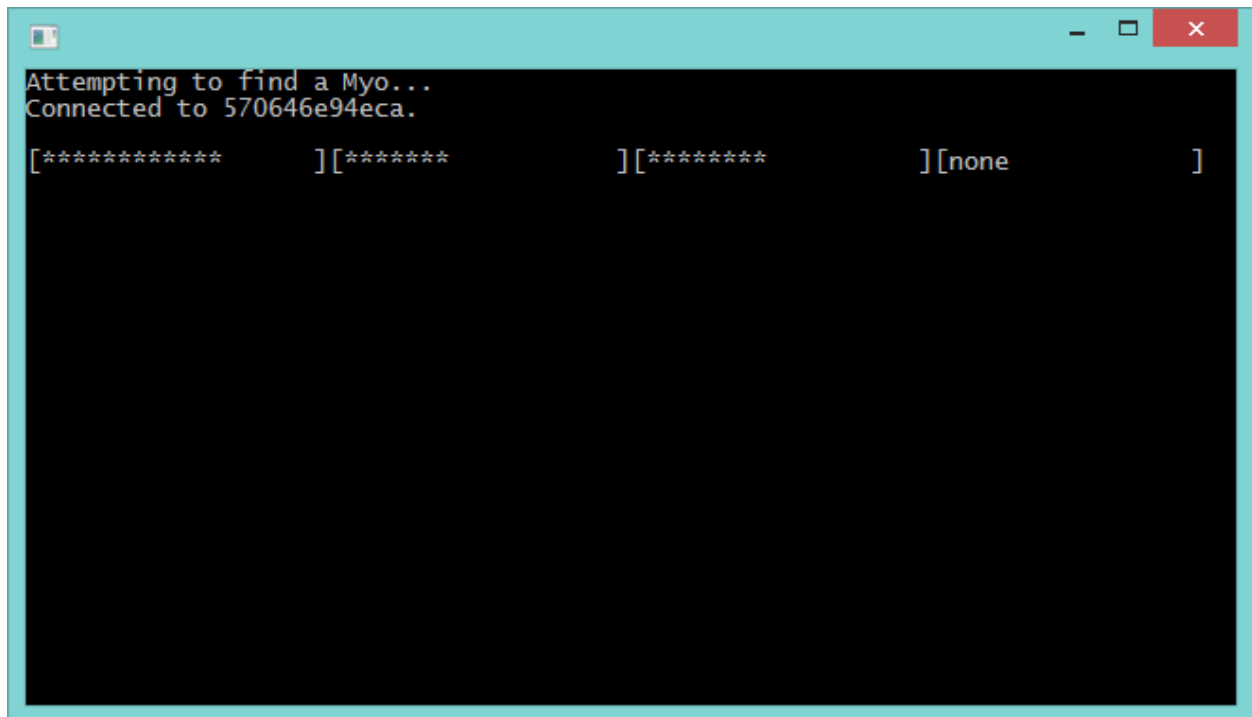
The trainer itself is intended to be self explanatory and will guide you through the training process. Before you train for the first time, we strongly recommend you watch the *How To Train Your Myo* video found on the Myo developer website.

Note

If you are using Windows and have more than one Myo armband, see [Using MYO_PAIR_WITH_MAC](#) on how to choose the Myo armband that you train.

Running The Samples

With training complete, you're ready to run any Myo application. Start by opening the `hello-myo` application found in the `bin/` directory of the SDK.



The `hello-myo` application is a basic console application that demonstrates Myo's orientation, pose recognition, and vibration functionality. The first three bars in the application show Myo's orientation

in terms of roll, pitch, and yaw respectively. The final bar shows the pose currently recognized by Myo. When Myo recognizes you performing a fist, the `hello-myo` app causes Myo to vibrate.

Verify that you are able to manipulate the roll, pitch and yaw indicators by orienting your arm. Then try out the poses and get a feel for the haptic feedback provided by Myo's vibration. Have a look at the source code in [hello-myo.cpp](#) to see how the app is implemented.

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This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

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