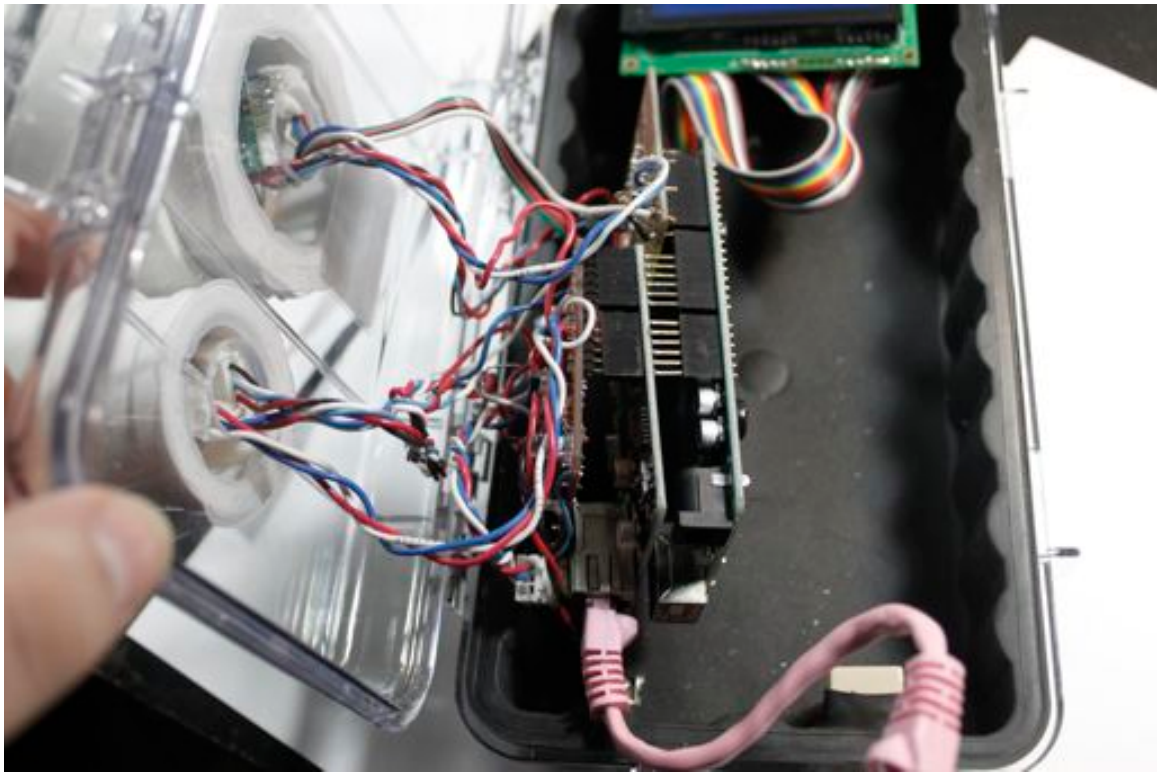
Reprogramming Your Weather Tunnel Unit v01

Step 1 — Open the Box and Locate the USB port on the Arduino Mega

The unit is built on top of an Arduino Mega microcontroller unit. There is an Ethernet shield on top of this, and a prototyping shield on top of that. On the rear of the Mega is a custom "weather tunnel shield" – a PCB we designed for the LCD screen and extra sensors.

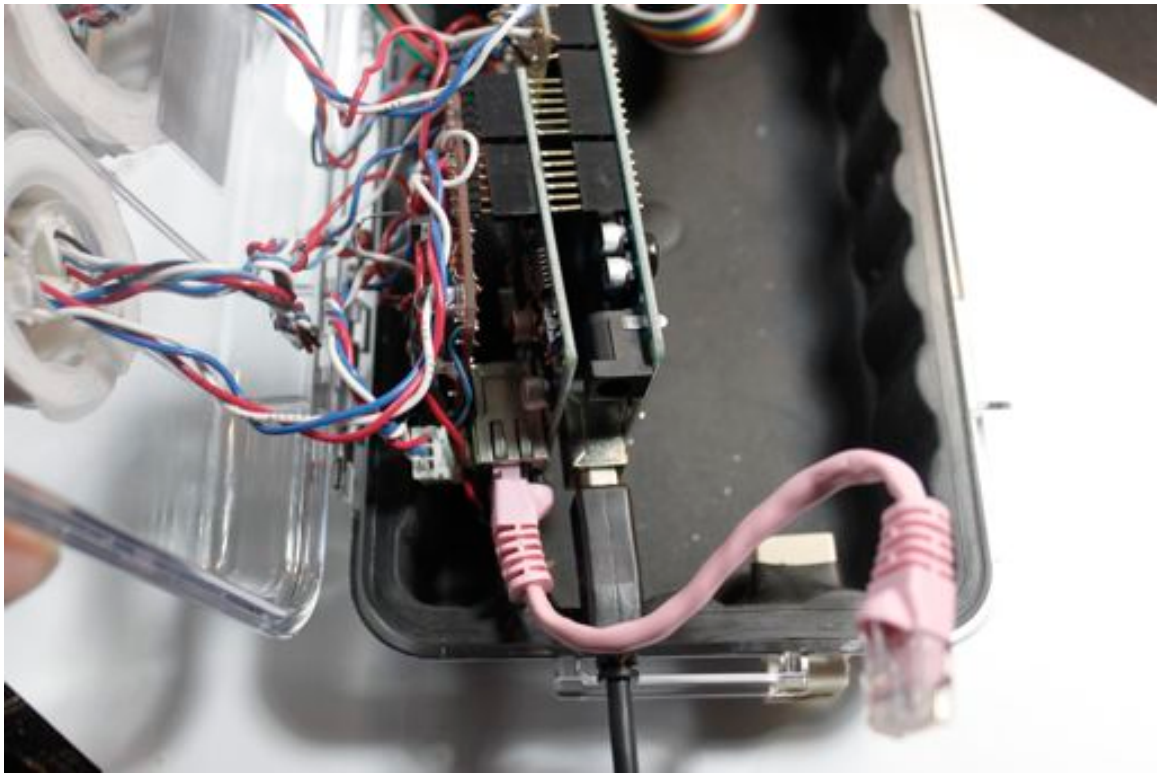
The case is a Pelican Micro 1060, and open easily on one long side. After opening, disconnect the Ethernet cable (pink in this image) from either port. When the case is opened, the Arduino will raise up off the floor of the base, sitting on it's side – do not be alarmed, this is normal:



The USB port is located at the bottom of the unit, directly beneath the Ethernet port, which has a very short Ethernet cable connecting it to a coupler embedded in the case.

Step 2 — Plug in USB Cable and Connect to Computer

Next you will insert the USB cable into the Arduino. This can sometimes be a bit tricky, don't be afraid to pull the Arduino in the direction needed to get enough access to the USB port.

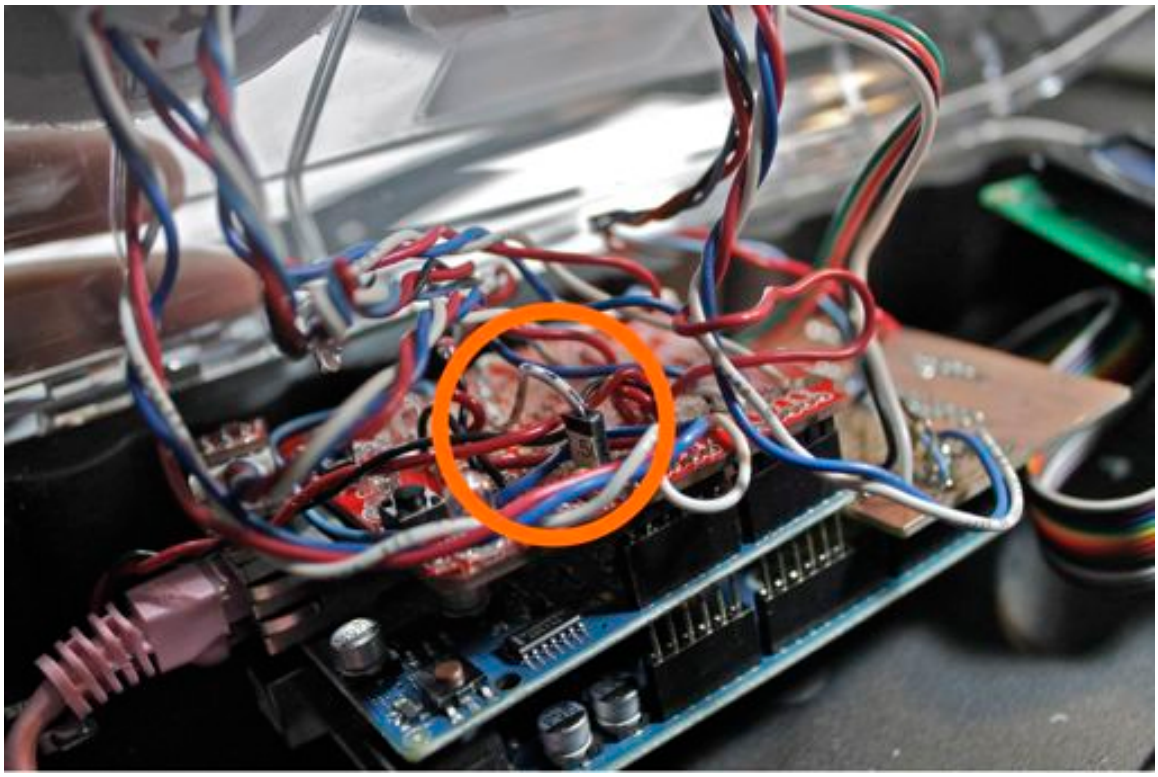


Standard USB A to B cable connected from Arduino to Mac or PC.

Step 3 — Disconnect RESET Feature

The Arduino Ethernet Shield has a tendency to hang it's connection when being powered for long periods of time. This was troublesome for us, as we want the units to be powered and connected for several months straight (at least). The fix is to RESET the entire unit. For this, we've implemented a small hack in which we use a digital pin to RESET the board when it hasn't been able to make a connection after several minutes.

However, in order to program the board, we need to disconnect this. I have labeled the connection by coloring the white wire with black "stripes" – more like dots or dashes made with a sharpie marker.



Pull the marked wire out of the female header pin and leave it disconnected while programming.

<u>Step 4</u> — Program the Arduino

In order to program the Arduino you will need to first download and install the Arduino application which you can find at: http://arduino.cc/en/Main/Software

After installing the application, you will need to install a single library we are using for one of the sensors. It is the CS_MQ7 library. This will be sent to you with your source code. In OSX, it is very simple: place the folder in *the Documents > Arduino > libraries* folder. More information on this here: http://www.arduino.cc/en/Hacking/Libraries

Now you can open your sketch (sent to you by Joe) and upload to the board. Remember to select the correct Serial Port, as well as *Arduino Mega 2560* under *Tools > Board* before uploading.

If you see "Done Uploading" in your console, you are finished!

Step 4 — Reconnect the RESET feature and Ethernet Cable

Be sure to insert the marked white wire back into the female header pin. Needle nose pliers can be helpful in grabbing it and pushing it in all the way. Connect the Ethernet cable to both the board and the coupler.

Step 5 — Close the Unit and Test!

You're now finished. Carefully close the box. On some of the units, the rainbow wire connecting the LCD screen needs to be folded a bit and pushed under the screen itself, otherwise it can put pressure on the top of the screen. Not a huge deal, just something to look for as you close the lid.