Garmin GCU478

Instructions

Parts List:

Electronic Parts:

- **(1) Dual shaft encoders Part # EC11EBB24C03**
- **(1) Range Pan Encoder Part # RKJXT1F42001**
- **(3) Single shaft encoders Part # EC11E15244G1**
- **(51) white LED tactile switches 6x6x7**
- **(10) 3mm round LED's white color**
- **(4) 2x3x4mm rectangle LED's white color (these are for the indicator lights)**
- **2.54mm header pins both male and female (various lengths)**
- **Resistors: (20) 240ohm (4) 160ohm (1) 750ohm (2) 10K ohm**
- **(1) 100uf Capacitor part number C713345 on LCSC.com**
- **(1) Adruino Mega2560 Pro mini (Embed) (for the Mobiflight Control Board)**
- **(1) 16 channel Multiplexer (MUX)**
- **(1) MOSFET Part # RFP30N06LE (used for Mobiflight controlled backlighting)**
- **(1) 2.54mm shunt Jumper**
- **JST 3 pin and 2 pin connectors (you could just use header pins if preferred**

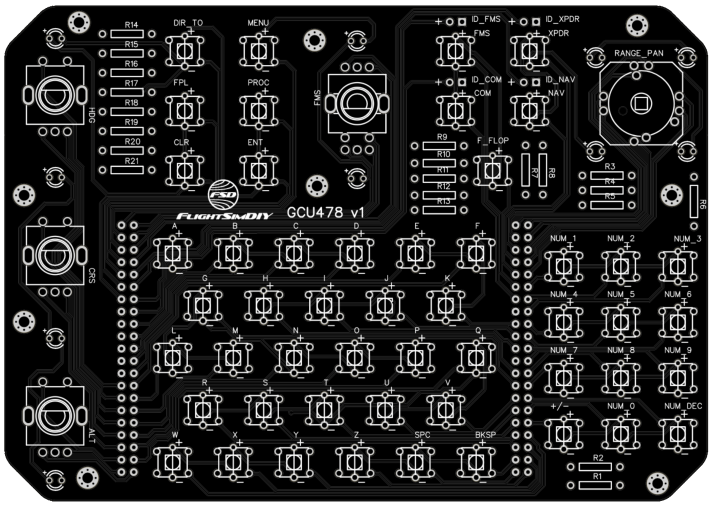
Hardware Parts:

- **(5) M2 x 13mm screws**
- **(4) M2 x 27mm screws**
- **(4) M4 x 22mm bolt**
- **(4) mm Nylon Lock Nut**

Important Notes:

The part numbers listed are the parts that these PCB's as well as the 3D print files are designed to use. Please use caution when using other components as they may not fit properly.

PCB Information



Resister Values

Please note that these values are based on using a 12v power supply.

These are the Minimum recommended resistor ratings.

R1 - R17 and R19 - R21 = 240 ohm Minimum.
R18 = 750 ohm Minimum.

On the Control Board **R1 - R4** = 160 ohm minimum

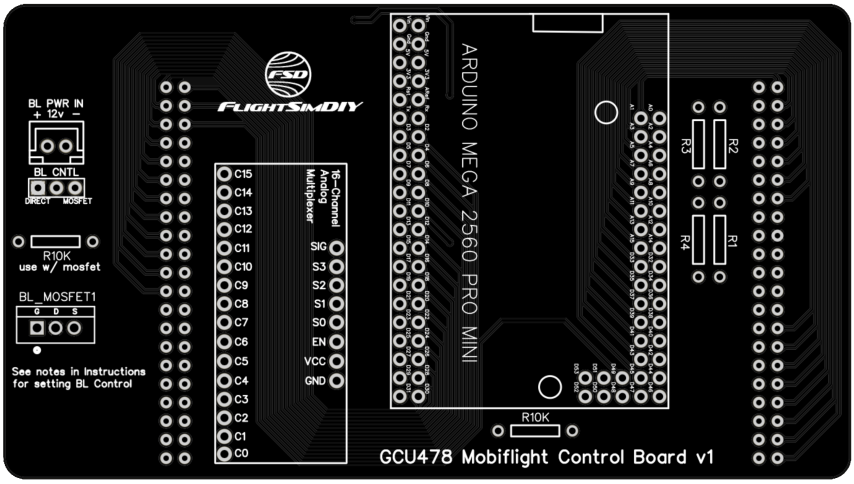
Arduino Card
Use the Mega2560 Pro Mini (Embed) card.

Control Board v1.0

Backlight Power In
12v required
Use a JST 2 pin connector or a 2 pin header

Backlight Control Select
Use a shunt jumper to choose Mobiflight control (MOSFET) or External (Direct) control

When using Mobiflight to control the Backlight dimming, Install a MOSFET and resistor here. This will allow the GCU backlights to dim in concert with the G1000 unit.

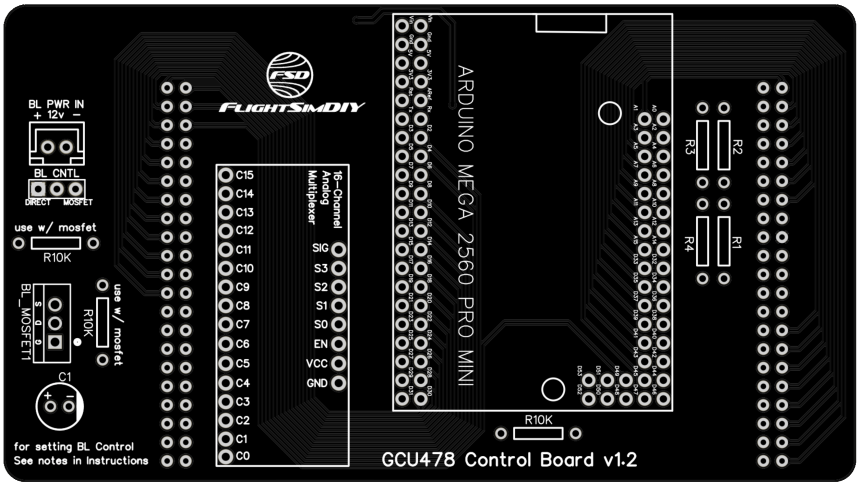


Control Board v1.2

Backlight Power In
12v required
Use a JST 2 pin connector or a 2 pin header

Backlight Control Select
Use a shunt jumper to choose Mobiflight control (MOSFET) or External (Direct) control

If you have version 1.2 of the PCBs then you will also need to install a 100uf capacitor and an additional 10k resistor here. Also, use the Mobiflight Configuration that is labeled for v1.2

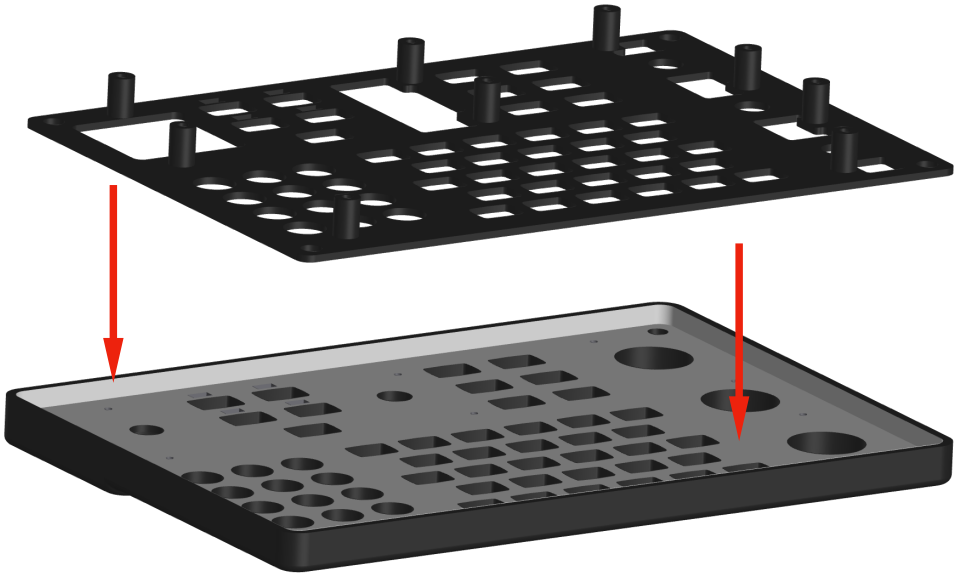


The GCU478 Control Board is used to connect the Faceplate PCB components to an Arduino mega2560 pro mini (embed)

Assembly Instructions

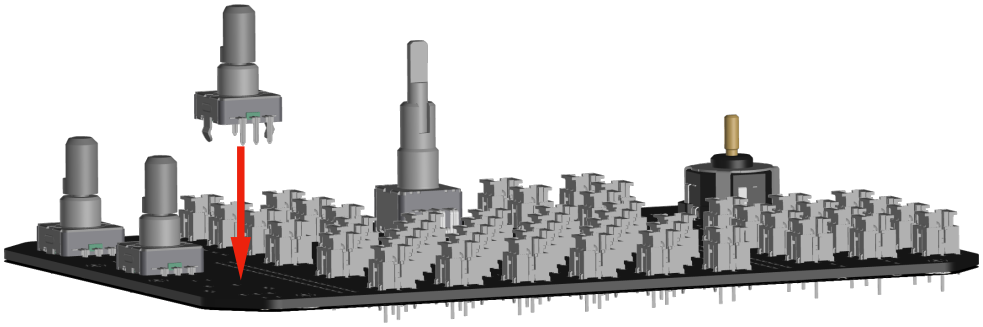
1

Begin by installing the PCB bracket into the rear of the faceplate. This can be glued onto place (although the PCB mounting screws will hold it in place).



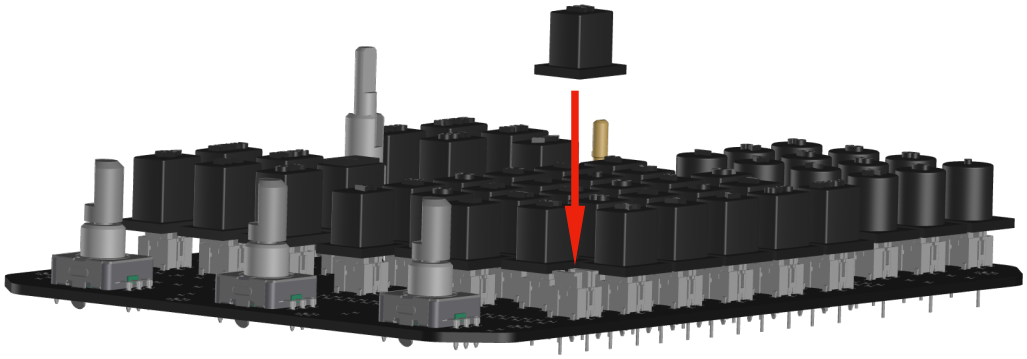
2

Assemble and solder all of the components onto both the faceplate and control board.



3

Place the buttons onto the key switches. The buttons will sit loosely on top of the switches but will stay in place once the faceplate is set in place.



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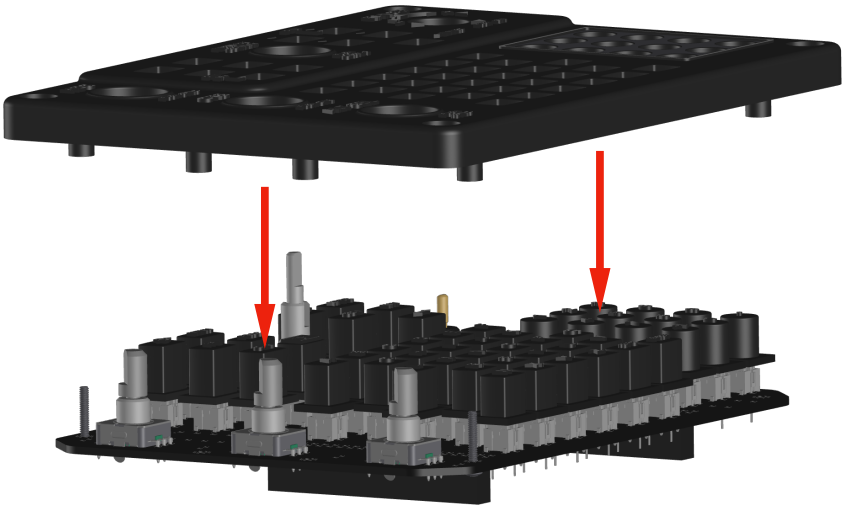
Place the faceplate assembly onto the assembled PCB. Carefully make sure all the buttons slide into the holes in the faceplate



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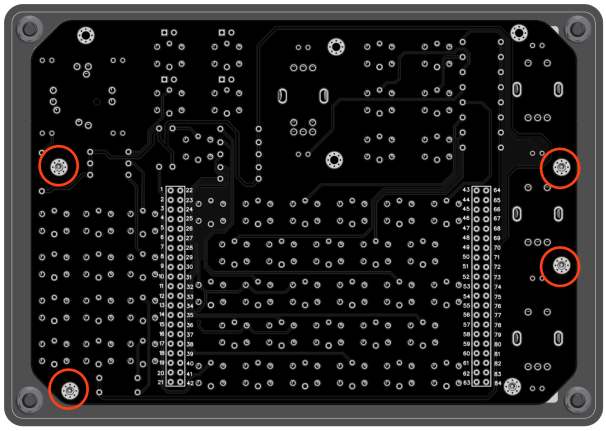
Attach the PCB to the faceplate using (5) M2 x 13mm screws. Make sure to leave the holes circled in red empty.



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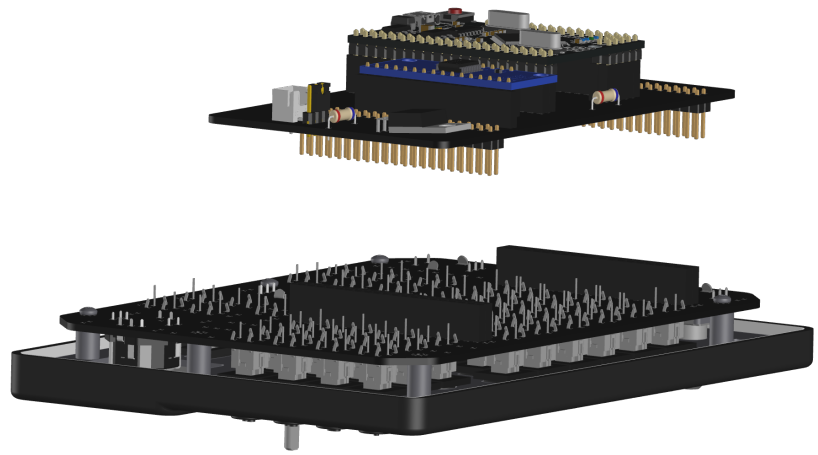
Now we can install the Control board.



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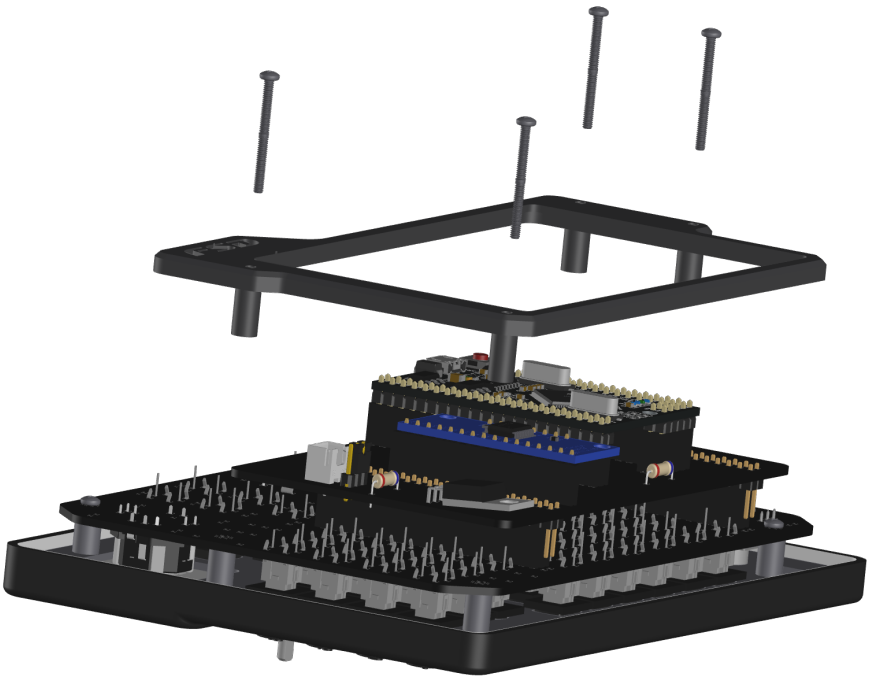
Install the Control Board bracket with (4) M2 x 27mm screws.



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Attach the Dual encoder, HDG, CRS, ALT and the range pan knobs.

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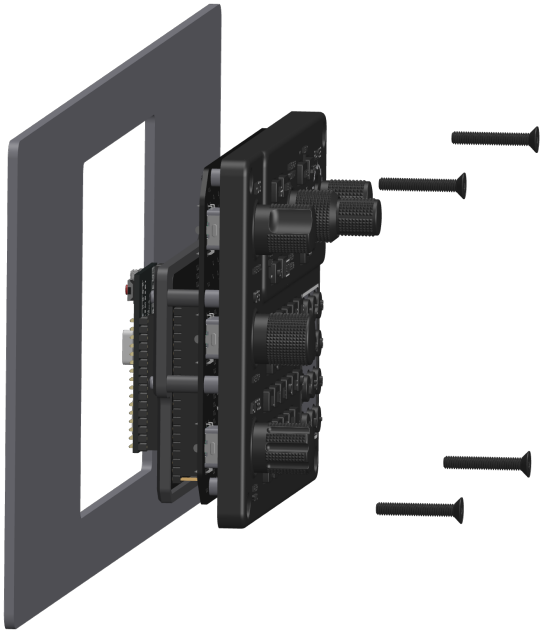
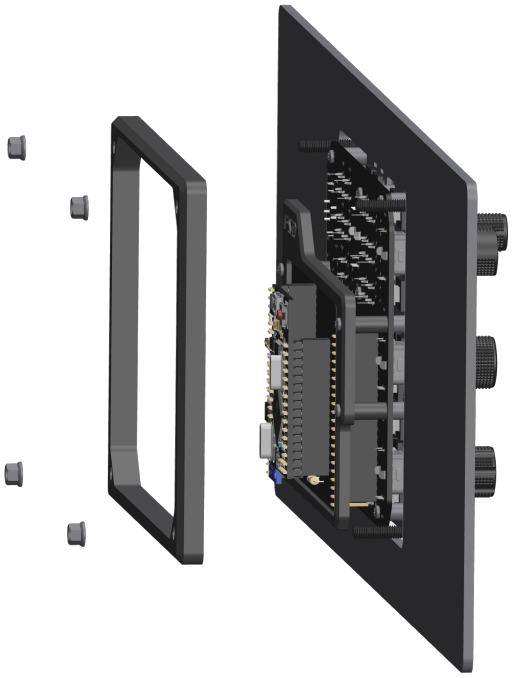
Install the unit into the cutout in your instrument panel and insert (4) M4 x 22mm. (Note that these are minimum lengths. If your panel is thicker than 1/8 inch then you'll need longer bolts).



10

Install the rear panel mount bracket and (4) M4 lock nuts.



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Complete…

Now you can plug the Arduino into your pc via usb and plug you 12v power supply into the backlight power connector. Follow the Mobiflight instructions on the website for installation of the Mobiflight configuration files.