



## Cessna Style Compass

The compass was designed primarily to work with MobiFlight, in conjunction with your particular simulator; basically because it's the easiest way to interface it. However it should work quite happily with a variety of interface cards, including those from Open Cockpits, or if you have more experience with one of the many Arduino cards; (that option would require some knowledge of writing Arduino code).

However these instructions will cover the installation using the first method, (MobiFlight) basically because we do not have any knowledge of the other options.

**Important:** If you have no past experience with MobiFlight, please read through the whole documentation before proceeding with the installation.

1. Firstly you need to get an Arduino Mega 2560 card. These are available from a number of on line vendors. You also have to install the Arduino software from <https://www.arduino.cc/>
2. The Arduino software has to be installed because MobiFlight needs it to function.
3. Next you need to download and install the MobiFlight software from their website: <https://www.mobiflight.com/en/index.html>
4. It's well worth joining their forum and donating if you find the software useful. You will get a lot more detailed information; with support for interfacing may other devices.
5. Once MobiFlight is installed you should run it, and then plug in your Arduino card; at which point the MobiFlight software will ask if you want to install the software to the new card.
6. Click yes! Once that's completed the Arduino is now recognised as a MobiFlight device.
7. From this point on it's simply a matter of adding the necessary settings into the MobiFlight software. We have added screenshot images to show what this entails.
8. *(As we mentioned at the start, this is just one of the methods of interfacing this product).*
9. To get a more visual introduction to MobiFlight and how to install it, have a look at this more detailed introduction on YouTube: <https://www.youtube.com/watch?v=RdJUeJl-o9o&t=14s>

This video explains the steps needed to interface a parking brake switch, but it will also get you to the point where this tutorial begins. For clarity we have started with a completely blank MobiFlight Interface, so each step is shown exactly as you should see it on your own system.

Please be aware that this tutorial is based on FSX/P3D only. The Compass will also work with X-Plane but you need to have the different offsets required for that platform. You will also need to setup the FSUIPC equivalent for X-Plane, which is called XPUIPC. Unfortunately that installation is beyond the scope of this tutorial.

One final thing to be aware of, if your computer crashes while the compass is operating it will lose the zero settings you have set within the software. This only means that you will have to reset this in the MobiFlight software to continue normal operations. You should also shut down the MobiFlight software properly at the end of every flying session for the same reason. Doing so will return all your Arduino gauges to their zero positions, ready for your next flight.

## Installing the Cessna Style Compass

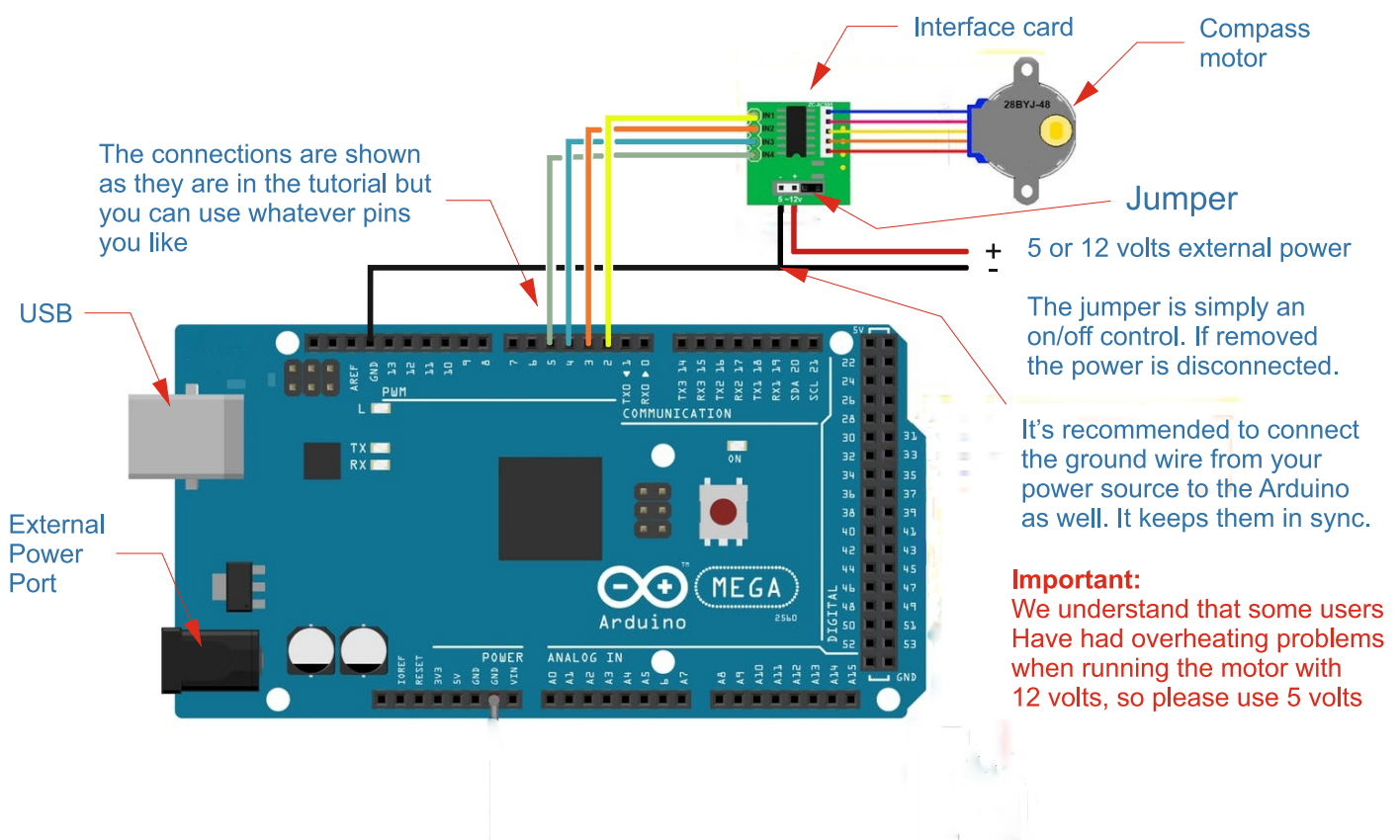
The physical installation of the compass will be determined by location you want it installed. But essentially it should be mounted on the glare shield using the holes in the mounting bracket. The holes are drilled to take M3 (3mm) screws but please remember that this is acrylic, so if you over tighten them it might crack the acrylic.

To connect the compass, you attach the motor cable to the interface card supplied, it has a keyed connector, so you should not be able to fit it incorrectly. I have added a diagram to show the other connections to the Mega Arduino board, the choice of pins is up to you, but they must match those set in the MobiFlight software, shown later in the tutorial.

The internal LED backlights work with 5 volts, so connect the Red to positive and Orange to negative.

**Do Not connect this to the Arduino.**

You should ideally add an external power supply for the backlight and the motor, particularly if you're going to add more devices to the arduino; which should also have its own power supply. Do not rely on the USB for power to drive the motor, you could damage your computer.



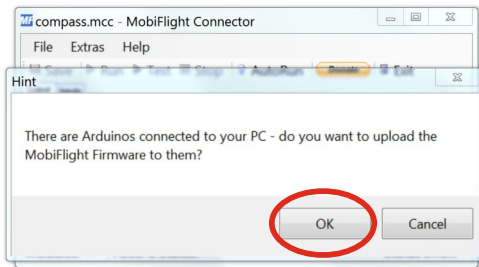
This diagram shows a full size Arduino Mega Card, but there is also a smaller Mini Mega which is quite a bit cheaper. It has the same number of pins and because of its size is easier to mount inside the cockpit structure. However many people prefer the larger card which can be easier to work with.

When connecting your motor interface card to the arduino, make a note of the pins you use and make sure you set them the same in the Mobiflight interface.

Just to reiterate, you should use separate power sources for the Arduino, the backlight and the motor. And as I've mentioned above we suggest you stick to 5 Volts to avoid any overheating of the motor.

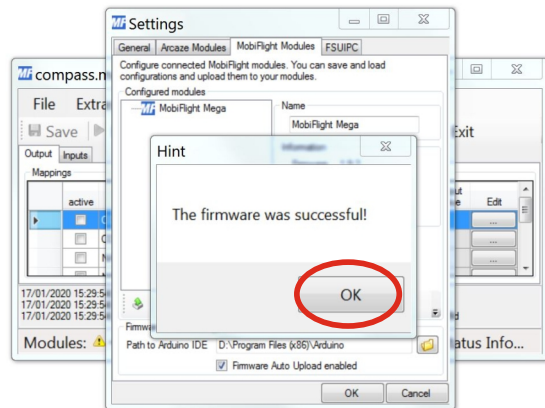
### Step 1

After installing the MobiFlight and Arduino software, plug in your Mega board, then you will get the message below. Click Ok.



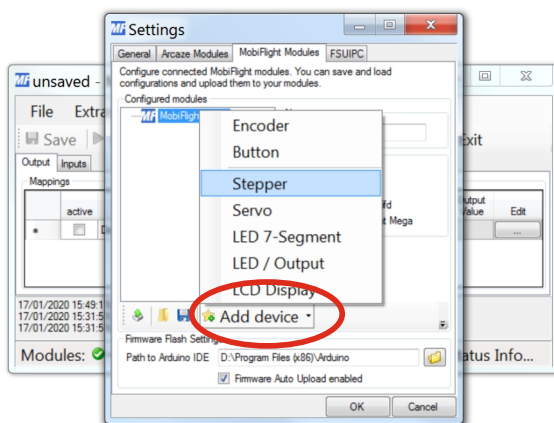
### Step 2

The new firmware will then be uploaded to your Arduino board.



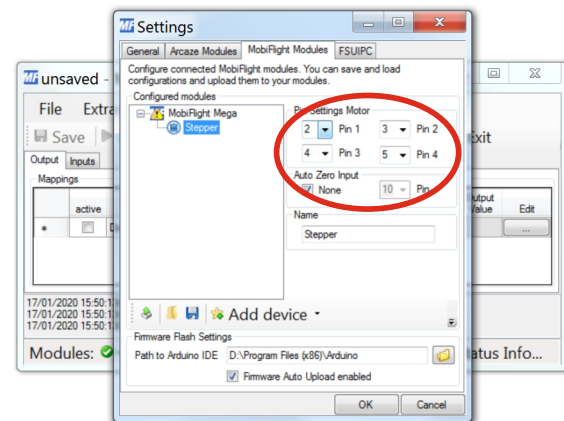
### Step 3

Next select the Add Device option and select Stepper from the list using the small arrow.



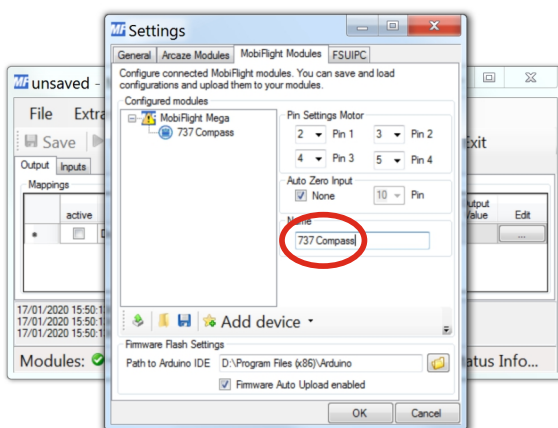
### Step 4

Then set the four Arduino pins you intend to use from the drop down list along side each motor pin.



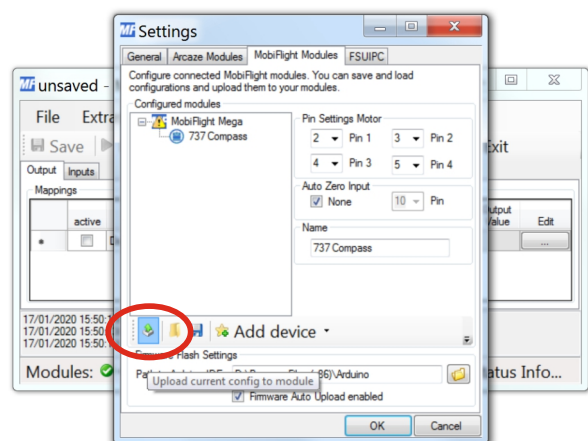
### Step 5

Now give the Stepper a more descriptive name, in case you add more devices.



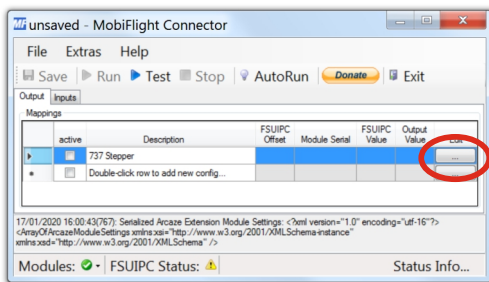
### Step 6

Finally Click the upload button to send the data to your Arduino.



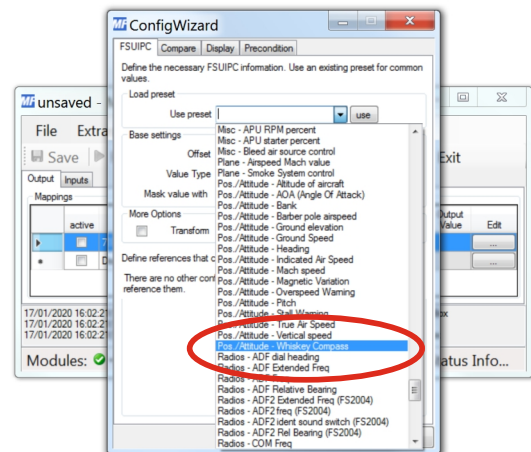
## Step 7

The new device will be shown in the list of devices, so click on the Edit button on the right side of the interface



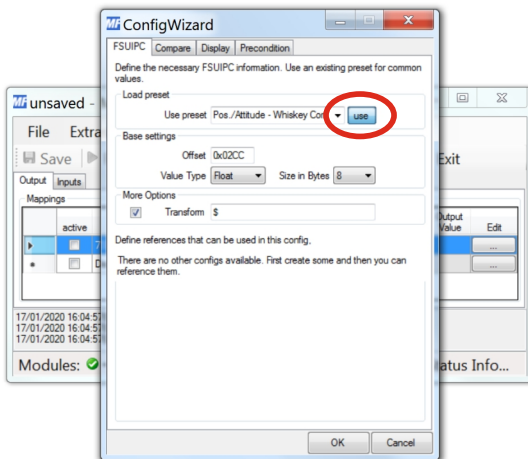
## Step 8

On this screen click on the drop down preset list and chose Whiskey Compass



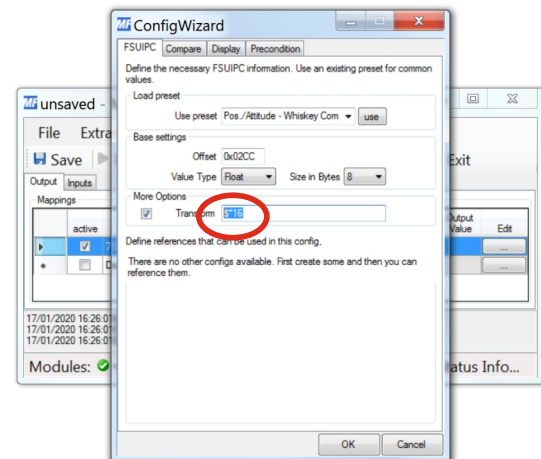
## Step 9

Once selected click on the use button and the correct offset, value etc. will be inserted.



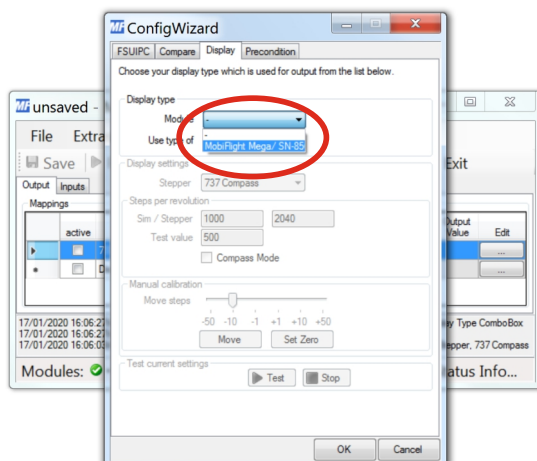
## Step 10

Now change the transform data to \$\*16 This is just a multiplier to make the stepper smoother. Then click Ok.



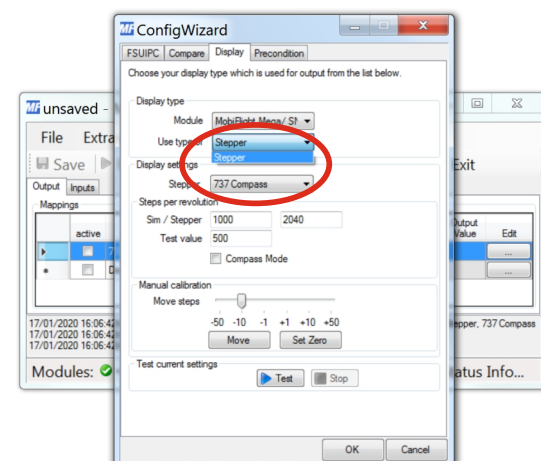
## Step 11

On this screen firstly chose your Arduino module. In this case it will be the only one available; (until you add more output options)



## Step 12

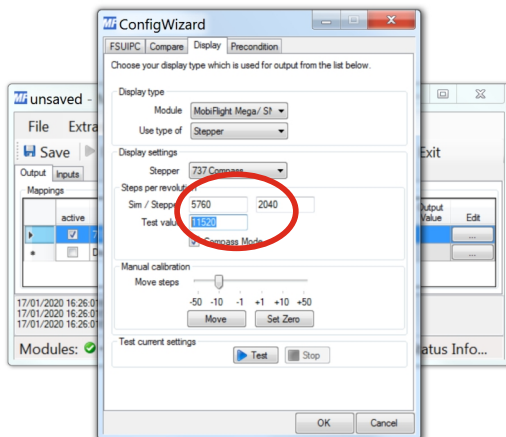
In a similar way chose the type from the lower drop down lists. The second one down will be Stepper and the bottom one 737 Compass, or whatever you called it





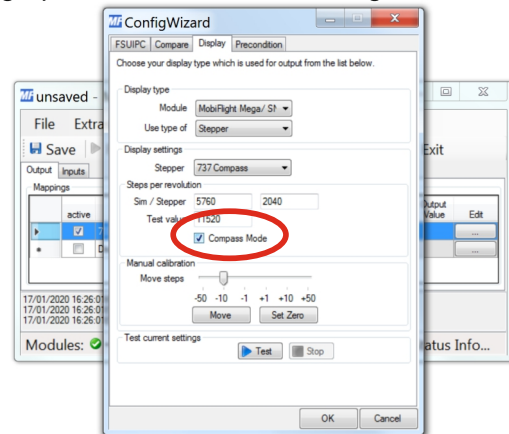
### Step 13

You need to change the default settings here to 5760, 2040 and 11520,



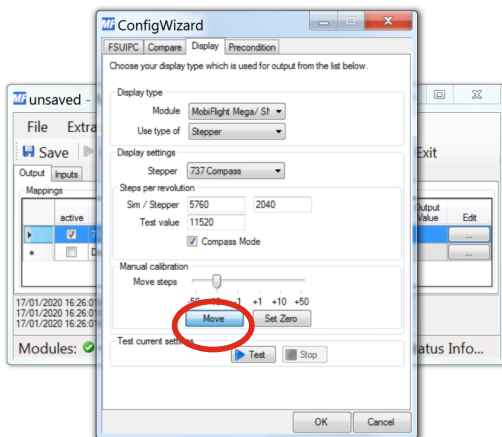
### Step 14

You also need to make sure that Compass mode is ticked. This allows the stepper to go past 360 without reversing back to 0.



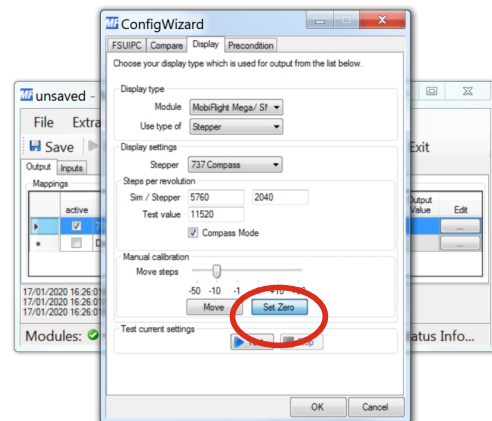
### Step 15

Next with the compass now fully connected use the move command button to move the compass to the zero position.



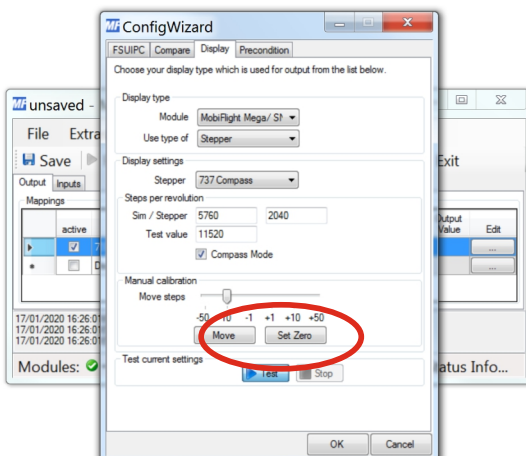
### Step 16

Once the zero position (Usually North) is on the lubber line click the set zero button.



### Step 17

At this point you can test the correct operation of the compass. it should rotate slowly, then return in a sort of random test pattern. When you click the stop button it should return to zero.



### Step 18

Once you're happy it's all working correctly, you can click OK to return to the initial screen and run the other test button. If everything is good, don't forget to save the settings before launching your simulator.

