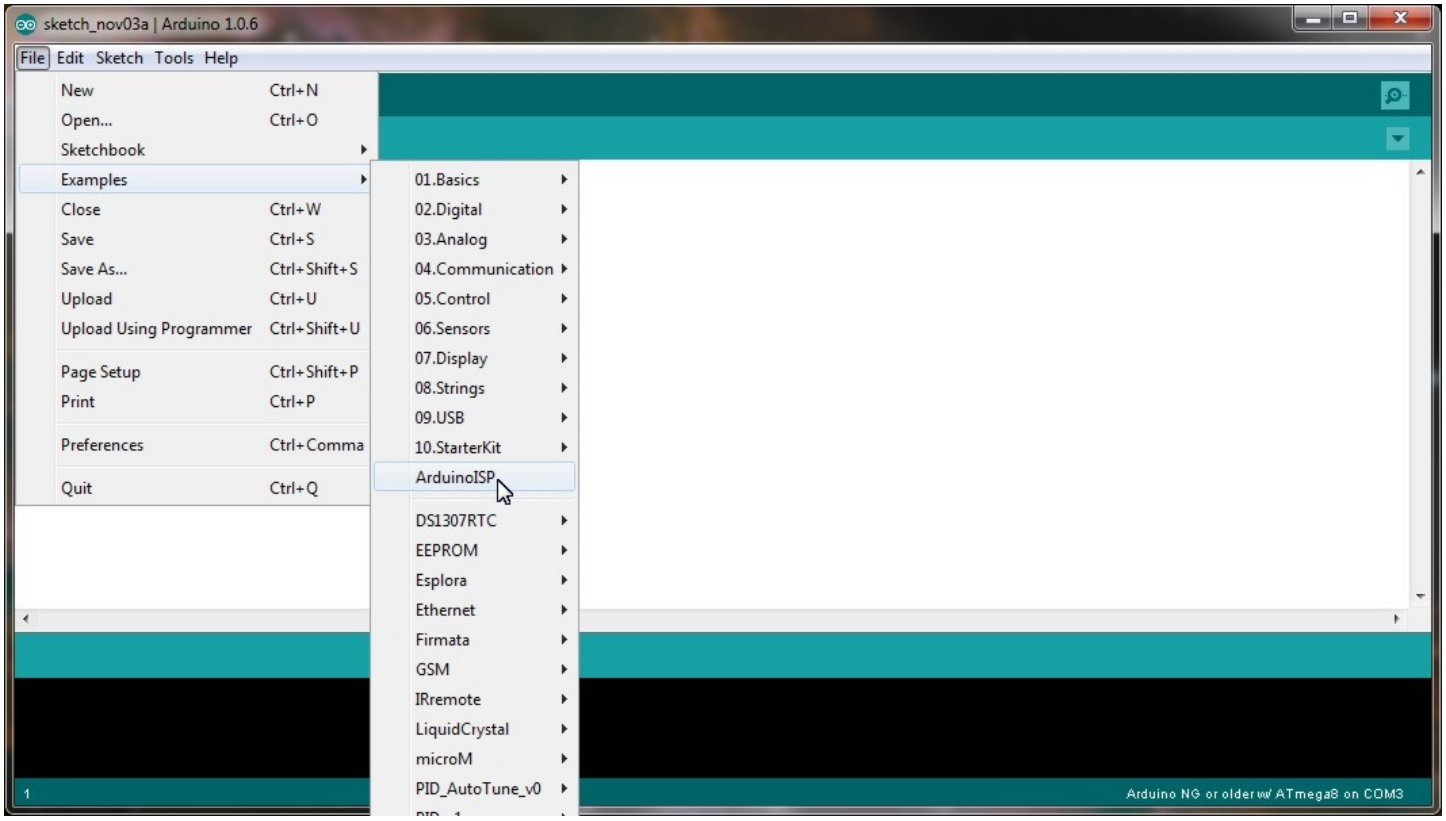
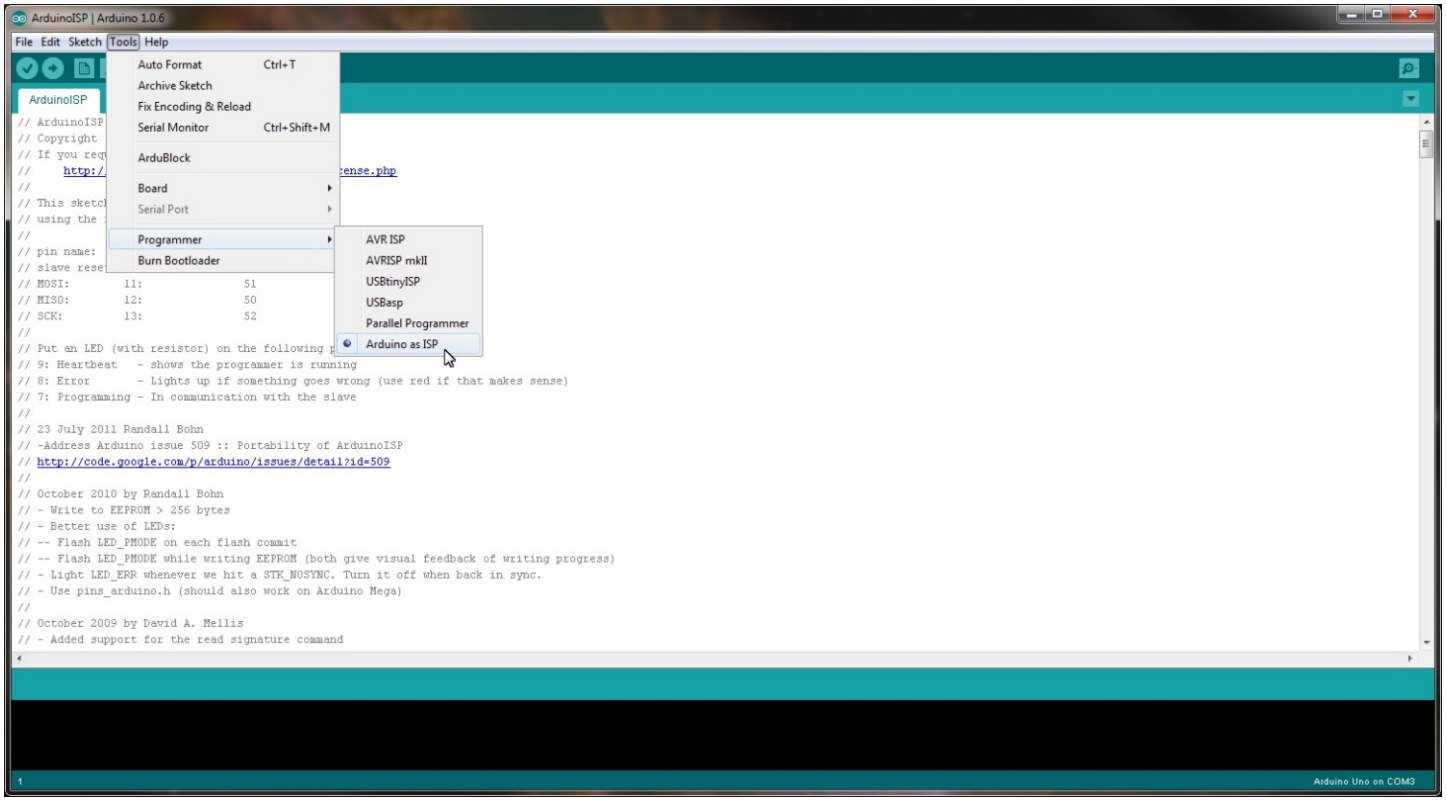
Programming ComMotion

One great feature of the ComMotion motor control shield is that you can re-program it using the Arduino IDE. Not only does this allow you to customize the controller but it also allows you to install updated code when it becomes available.

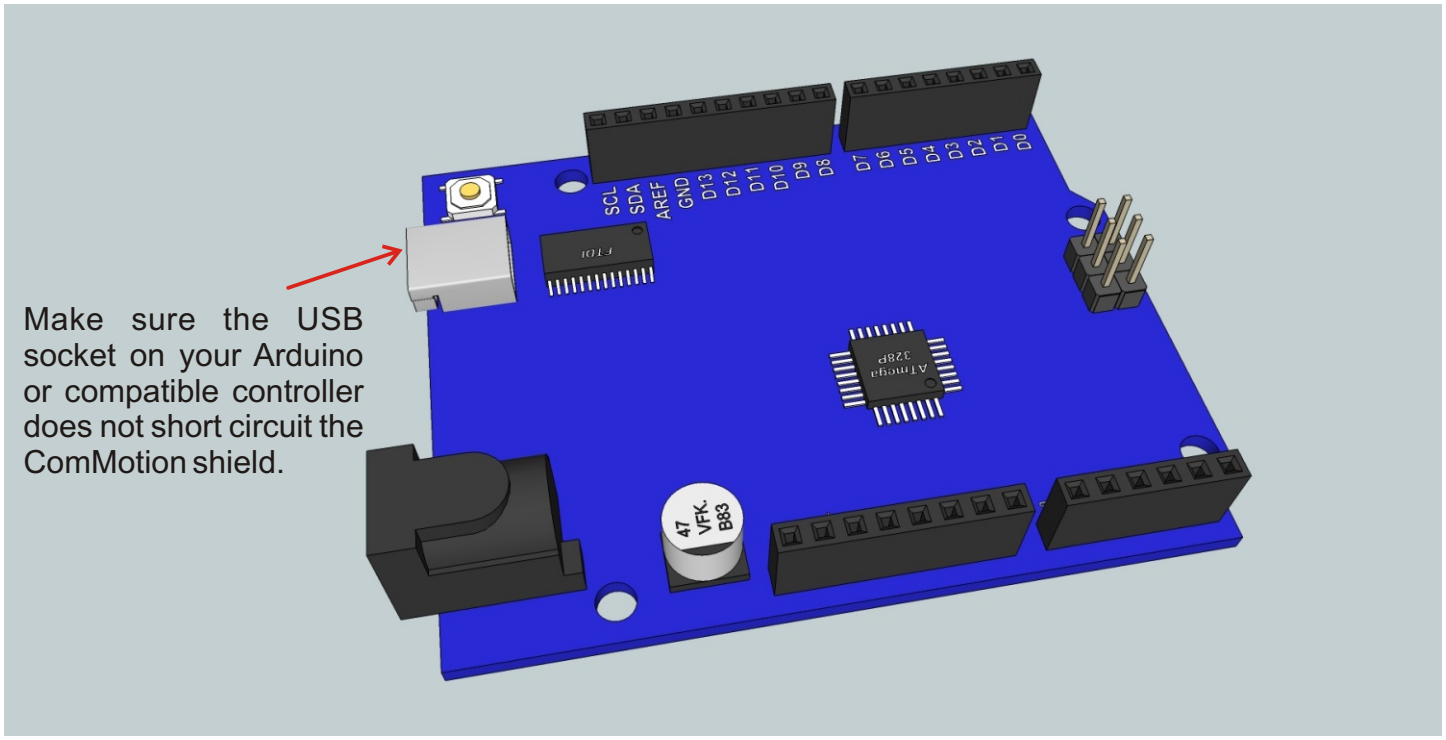
programming the ComMotion shield is easy. All you need is an Arduino or compatible controller with the Arduino ISP example code installed. This code allows you to use your controller as an ISP programmer.



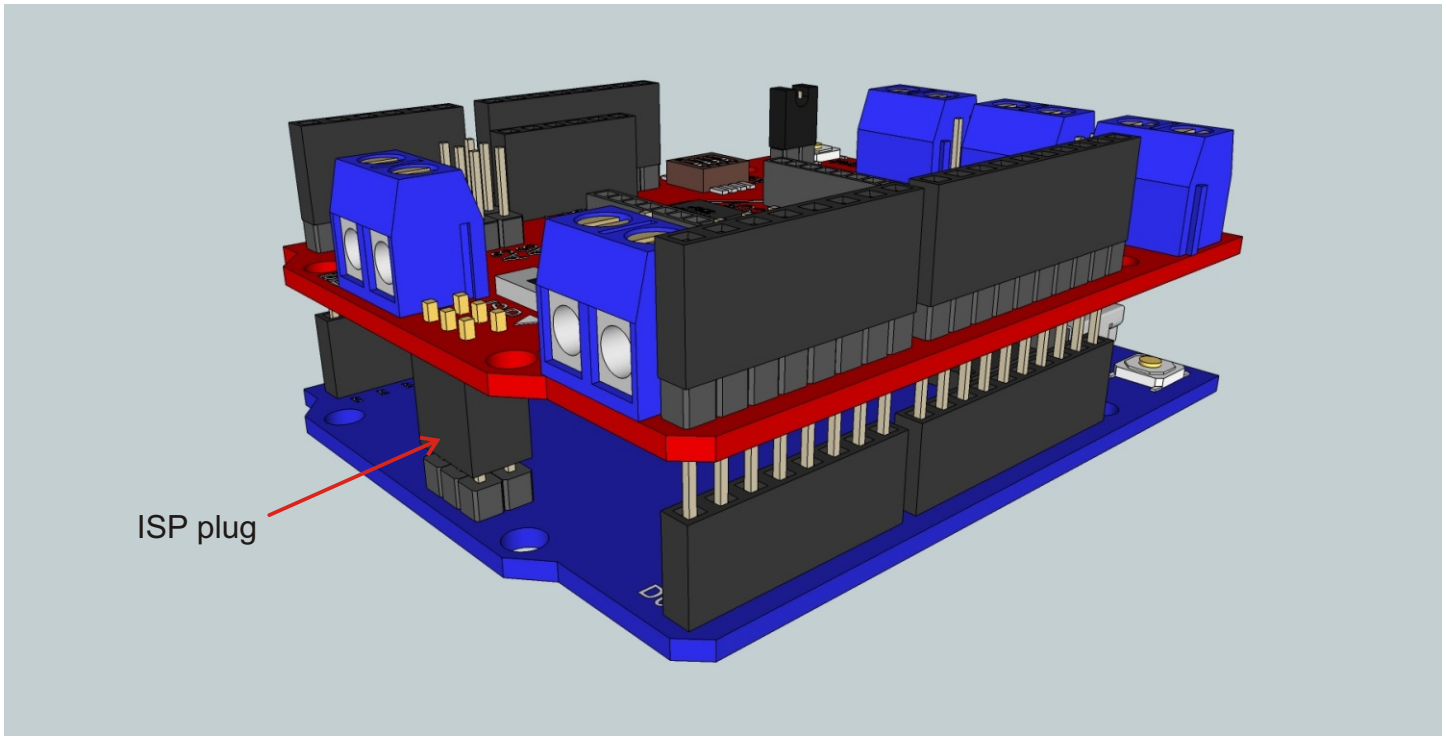
Once you have installed the Arduino ISP code in your controller, make sure the programmer type is set to "Arduino as ISP".



Before you plug in the ComMotion shield, check that your USB socket will not short the ComMotion shield. You may need to put some tape on the USB socket to insulate it.

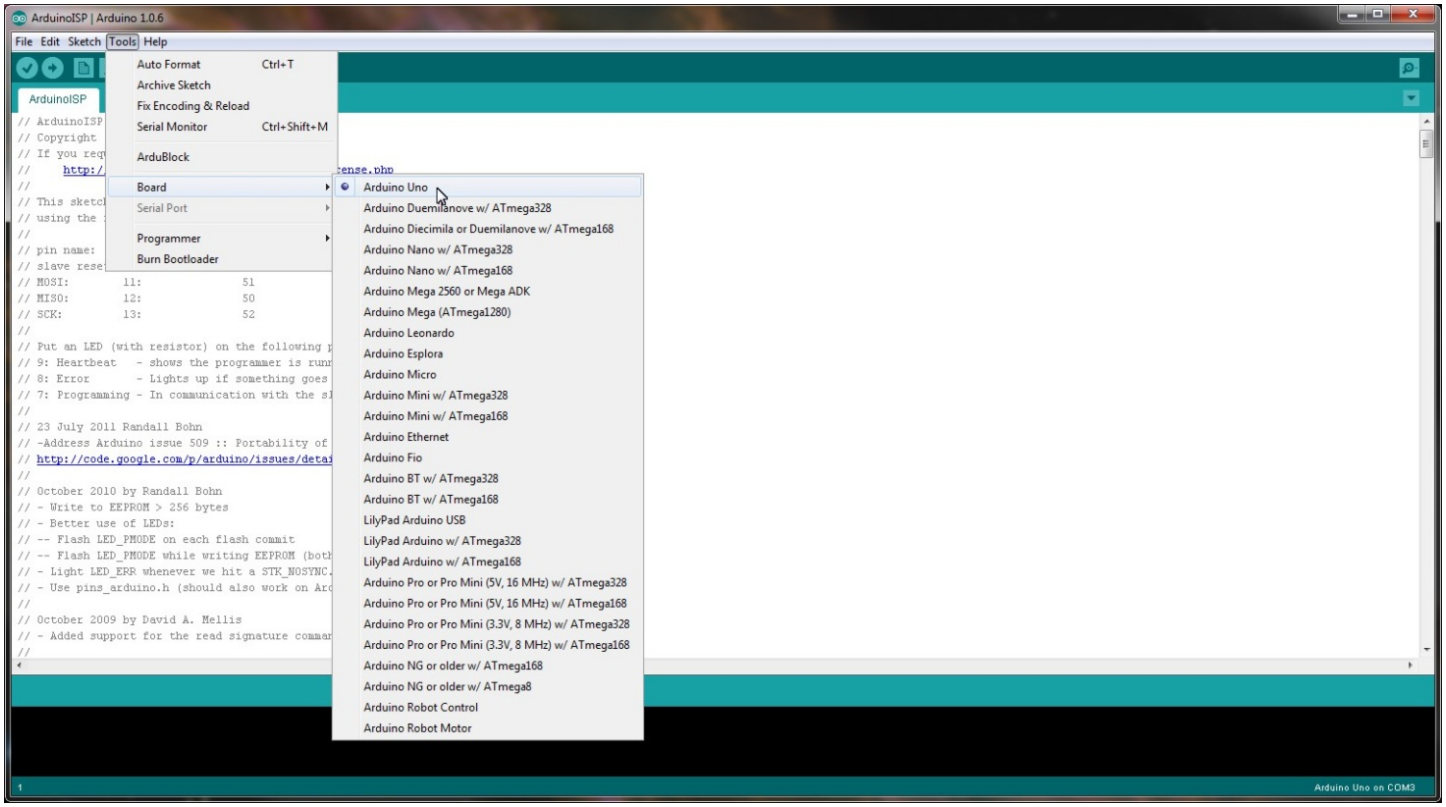


Once you have installed the ArduinoISP code in your controller and checked that the USB socket is insulated you can install the ComMotion shield. The ISP socket on your controller should line up with the ISP plug on the ComMotion shield.



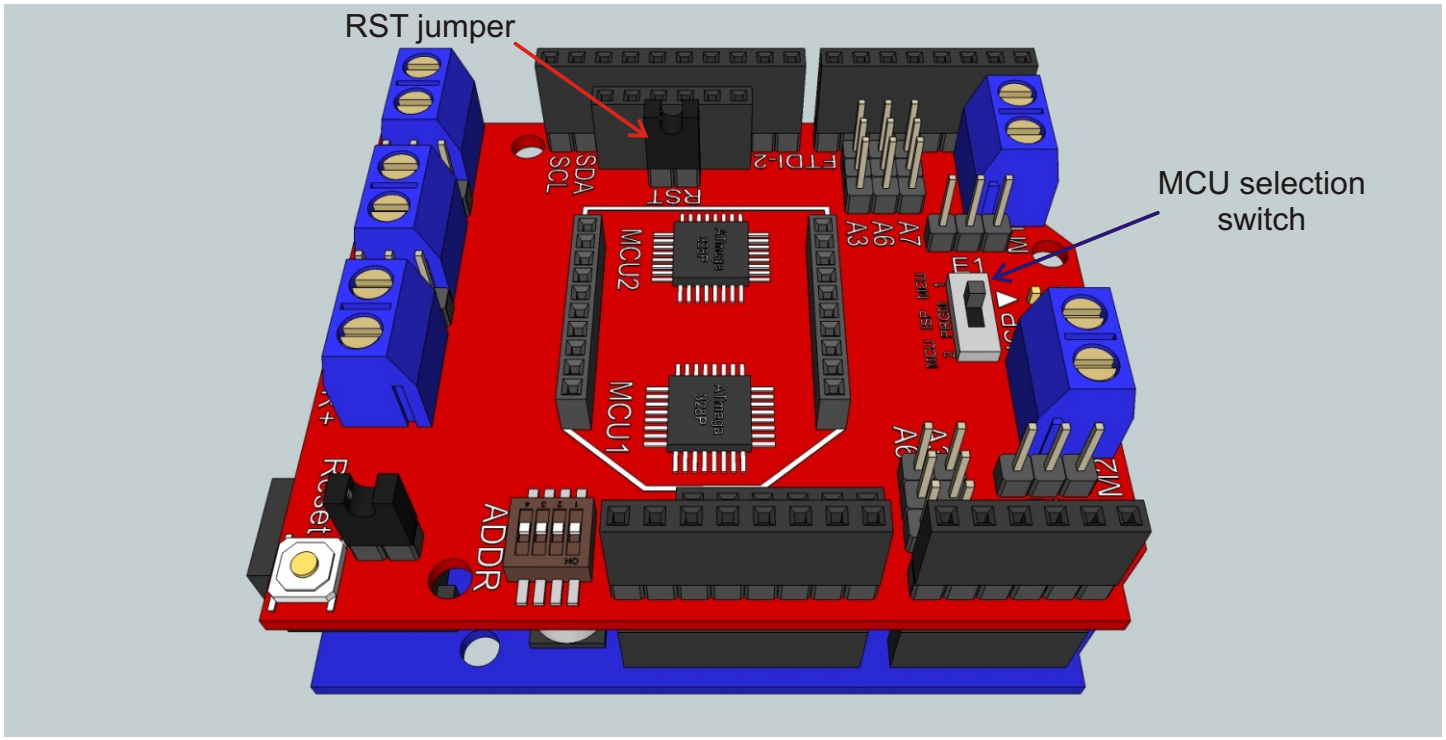
If you want to use a dedicated ISP programmer then you may need to use jumper wires to connect it to the ComMotion shield. Make sure to connect the reset pin of the ISP programmer to the D10 pin on the shield.

When programming the ComMotion shield the board type should be set to Arduino Uno. Do not worry if your controller is not an Uno. This tells the programmer what board type you are programming, not what type of controller you are using as the programmer.



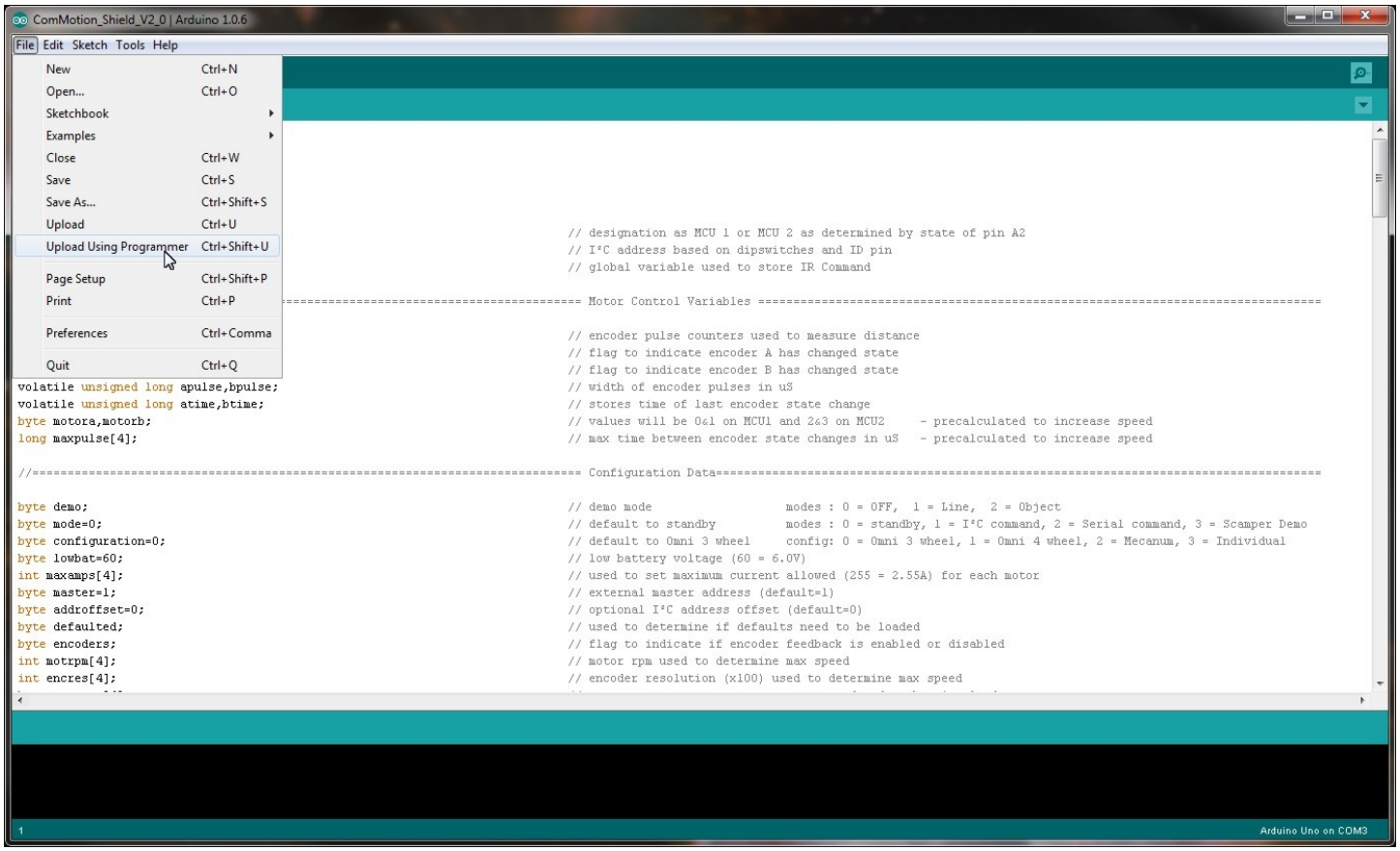
Make sure the RST jumper is shorted. This connects D10 of the Arduino controller to the ComMotion shields reset circuit. D10 is used by the Arduino ISP code to reset the target.

The ComMotion shield has two ATmega328P MCU's. Use the MCU selection switch to choose which MCU you want to program. When you have finished programming this switch should be left in the center position. To make software updates as easy as possible, the same code is loaded into each MCU.



Open the new code for the ComMotion shield and check that it compiles ok. The original code was written in Arduino 1.04. If the code does not compile correctly using a later version then you may need to use Arduino 1.04.

Because we are using the Arduino as a programmer we must choose "Upload using programmer" from the menu. Make sure you load the same code in both processors.



Once the new code has been installed on MCU1 and MCU2 you can remove the RST jumper and return the MCU selection switch to the center position. The ComMotion shield is now ready to be used.

Trouble shooting

On rare occasions it is possible for the flash memory in the shield to be corrupted if the battery voltage drops too low. In this case it may be necessary to re-install the Arduino UNO bootloader first. The reason for this is that the "Upload using programmer" option does not seem to set the fuses.

By using the "Burn bootloader" option first before installing the code you will ensure the fuses are set correctly.

If you get an "out of sync" error message when trying to upload the ComMotion code then check the RST jumper is installed and that no motors are connected to the shield.

If you get an "invalid device" error then check that the MCU selection switch is in the correct position and that "Arduino Uno" was selected as the board type.

While USB power should be enough for programming the shield it may be necessary to power the shield when programming in some cases.