ARDUINO INSTALLATION

INSTALLING THE ARDUINO IDE

This manual provides a step-by-step guide on installing the Arduino IDE, setting up the ARM based microcontroller core support for the Arduino IDE, and installing library dependencies needed for motor control and haptic simulations. The Haply Development Board is based on the Arduino Due core, and uses software support from Arduino.

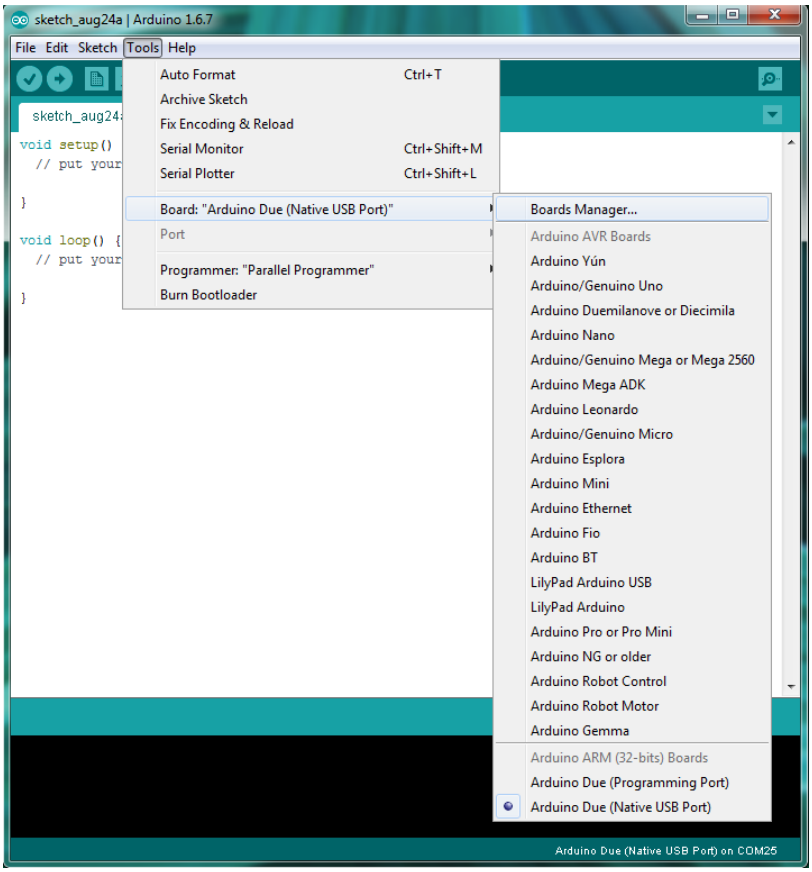
This section is divided into two sections, General Steps which applies to all Operating Systems, and steps required to properly install drivers for the Windows Operating System.

GENERAL STEPS

1. Download and install the Arduino IDE from the main Arduino software site: https://www.arduino.cc/en/Main/Software. In the download options, please download the local IDE rather than the online IDE. For Windows users, installation is easiest and quickest using the Windows Installer option. For other OS users, please download the relevant version for your computer.

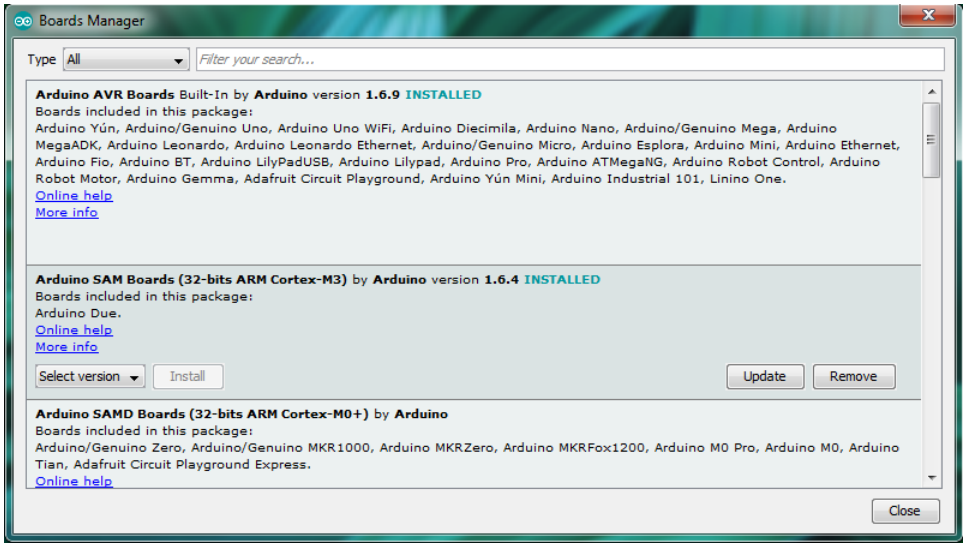
2. After the installer have finished, we now need to install the proper processor core used by the Haply Development Board. Open the Arduino IDE, and navigate to the Boards Manager by clicking on the Tools menu up top and then selecting: Boards > Boards Manger.

   ***Note**: In the example screen shot below, support for the 32-bit Arduino ARM cores have already been installed, which is why the Board selections for Arduino Due (Programming Port) and Arduino Due (Native USB Port) are already available.



3. Once the Boards Manager window is open, select the “Arduino SAM Boards (32-bits ARM Cortex-M3) by Arduino” option. In the “Select version” drop-down menu, choose version 1.6.11 and then click install. Once installation is finished, your Boards Manager window should look similar to the screen-shot below.

   ***Note**: This step may be skipped for Mac users



4. After installing the Arduino IDE and setting up the Arduino SAM Boards core support, you can now connect your Haply Development Board to the computer using the micro USB cable using the available Native USB port available on the Board.

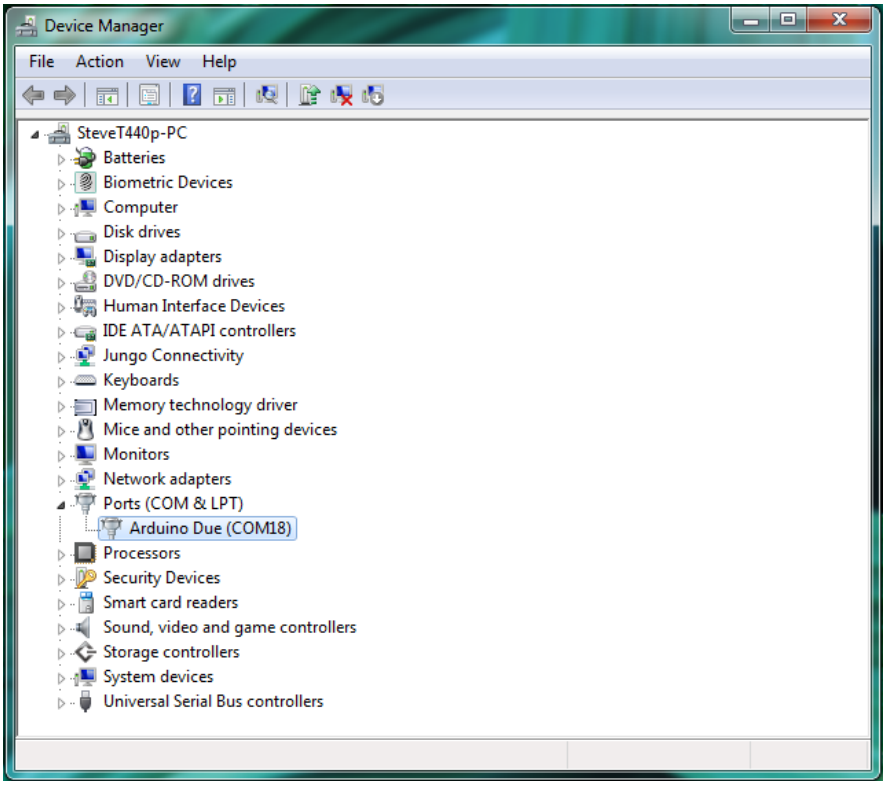
   ***Note**: For Windows users, connect your Haply Development to the computer using the micro USB cable and proceed to Windows Driver Installation.

WINDOWS DRIVER INSTALLATION

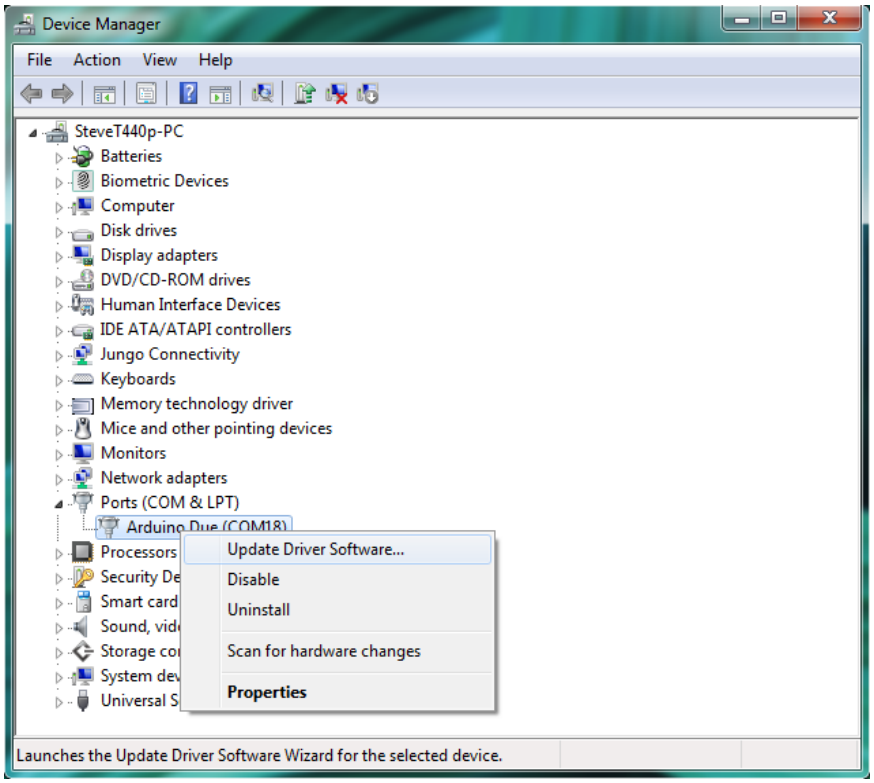
1. After completion of the General Steps on installing the Arduino IDE, setting up the support for the Arduino SAM Boards core, and connecting the Haply Development Board to the computer using the micro USB cable. Open Device Manager on your version of Windows.

2. In Device Manager, look for the listing “Ports (COM & LPT)” and expand the listing. Depending on varying configurations, you will see “Bossa Programming Port” or “Unknown Device” or something similar. In the screen-shot below, the driver has already been installed, which is why the listing shows up as “Arduino Due (COM18)”

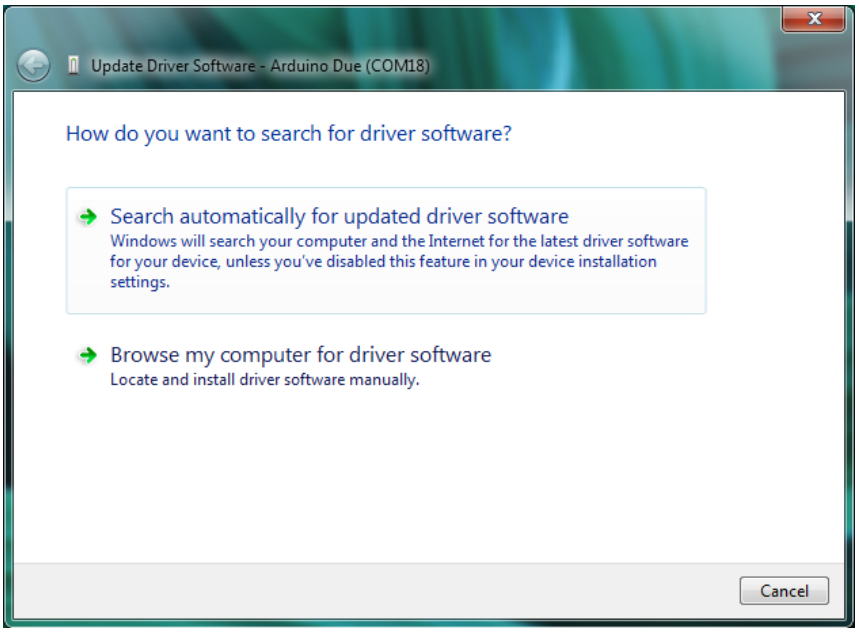
   ***Note**: It is assumed that you only have one Serial port device connected to your computer, the Haply Development Board during the driver installation.



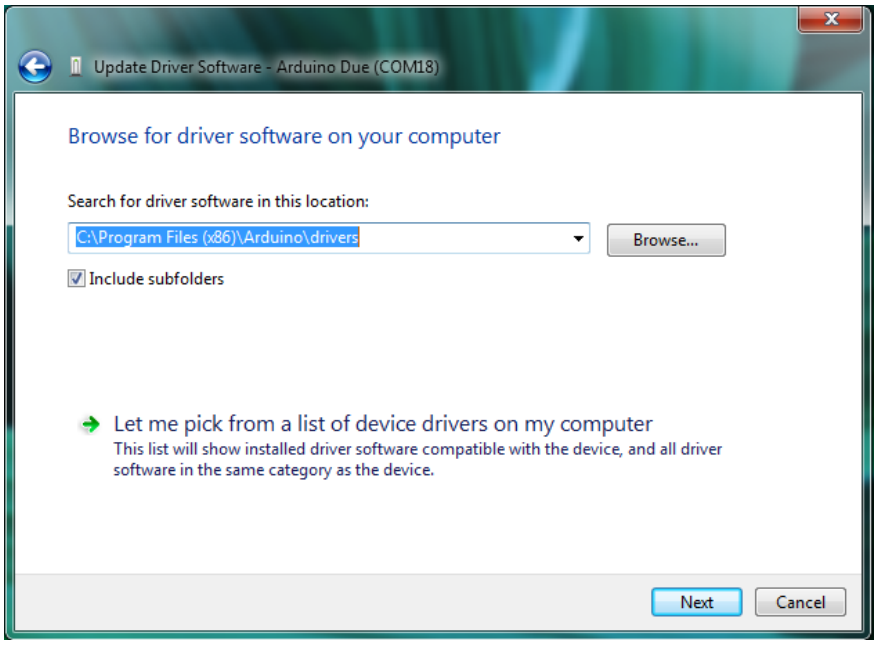
3. Right click on the listing and select “Update Driver Software”



4. This will open the “Update Driver Software” window, click the option “Browse my computer for driver software.”



5. This will bring you to a new window where you can select a specific directory for installation. Click the "Browse" button and navigate to the directory where the Arduino IDE is installed and locate the "drivers" folder. If you performed the default installation, the directory listing should be similar to: C:\Program Files (x86)\Arduino\drivers. Once the directory location has been specified, press the "Next" button to continue. If you are prompted with a warning dialog about the software not passing Windows Logo test click "Continue Anyway" option.



6. Once the drivers have finished installing, you should now see the listing in "Ports (COM & LPT)" be displayed similar to "Arduino Due (COM18)." The COM numbers will change depending on the number of Serial devices that had been connected to your computer previously.

INSTALLING ARDUINO LIBRARIES

Before you can load firmware onto the Haply Development Board, you need to install some Arduino Library dependencies that the firmware uses.

1. In the same directory where you found this guide, locate the two folders Encoder and PWM.

2. Navigate to the Arduino default working directory by going to Documents > Arduino > libraries. Copy the two folders Encoder and PWM into the "libraries" directory.

3. You can now open the Haply firmware file, verify that it builds with no errors and upload the program onto the Haply Development Board.