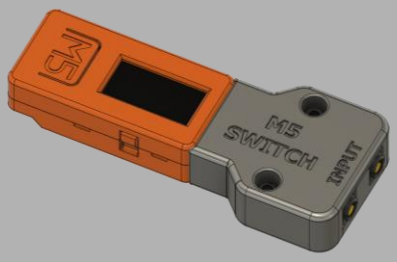


M5 ACCESS SWITCH INPUT ASSEMBLY GUIDE (V1.0)

A wireless switch interface device

Milad Hajihassan

https://github.com/milador/M5-Access-Switch-Input

Contents

Components List

1. M5STICKC PLUS ESP32-PICO IOT KIT **x 1**
2. SJ-43514 3.5MM TRRS AUDIO JACK **x 2**
3. LTV-817 OPTOISOLATR **x 2**
4. 8 POSITION MALE RIGHT ANGLE HEADER **x 1**
5. 1K OHM 1/4W RESISTOR **x 2**
6. 470 OHM 1/4W RESISTOR **x 2**
7. M2.5 SCREW (8MM) **x 2**
8. M2.5 SCREW NUT **x 2**

The bill of materials can also be downloaded from GitHub repository under main directory.

https://github.com/milador/M5-Access-Switch-Input/blob/main/Documentation/M5_Access_Switch_Input_BOM.csv

Software

The Switch Input software can be downloaded from the GitHub repository under software directory.

https://raw.githubusercontent.com/milador/M5-Access-Switch-Input/develop/Software/M5_Access_Switch_Input_Software/M5_Access_Switch_Input_Software.ino

Installing Arduino IDE

The Arduino IDE is required to compile and upload the source code to the MCU in your M5StickC device. You can download and install the Arduino from official Arduino website that you can find using following link:

https://www.arduino.cc/en/software

Installing Arduino Libraries

The following instructions on how to install additional Arduino libraries helps you to get started with setting up Arduino IDE with required libraries and dependencies.

https://www.arduino.cc/en/guide/libraries

Board Support Packages

You can find the official instructions to install Board Support Packages on M5Stack website using following link:

https://docs.m5stack.com/en/quick_start/m5stickc/arduino

Alternatively, you can perform following instructions to install Board Support Packages:

1. Open and start the Arduino IDE.
2. Go to ***File > Preferences***.
3. Add following link as a new line under ***Additional Board Manager URLs***
    - https://m5stack.oss-cn-shenzhen.aliyuncs.com/resource/arduino/package_m5stack_index.json
4. Restart the Arduino IDE
5. Open the ***Boards Manager*** option from the ***Tools > Board*** menu and install ***M5Stack by M5Stack official***
6. Wait until the IDE finishes installing the cross-compiling toolchain and tools associated with Board Support Package. This may take few minutes.
7. That's it! The installation of Board Support Packages is finished.

Required Software and libraries

The software requirements:

- M5_Access_Switch_Input_Software.ino
- M5StickC Plus
- ESP32-BLE-Keyboard
- StopWatch Library
- EasyMorse Library

Note: This project is using edited version of ***ESP32-BLE-Keyboard*** library by ***T-vK***.

You can use the following instructions to download and install the required libraries:

1) Visit the ***M5StickC-Plus*** library github repository page.
2) Click on ***Code > Download Zip*** to download **M5StickC-Plus**.
3) Extract ***M5StickC-Plus-master.zip*** file
4) Rename ***M5StickC-Plus-master*** folder to ***M5StickC-Plus*** folder under ***M5StickC-Plus-master*** subdirectory.
5) Copy or move ***M5StickC-Plus*** folder to Arduino installation library subdirectory. As an example: This is found under ***C:\Program Files (x86)\Arduino\libraries*** in windows 10.
6) Visit the ***ESP32-BLE-Keyboard*** library github repository page.
7) Click on ***Code > Download Zip*** to download ***ESP32-BLE-Keyboard***.
8) Extract ***ESP32-BLE-Keyboard-master.zip*** file
9) Rename ***ESP32-BLE-Keyboard-master*** folder to ***ESP32-BLE-Keyboard*** folder under ***ESP32-BLE-Keyboard-master subdirectory***.
10) Copy or move ***ESP32-BLE-Keyboard*** folder to Arduino installation library subdirectory. As an example: This is found under ***C:\Program Files (x86)\Arduino\libraries*** in windows 10.
11) Visit the ***StopWatch*** library github repository page.
12) Click on ***Code > Download Zip*** to download ***StopWatch*** library.
13) Extract ***Stopwatch_RT-master.zip*** file
14) Rename ***Stopwatch_RT-master*** folder to Stopwatch folder under ***Stopwatch_RT-master*** subdirectory.
15) Copy or move Stopwatch folder to Arduino installation library subdirectory. As an example: This is found under ***C:\Program Files (x86)\Arduino\libraries*** in windows 10.
16) Visit the ***EasyMorse*** library github repository page.
17) Click on ***Code > Download Zip*** to download EasyMorse library.
18) Extract ***EasyMorse-master.zip*** file
19) Rename ***EasyMorse-master*** folder to ***EasyMorse*** folder under ***EasyMorse-master*** subdirectory.
20) Copy or move ***EasyMorse*** folder to Arduino installation library subdirectory. As an example: This is found under ***C:\Program Files (x86)\Arduino\libraries*** in windows 10.
21) Visit the ***M5_Access_Switch_Input_Software.ino*** raw source code file under ***Software*** directory.
22) Right click on the source code or any place on this page and select ***Save Page As…***
23) Select the directory you would like to save the software in your computer.
24) Change File name from ***M5_Access_Switch_Input_Software*** to ***M5_Access_Switch_Input_Software.ino***
25) Change ***Save*** as type to ***All Files***.
26) Click on ***Save*** button.
27) Open the directory you selected in step 23.
28) Double left click or open ***M5_Access_Switch_Input_Software*** file
29) Arduino IDE will ask your permission to create a new sketch folder named ***M5_Access_Switch_Input_Software*** and move ***M5_Access_Switch_Input_Software.ino*** under this folder.
30) Click on the ***Ok*** button.
31) Arduino IDE should now open the ***M5_Access_Switch_Input_Software.ino*** file automatically.

Uploading Software

Note: Make sure all files are included in your local copy of Software directory before uploading it to the M5StickC device. The libraries can be installed in Arduino libraries.

You can go ahead and upload the downloaded ***M5_Access_Switch_Input_Software.ino*** code to M5StickC using Arduino IDE once all the necessary libraries are installed.

1. Start the Arduino IDE
2. Open ***M5_Access_Switch_Input_Software.ino***
3. Select the Board under ***Tools > Board > M5Stick Arduino Boards*** as ***M5Stick-C-Plus***
4. Select the correct port number under ***Tools > Port*** which should show ***COM XX (M5Stick-C-Plus)***

Note: It's very important to make sure the correct Board and port number are selected as selecting the wrong board may result problems with bootloader of M5StickC device.

5. Press the ***Verify*** button to make sure there is no problem with the software and libraries.
6. Press ***Upload*** button

You can now go ahead and upload the software. Arduino IDE will show you a ***Done Uploading*** message indicating the software is uploaded to your ***M5StickC device***.

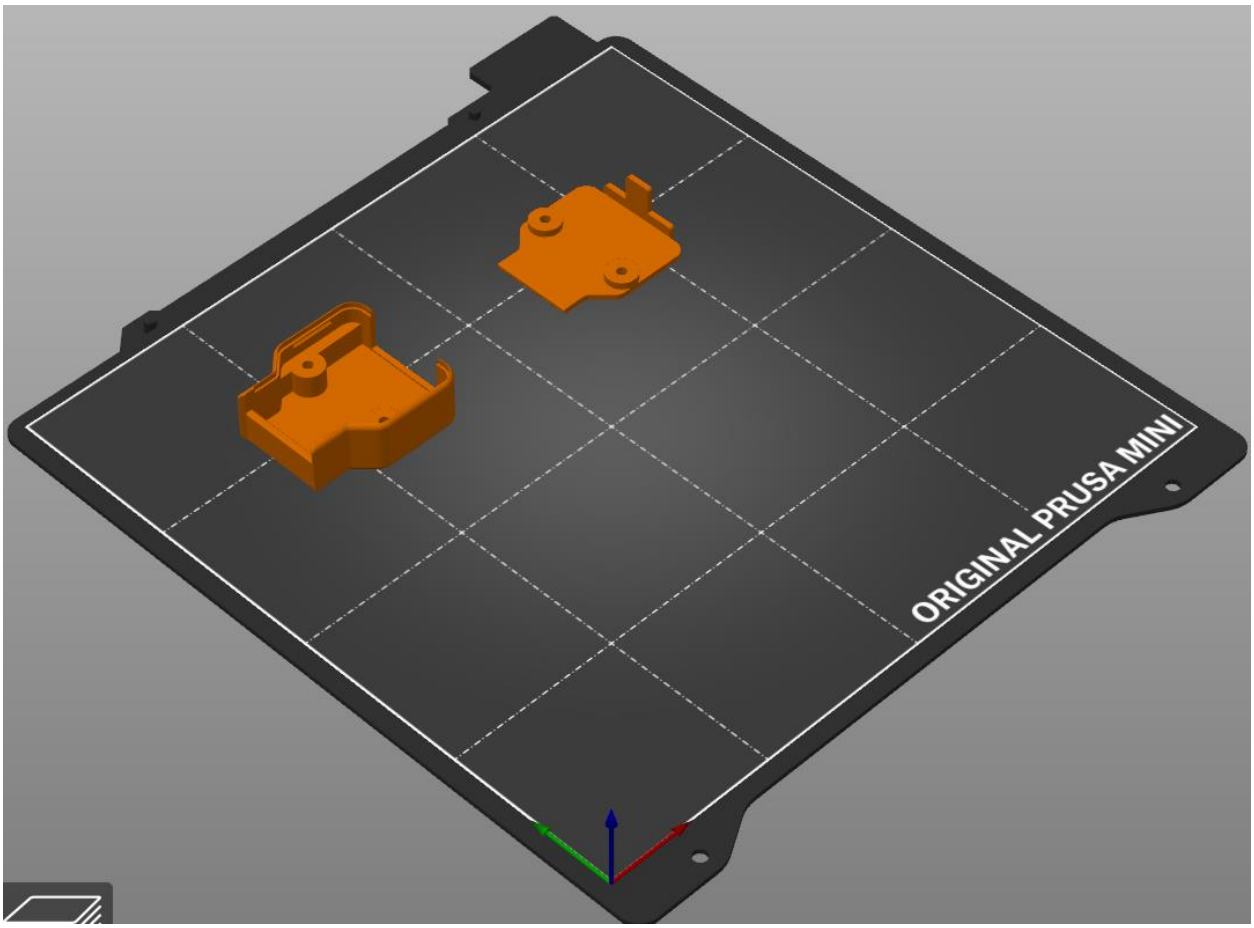
Hardware Assembly

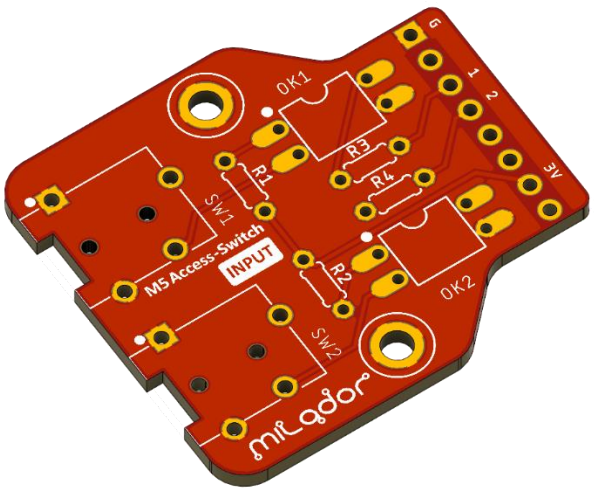
Enclosure design

The enclosure/housing files in STL format can be downloaded from GitHub repository under Hardware and Case subdirectory.

- M5StickC_Switch_Input_Main.STL
- M5StickC_Switch_Input_Bottom.STL

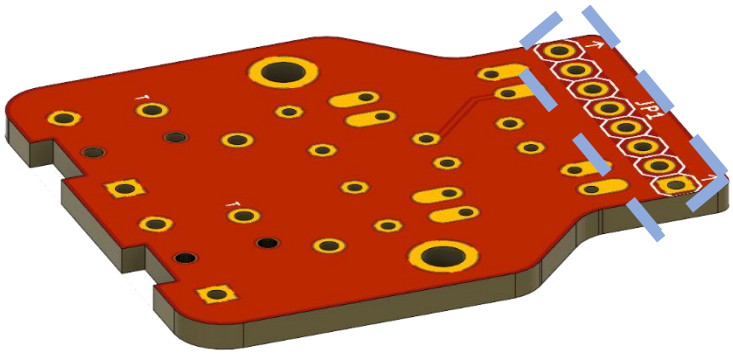
https://github.com/milador/M5-Access-Switch-Input/tree/main/Hardware/Case/STL





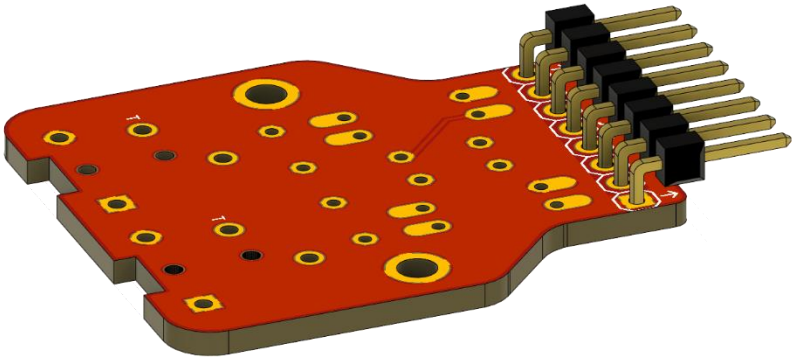
1

Step 1: M5 Switch Input x 1.



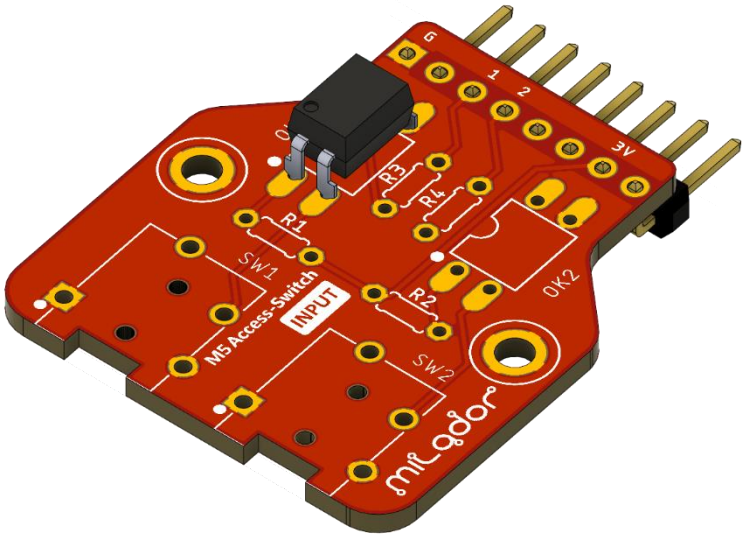
2

Step 2: Locate JP1 label at the back side of PCB which indicates 8 pin header footprint.



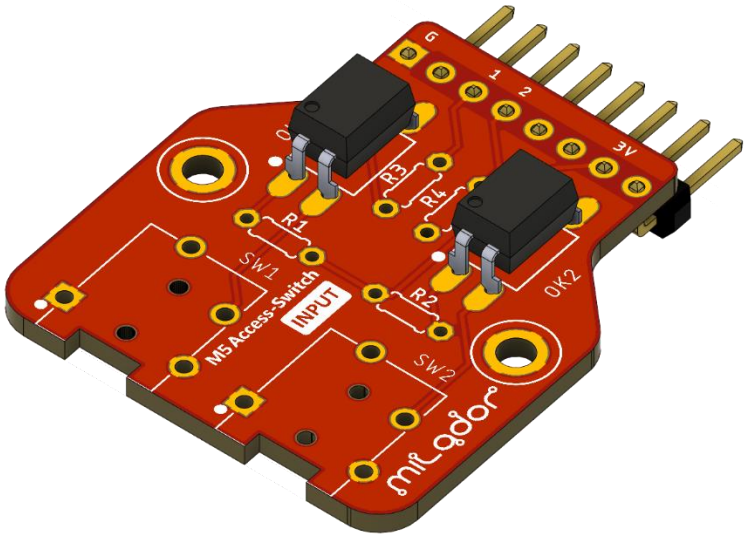
3

Step 3: Solder 8 pin Right-Angle Male header.



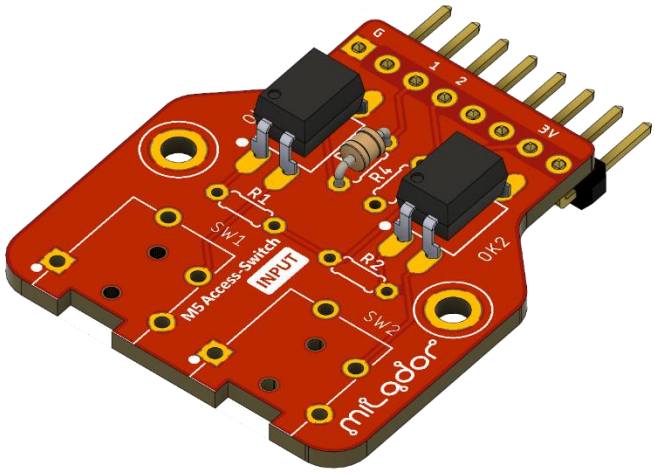
4

Step 4: Solder the first LTV-817 Optoisolator (OK1).



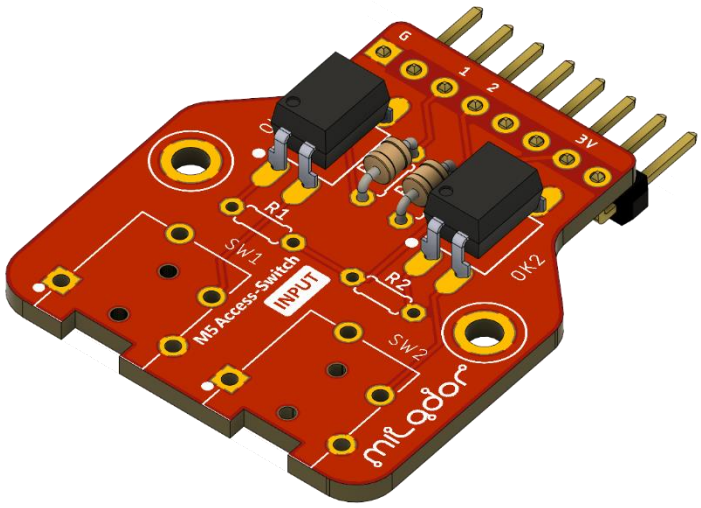
5

Step 5: Solder the second LTV-817 Optoisolator (OK2).



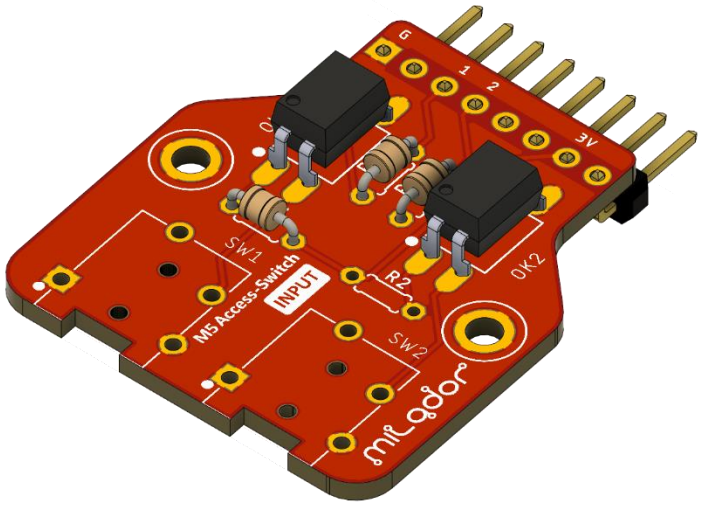
6

Step 6: Locate R3 resistor label on the PCB and solder the first 470 Ohm resistor.



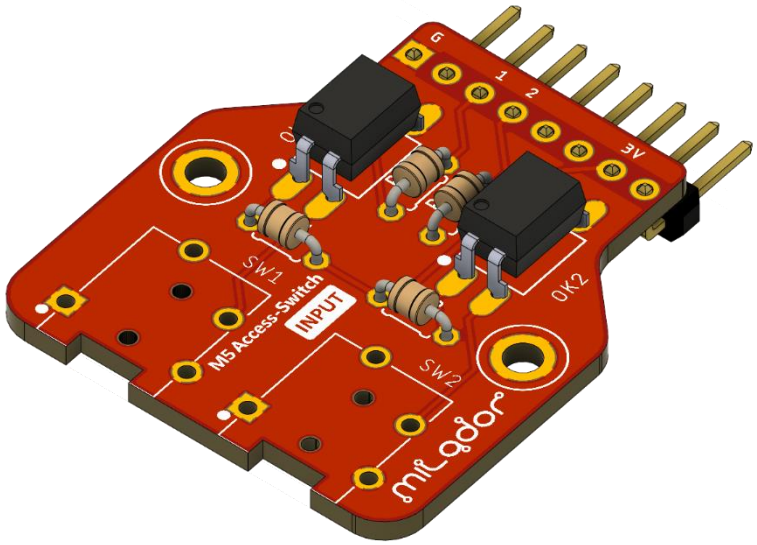
7

Step 7: Locate R4 resistor label on the PCB and solder the second 470 Ohm resistor.



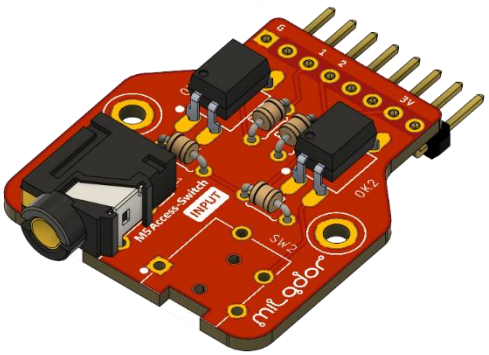
8

Step 8: Locate R1 resistor label on the PCB and solder the first 1K Ohm resistor.



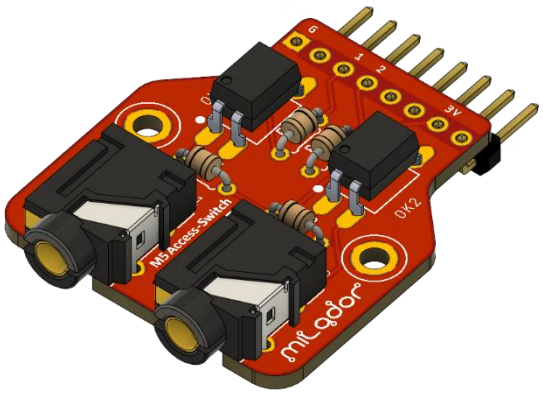
9

Step 9: Locate R2 resistor label on the PCB and solder the second 1K Ohm resistor.



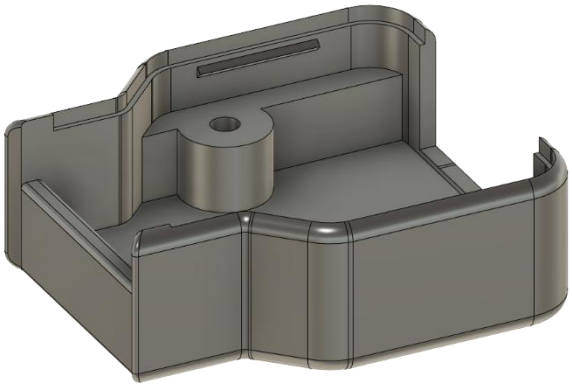
10

Step 10: Solder the first SJ-43514 3.5MM TRRS Audio Jack (SW1).



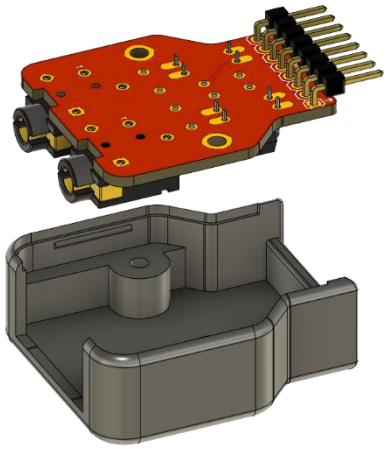
11

Step 11: Solder the second SJ-43514 3.5MM TRRS Audio Jack (SW2).



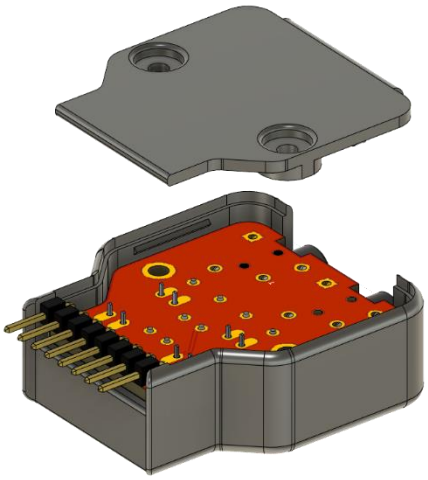
12

Step 12: M5 Switch Input Main case x 1.



13

Step 13: Insert the soldered PCB board into the Main case (Make sure the screw holes align).

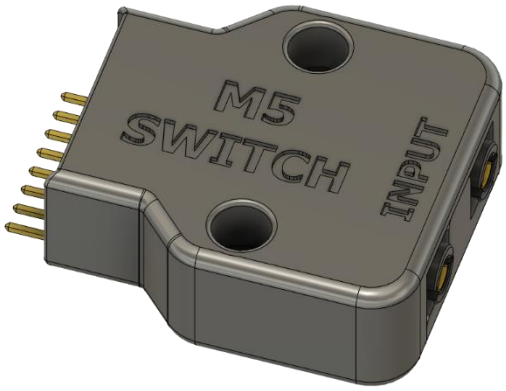


14

Step 14: Snap in the Bottom case to the Main case.

15

Step 15: Make sure the Bottom case is not inserted in an angle.

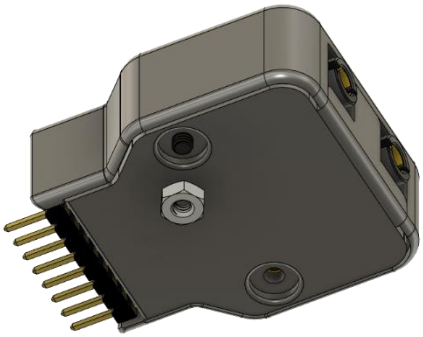


16

Step 16: Turn the case to the top side.

17

Step 17: Insert the first M2.5 screw from top of the case.

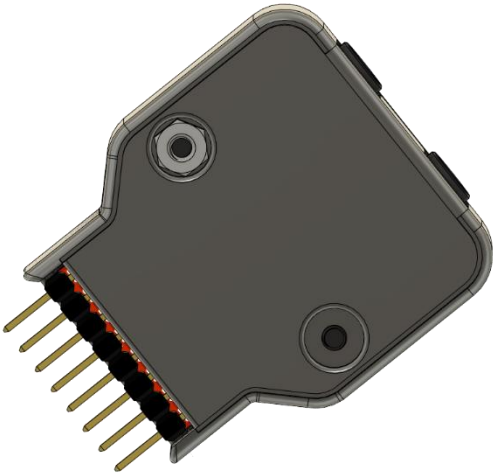


18

Step 18: Insert the first screw nut from bottom side and tighten the screw.

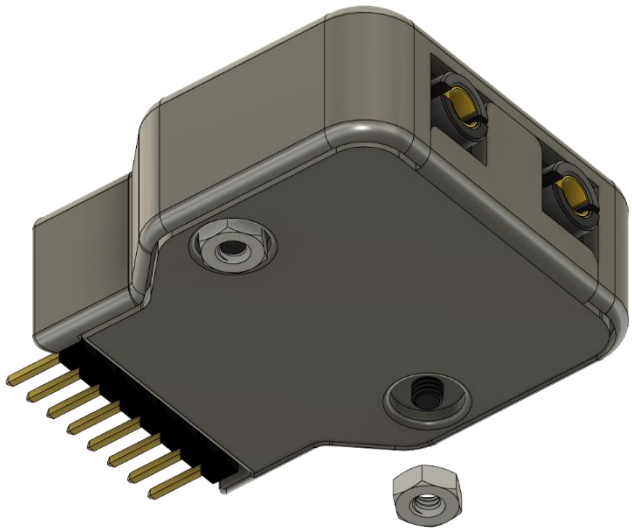
19

Step 19: Insert the second M2.5 screw from top of the case.



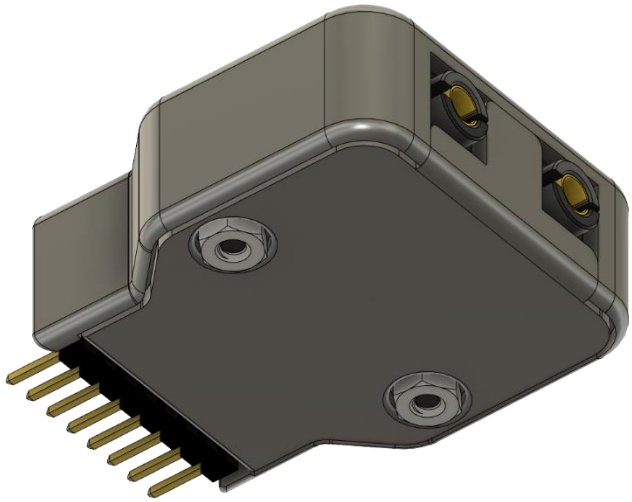
20

Step 20: Make sure the screw is visible from bottom side.



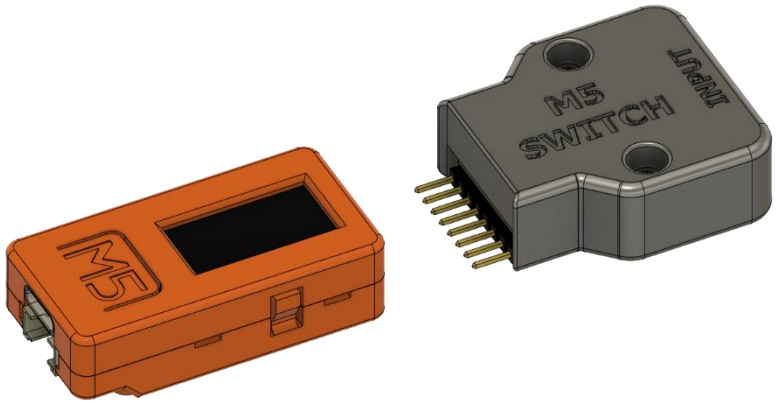
21

Step 21: Insert the second screw nut from bottom side.



22

Step 22: Tighten the second screw nut.



23

Step 23: Stack the Switch Input module into the M5StickC device.

24

Step 24: That's it! The assembly process is complete.