MOD Duo 2019 Full Assembly Guide

MOD Devices GmbH - full version (including topboard)

Document history

Version	Date	Author	Changes
0.0	04-03-2019	J. Verhage	Initial document setup
0.1	05-03-2019	J. Verhage	Drafting text for step 1 through 7
0.2	11-03-2019	J. Verhage	Adding item IDs, revising list of materials, adding photo of materials
0.3	12-03-2019	J. Verhage	Updating text, adding references to item IDs
1.0	14-03-2019	J. Verhage	Adding images to document, final formatting
1.1	10-10-2019	J. Janssen	Add texts for steps of inserting the Bottom Board

About this document

This document describes the pre-assembly procedure for the **MOD Duo 2019** product, designed by **MOD Devices GmbH**.
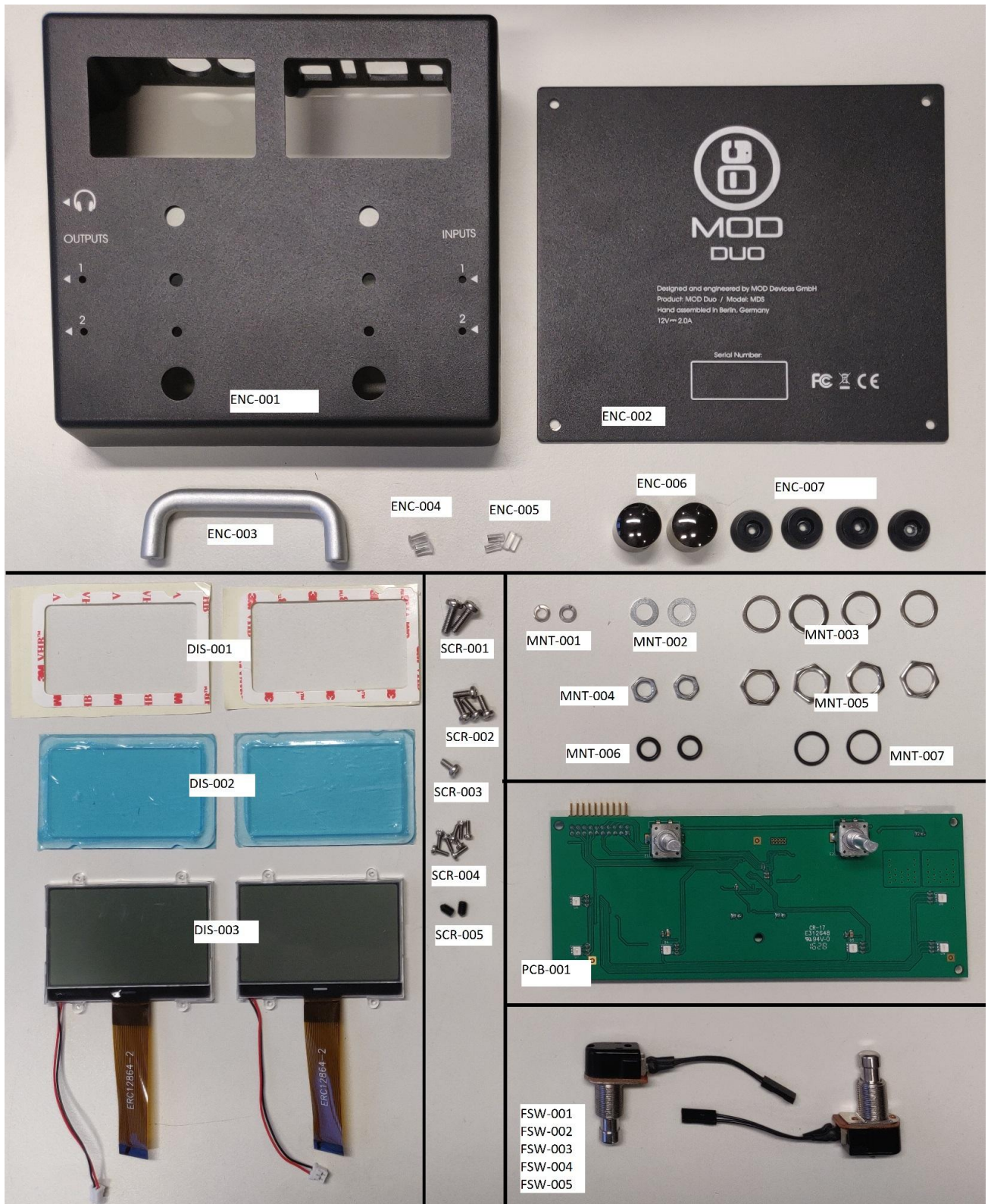
Table of contents

List of materials

Item ID	QTY	Item	Notes
PCB-001	1	MOD controller board	
PCB-002	1	MOD main board	
PCB-003	1	Marsboard CPU	
ENC-001	1	MOD Duo die cast enclosure	
ENC-002	1	MOD Duo bottom cover	
ENC-003	1	MOD Duo U-shape protector	
ENC-004	2	Light pipe PLP 5	
ENC-005	4	Light pipe PLP 2	
ENC-006	2	MOD Duo knob	
ENC-007	4	Rubber foot - Bosetar KOH 1805	
MNT-001	2	DIN127 M4 spring washer	
MNT-002	2	Rotary washer	
MNT-003	4	Footswitch washer	Included with FSW-001
MNT-004	2	Rotary nut	
MNT-005	4	Footswitch nut	Included with FSW-001
MNT-006	2	O-ring NBR70 6.7x1.8mm	
MNT-007	2	O-ring NBR70 12.5x1.8mm	
MNT-008	5	Jack nut	
MNT-009	5	Jack nuts spacer	
SCR-001	2	DIN7985 M4x12 stainless steel bolt	
SCR-002	4	DIN7985 M3x8 stainless steel bolt	
SCR-003	6	DIN7985 M3x6 stainless steel bolt	
SCR-004	8	DIN7985 M2x6 stainless steel bolt	
SCR-005	2	Knob allen set screw	Included with ENC-006
DIS-001	2	3M VHB tape	
DIS-002	2	Transparent polycarbonate display protector	
DIS-003	2	Display ERC12864FSF-2	
FSW-001	2	Footswitch R13-85-A3-05	Photo of materials shows these pieces already assembled into 2 footswitch assemblies.
FSW-002	2	2.54mm 2x1 dupont connector	
FSW-003	4	2.54mm dupont crimp terminal	Only FSW-001 is handed to the

FSW-004	4	Stranded 26AWG copper wire, black color, 5cm length	factory.
FSW-005	4	Heat shrink tubing	FSW-002, FSW-003, FSW-004 and FSW-005 are supplied by the factory
FSQ-001	2	Foam squares 2cm x 2cm, 4mm thick	Not in photo of materials, supplied by factory
CON-001	1	Controller data cable	
CON-002	1	Controller power cable	

Photo of materials

ENC-001
ENC-002
ENC-003
ENC-004
ENC-005
ENC-006
ENC-007

OUTPUTS
INPUTS
1
2
1
2

MOD
DUO

Designed and engineered by MOD Devices GmbH
Product: MOD Duo / Model: MDS
Hand assembled in Berlin, Germany
12V⎓ 2.0A

Serial Number:

FC ☒ CE

DIS-001
DIS-002
DIS-003

ERC12864-2
ERC12864-2

SCR-001
SCR-002
SCR-003
SCR-004
SCR-005

MNT-001
MNT-002
MNT-003
MNT-004
MNT-005
MNT-006
MNT-007

PCB-001

FSW-001
FSW-002
FSW-003
FSW-004
FSW-005

PCB-003

SRC-003

MNT-008

MNT-009

CON-001

CON-002

PCB-002
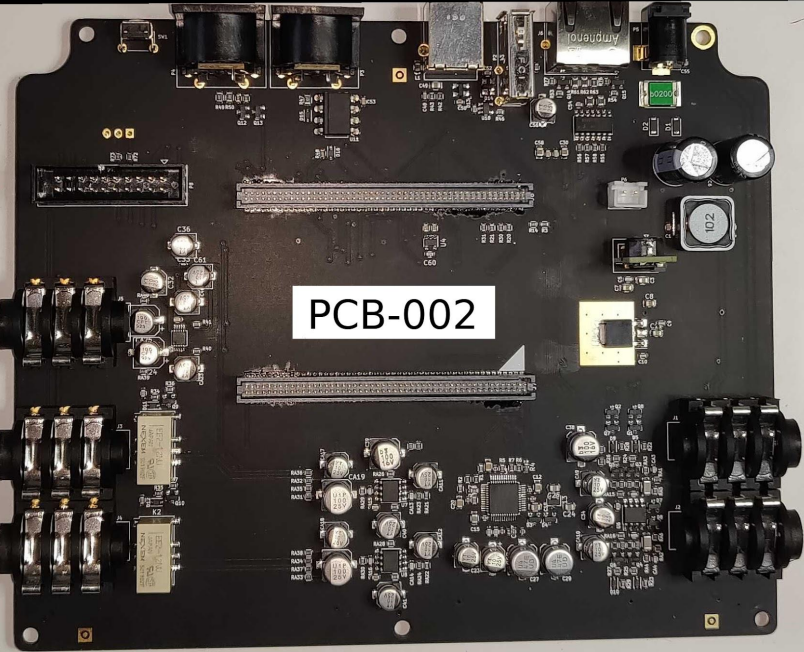
Step 1: preparing the enclosure

- peel off the bottom layer of the the 3M VHB tape **[DIS-001]** and attach to the transparent screen protectors **[DIS-002]**
- clean display protector mounting surface on die-cast enclosure **[ENC-001]**
- peel off the top layer of the 3M VHB tape **[DIS-001]** and attach the transparent screen protectors **[DIS-002]** to the enclosure **[ENC-001]** by applying pressure
- **IMPORTANT**: do not yet remove the protective film from the protectors
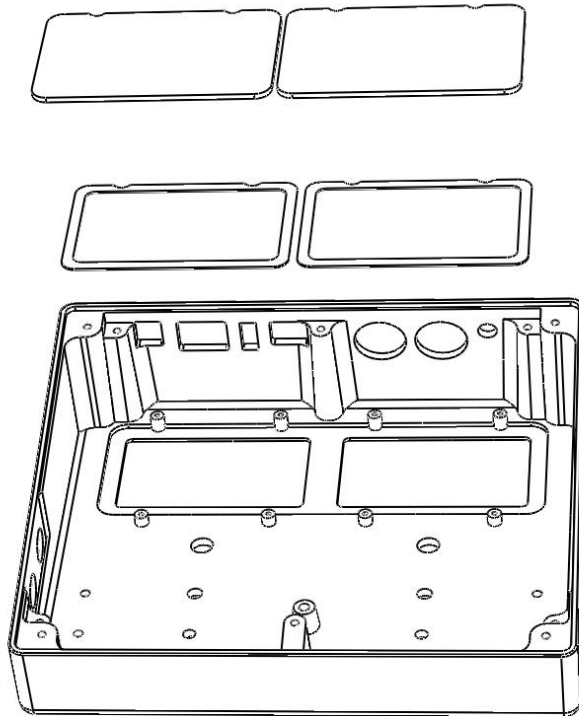
[1: image of how to attach display protectors + 3M tape to enclosure - exploded view]

- attach the u-shaped protector **[ENC-003]** firmly using the m4x12 bolts **[SCR-001]** and the m4 spring washers **[MNT-001]** as shown in the image below
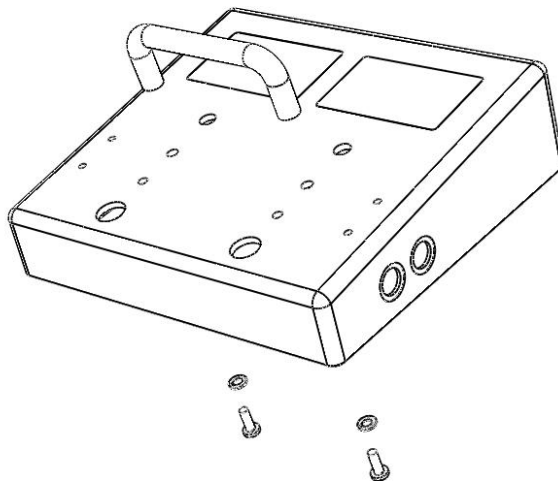
[2: image of how to attach U-shaped protector + m4x12 + m4 spring - exploded view]

● After completing this step the enclosure should look as shown in the image below
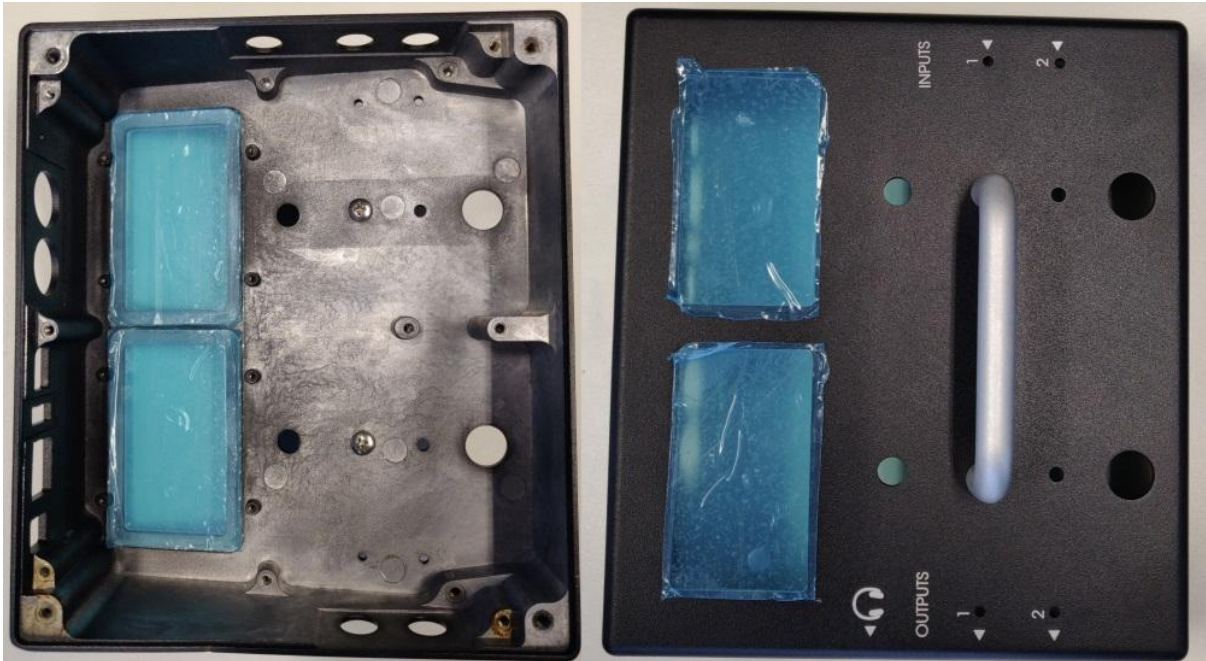
[3: image of enclosure after step 1]

Step 2: inserting the light pipes

● attach light pipes **[ENC-004]** and **[ENC-005]** to the die-cast enclosure **[ENC-001]** by press fitting them as shown in the image below
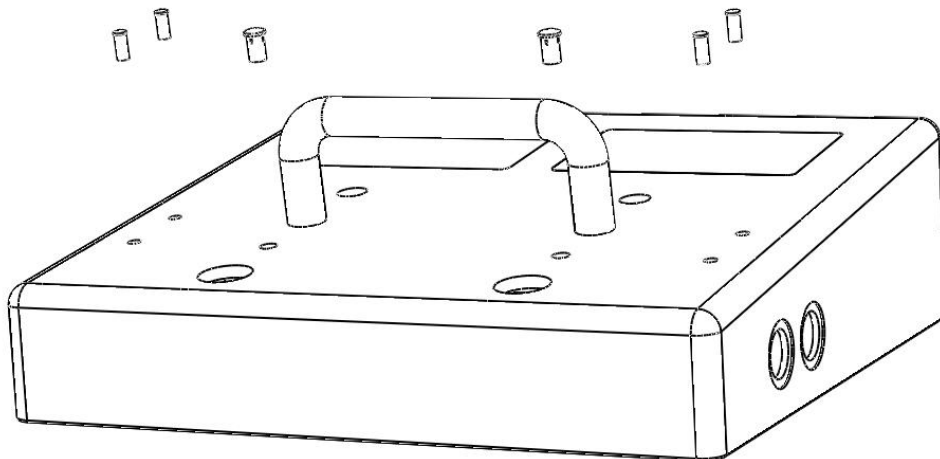
**[4: image of how to attach light pipes to the enclosure - exploded view]**

Step 3: preparing the footswitches

- Attach a crimp terminal **[FSW-003]** on one side of all four electric wires **[FSW-004]**
- Slide the crimp terminal sides of the electric wires into the 2.54mm 2x1 DuPont connectors **[FSW-002]**
- Slide the heatshrink tubing **[FSW-005]** onto each loose end of the electric wires
- Solder the loose ends onto the footswitches **[FSW-001]**
- Slide the heatshrink tubing onto the footswitch solder terminals and heat the heatshrink tubing **[FSW-005]**

- screw 1 nut **[MNT-005]** onto the footswitch
- put 1 washer **[MNT-003]** onto the footswitch
- put 1 O-ring **[MNT-007]** onto the footswitch
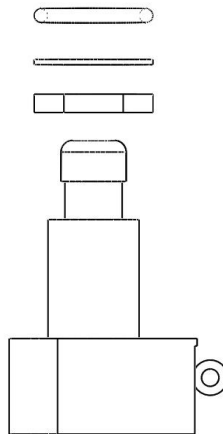
[5: image of how to prepare the footswitch - exploded view]

- The end result should look like the image below
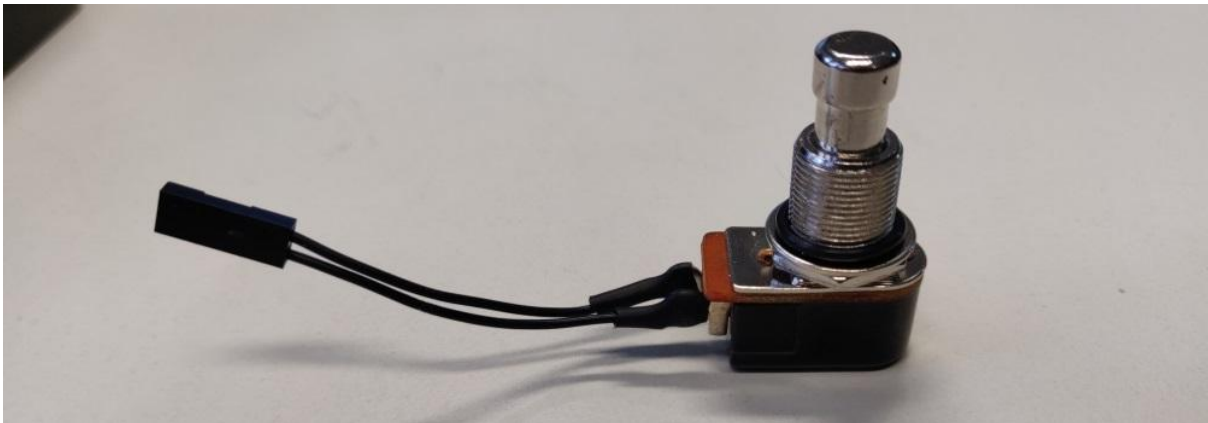
[6: image of prepared footswitch]

Step 4: preparing the displays

- remove protective film from the displays **[DIS-003]**
- remove protective film from the internal side of the transparent protectors **[DIS-002]**
- **IMPORTANT**: do not remove the protective film from external side of the transparent protectors
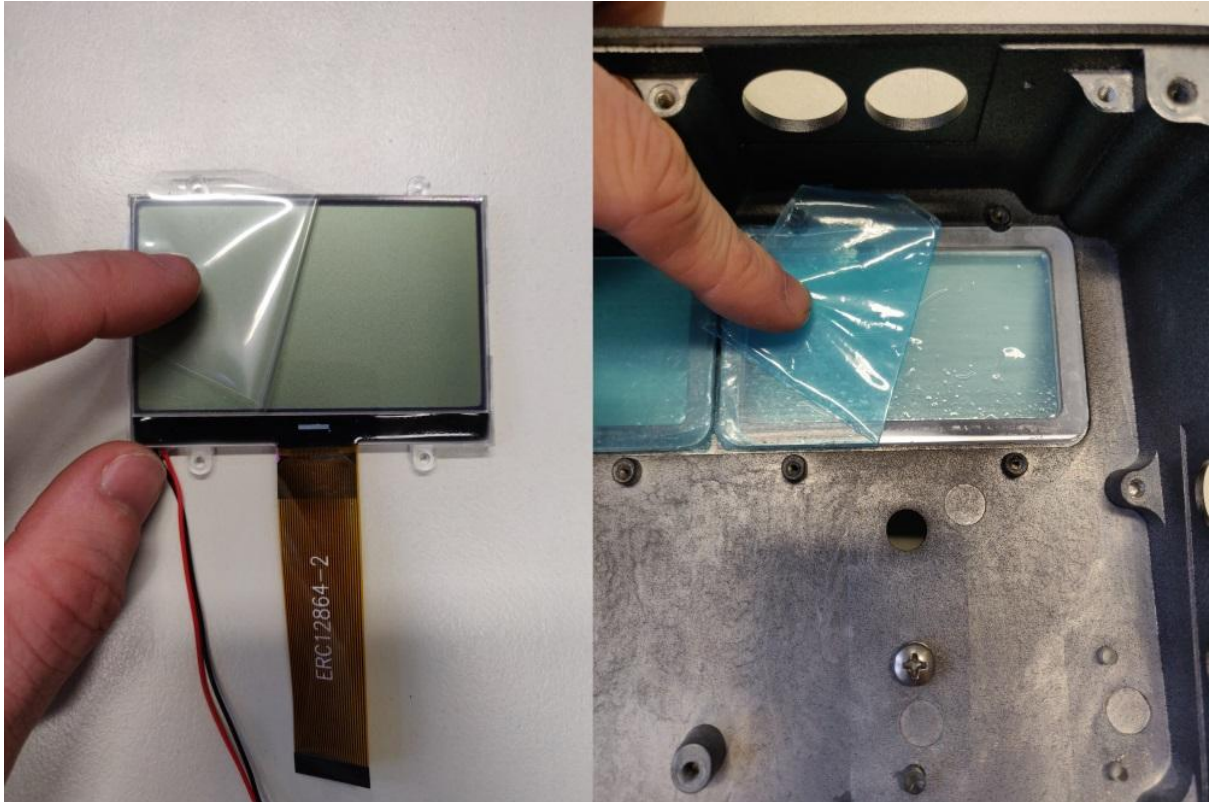
[7: removing protective film from display and internal side of transparent protector]

Step 5: preparing the topboard

- put 1 O-ring **[MNT-006]** on the left encoder of the topboard **[PCB-001]**
- put 1 O-ring **[MNT-006]** on the right encoder of the topboard **[PCB-001]**
- put the 2 foam pieces **[FSQ-001]** over the protruding encoder pins in the topboard **[PCB-001]**

- The end result should look like the image below
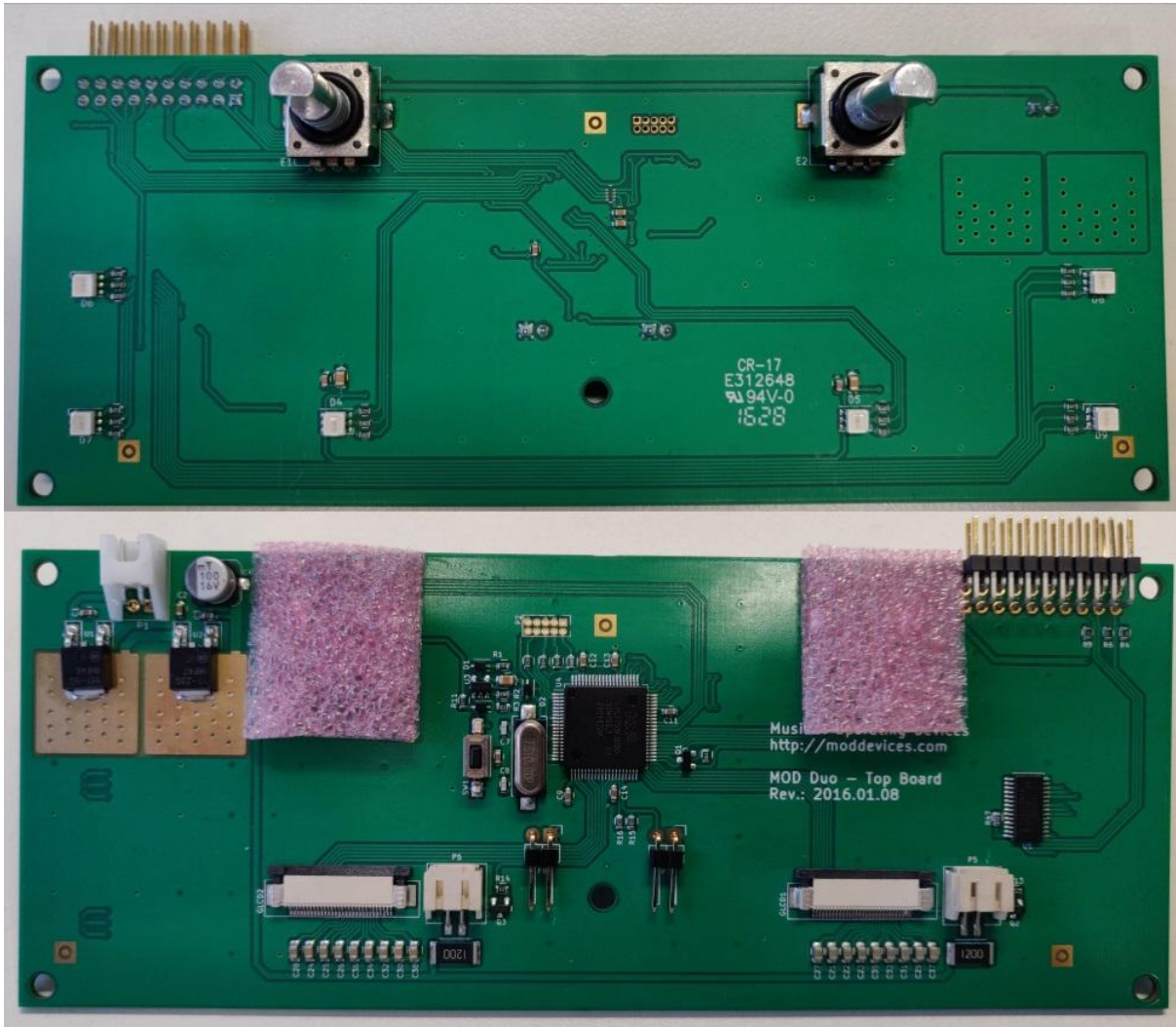
**[8: image of prepared topboard - front and back sides]**

Step 6: assembly procedure

- Attach the prepared footswitches **[FSW-001]** to the enclosure **[ENC-001]** using a washer **[MNT-003]** and a nut **[MNT-005]**
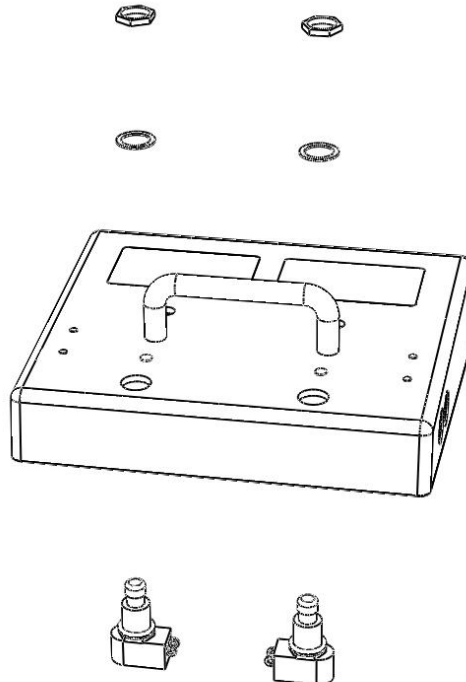
[9: image of how to attach footswitch to enclosure - exploded view]

- Attach the 2 displays **[DIS-003]** using the 8 M2x6 screws **[SCR-004]**
- **IMPORTANT:** make sure that there is no dust between the displays **[DIS-003]** and the transparent display protectors **[DIS-002]**
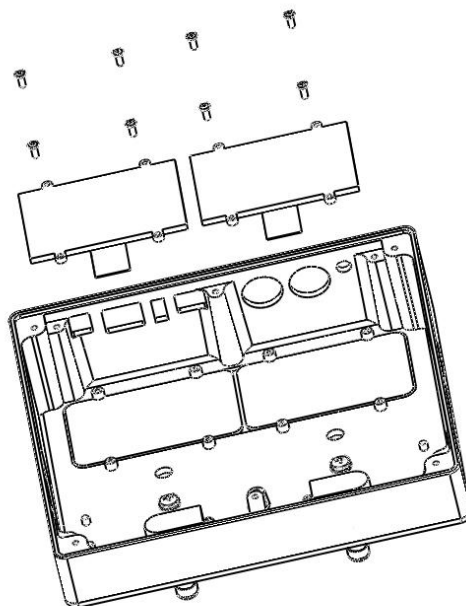
[10: image of how to attach displays to enclosure - exploded view]

- Attach the topboard **[PCB-001]** using 1 M3x6 screw **[SCR-003]** on the inside, and washers **[MNT-002]** and nuts **[MNT-004]** on the outside of the enclosure
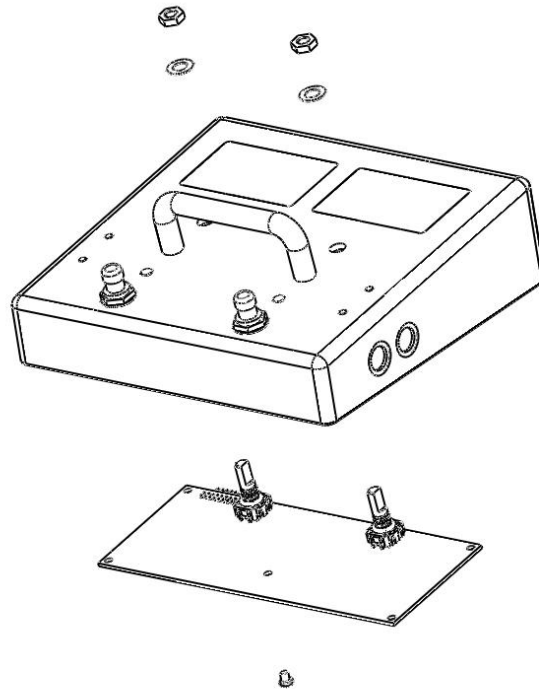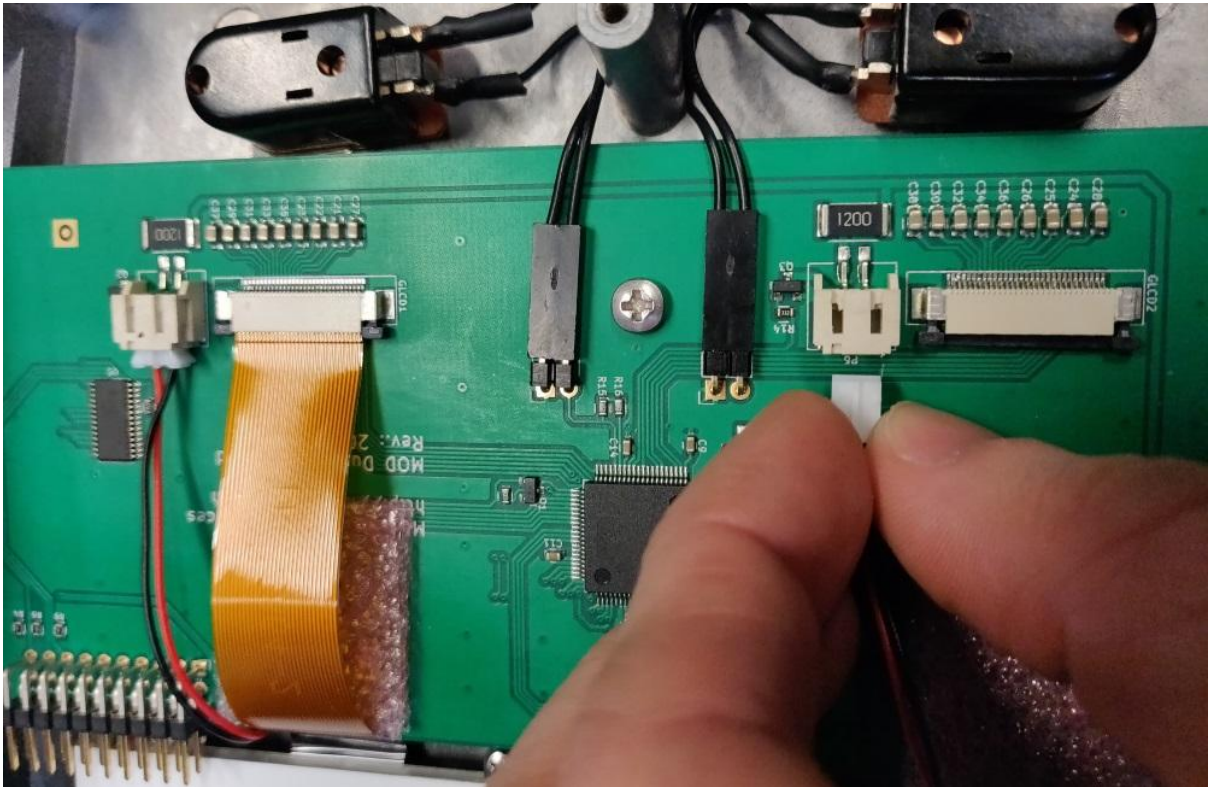

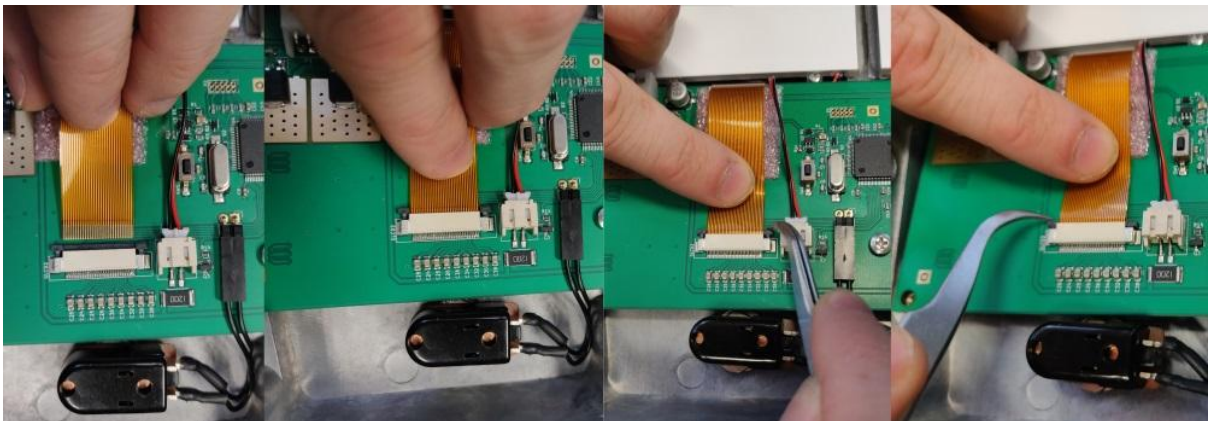**[11: image of how to attach the topboard - exploded view]**

- Connect the footswitches' **[FSW-001]** cables to the topboard **[PCB-001]**
- Connect the displays' **[DIS-003]** power cables to the topboard **[PCB-001]**
- Connect the displays' **[DIS-003]** data cables to the topboard **[PCB-001]**
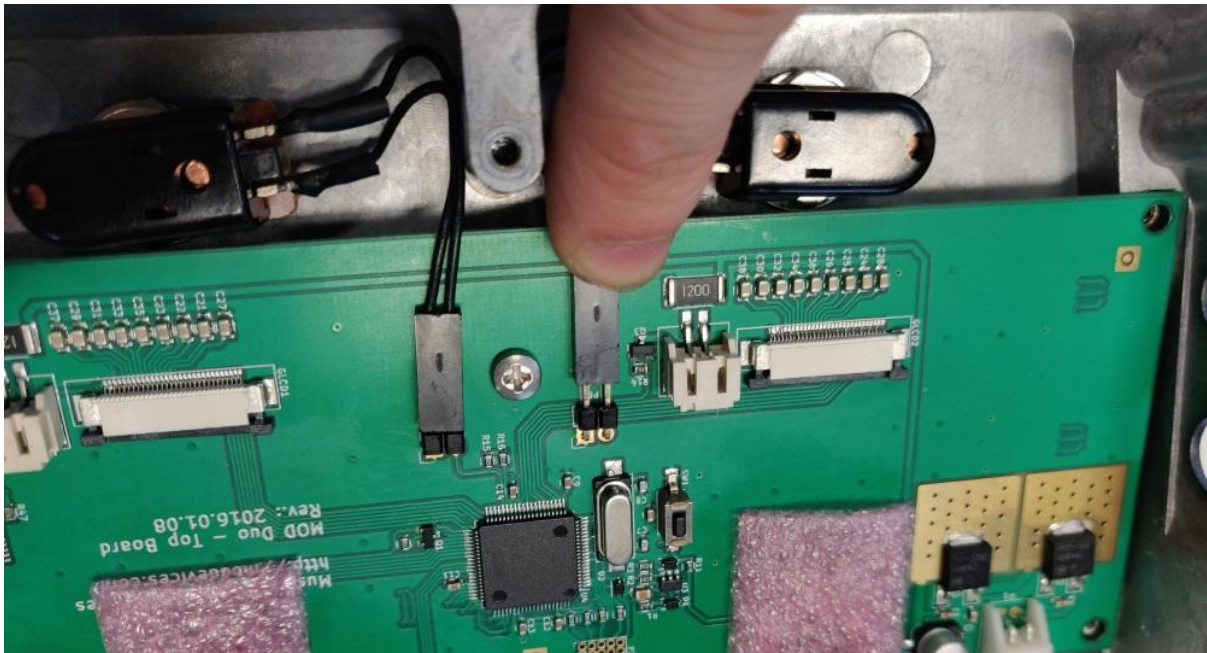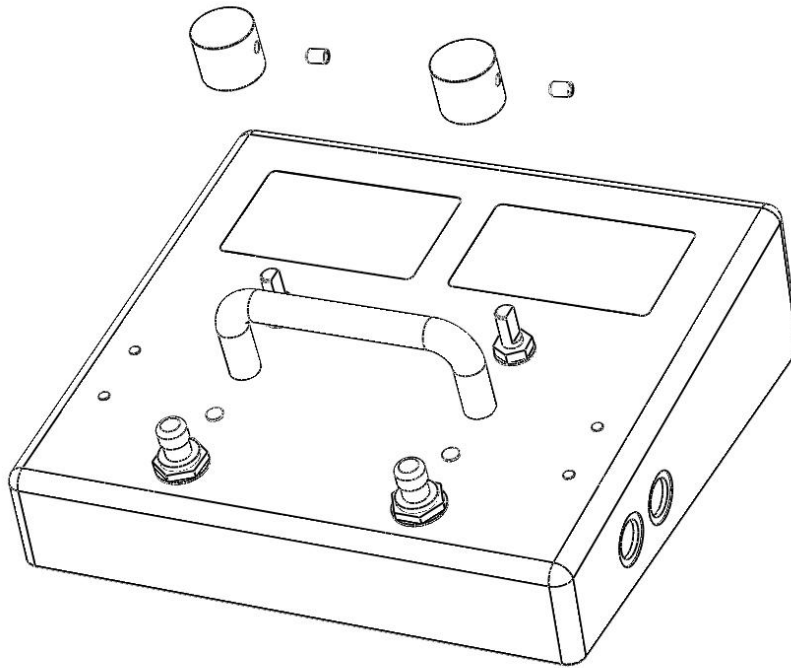

[12: image of connecting footswitch cables]

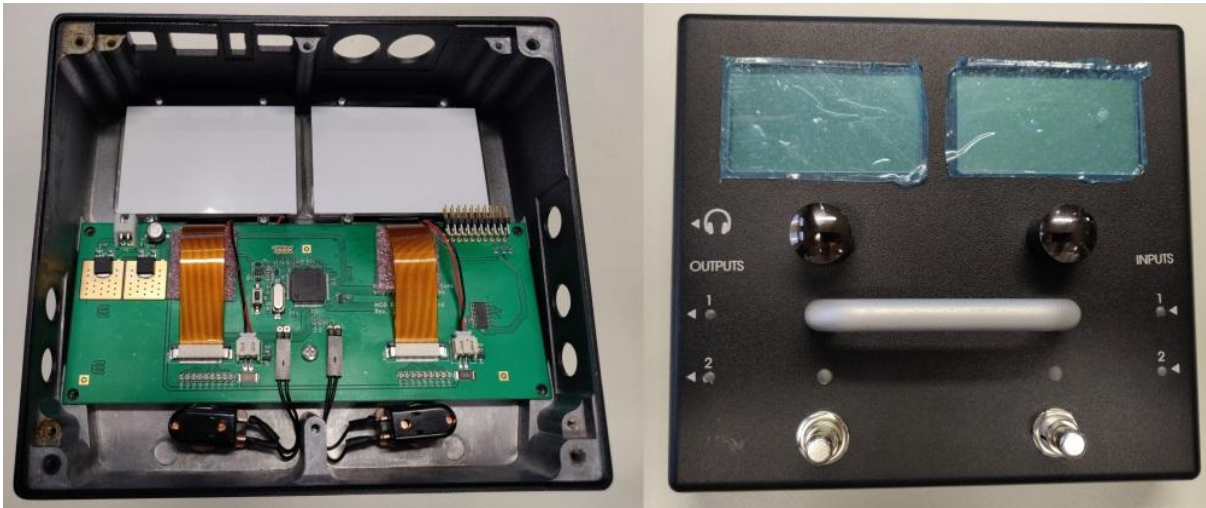**[13: image of connecting display power cable]**

[14: image of connecting display data cable]

- Attach the knobs **[ENC-006]** to the encoder shafts by tightening the knob allen set screw **[SCR-005]** to the flat side of the encoder shafts.

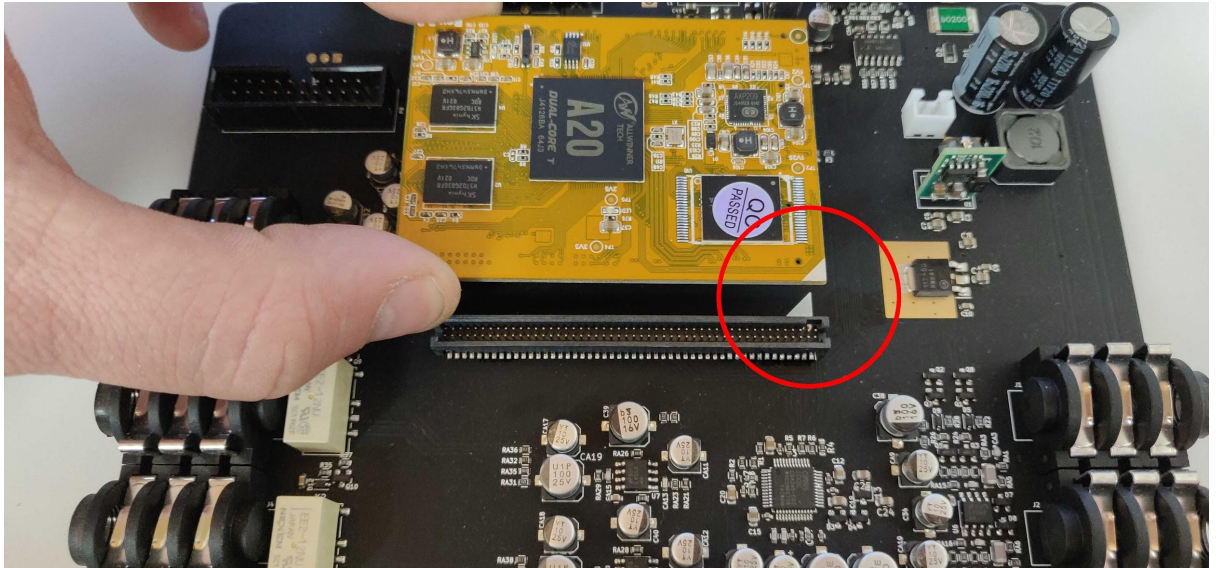**[15: image of attaching the knobs to encoder shafts - exploded view]**

- The end result should look like the images below

**[16: image of final result - internal and external]**

Step 7: Inserting the Bottom board

- Insert the Marsboard CPU **[PCB-003]** into the main-board **[PCB-002]**. Make sure the triangle marker of the Bottom Board and the marker of the Marsboard align
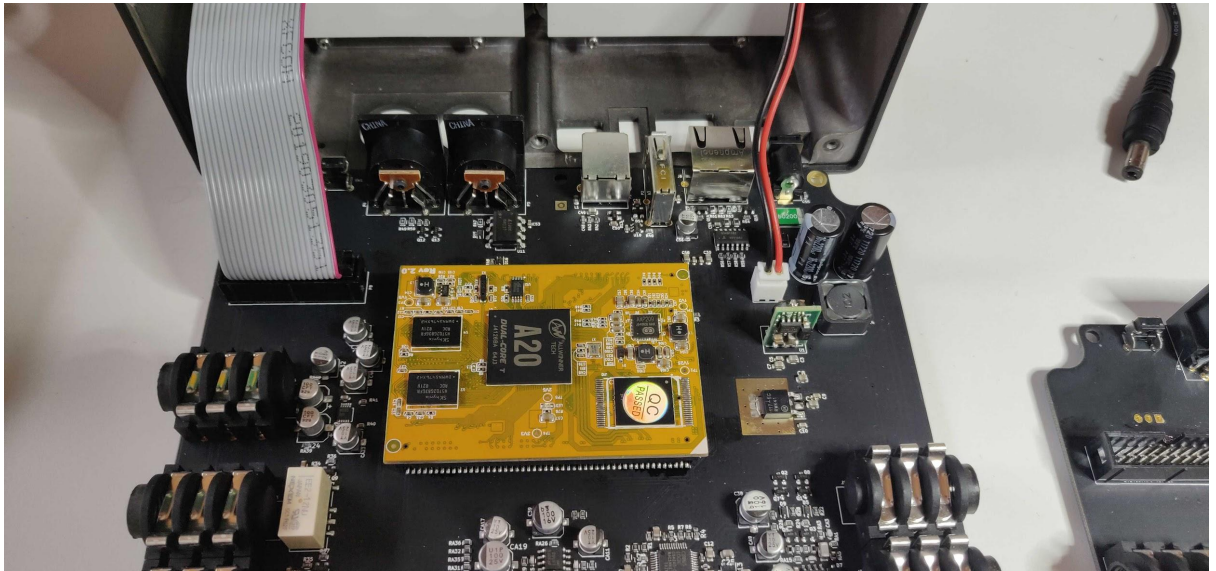

[17:Inserting the Marsboard]

- Connect the data cable **[CON-001]** and power cable **[CON-002]** to the controller PCB **[PCB-001]** as shown below. Please mind the orientation of the cables
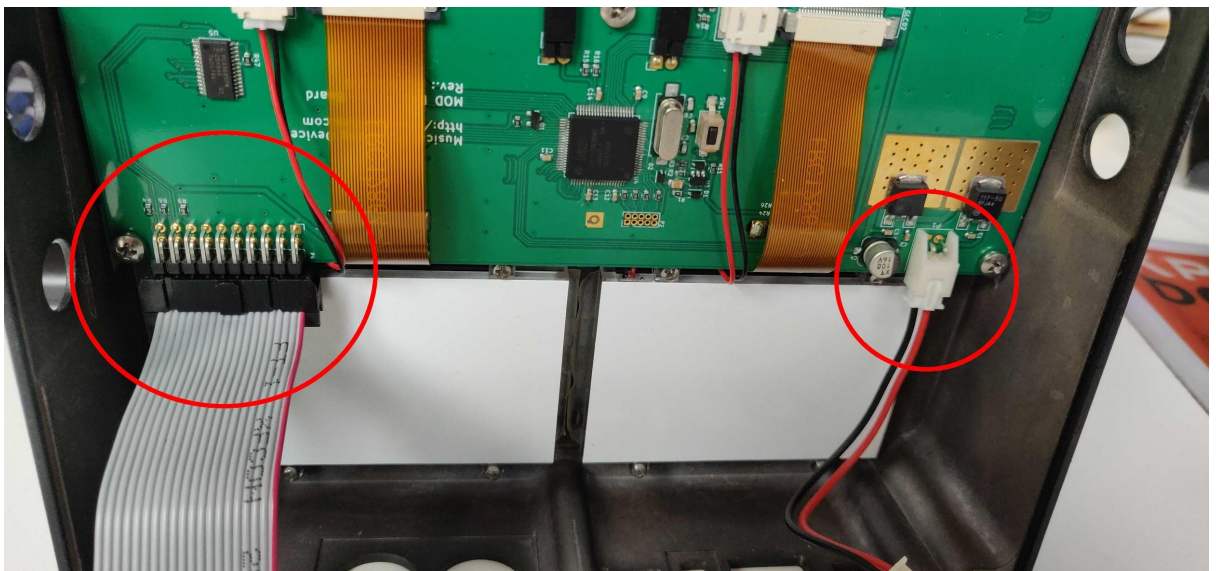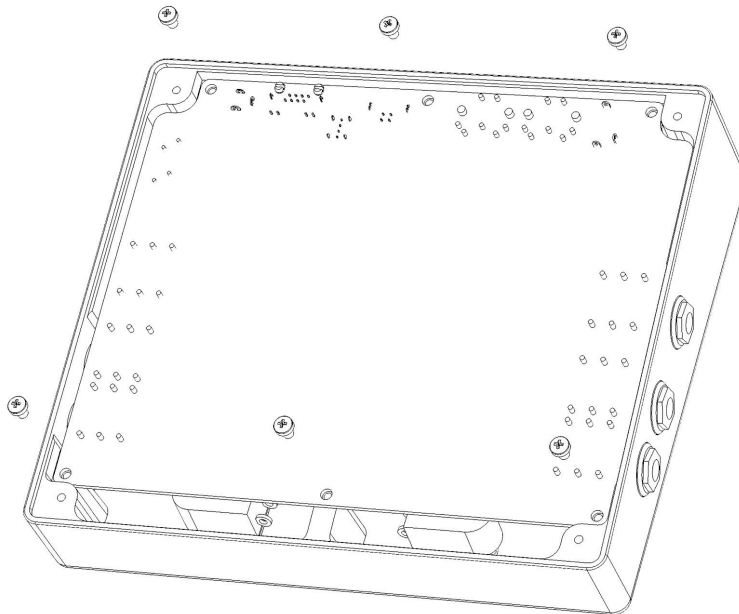

[19: connecting cables to the controller PCB]

- Connect the data cable **[CON-001]** and power cable **[CON-002]** to the bottom PCB **[PCB-002]** as shown below.

[19: connecting cables to the bottom PCB]

- Fold the bottom PCB into the enclosure and attach it using the 6 screws **[SCR-003]**
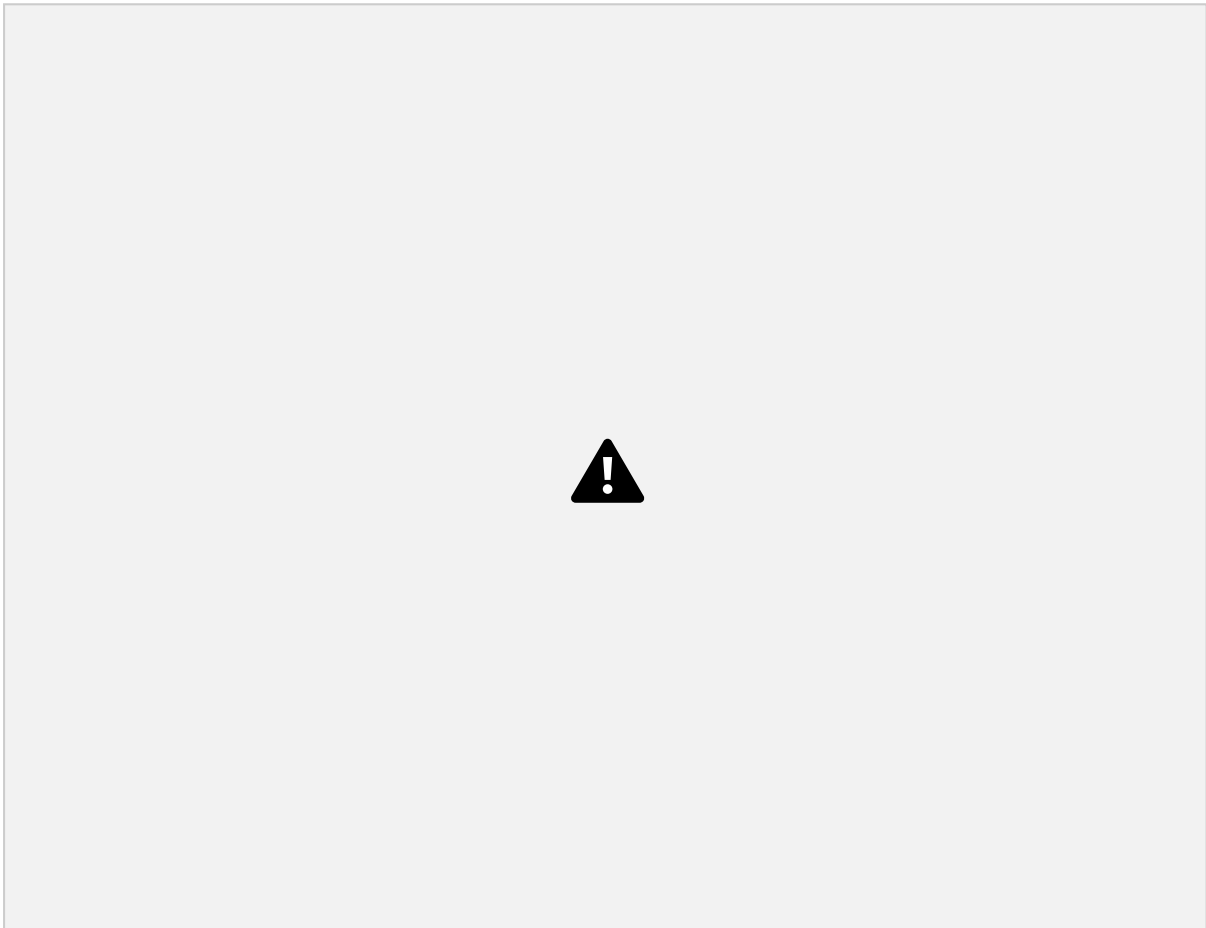

[20: image of mounting the bottom PCB - exploded view]

Step 8: closing the unit

**BEFORE STARTING THIS STEP IT IS ADVISED TO RUN THE SELF-TEST, IF THE UNIT IS NOT FUNCTIONING PROPERLY IT IS EASIER TO EXCHANGE PARTS
(FOR INSTRUCTIONS SEE THE DEPLOY GUIDE)**

- Attach the bottom plate using the rubber feet **[ENC-007]** and M3x8 screws **[SCR-002]**.
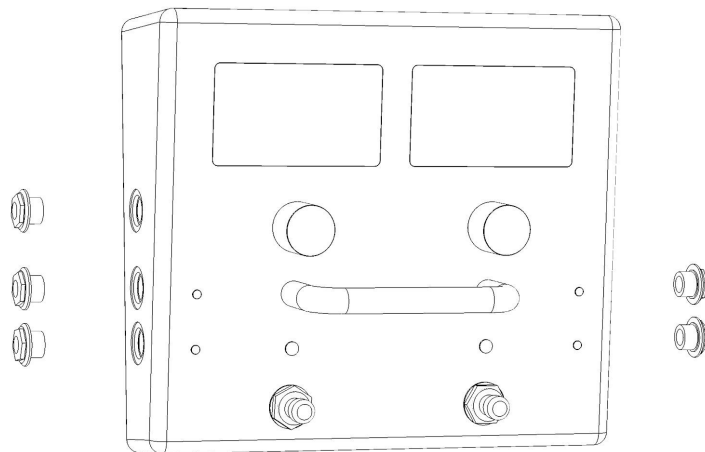
[21: image of closing the unit - exploded view]

[22: image of the closed unit - with bottom plate]

● Attach the jack nuts **[XXX]** to the jack inserts on the side of the unit.

[23: image of inserting the jack nuts - exploded view]

● The unit should now be fully assembled and ready to be packed

[24: image of the finished unit]