Assembling the calculator - IN-12 - version

Things you will need

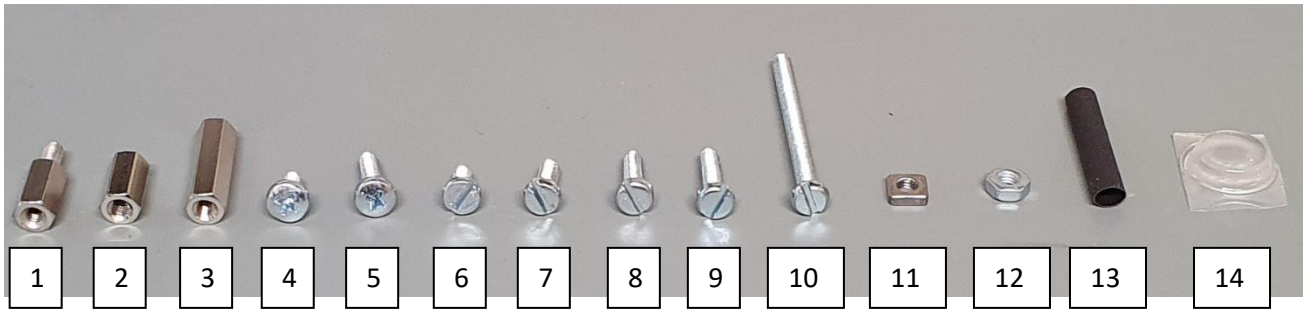
- Assembled boards, including the socket boards with the nixies
- High voltage power supply
- Keycaps
- Connection cables and connectors:

ID	Qty	Wires	Mode	Comment
SWITCH	1	2	straight	Mount connectors on both ends
LED	1	3	straight	Initially, mount a connector only on one end of the cable (display side), later you will also need one for the other end
KEYBOARD	1	5	straight	Mount connectors on both ends
DRIVER	1	6	crossed	Initially, mount a connector only on one end of the cable (display side), later you will also need one for the other end
TOHVPSU	3	1		
HV	1	1		

⚠ **Double-check the pin order and polarity of all connections before you power up the device.**

- 3D printed case parts
- Additional parts:

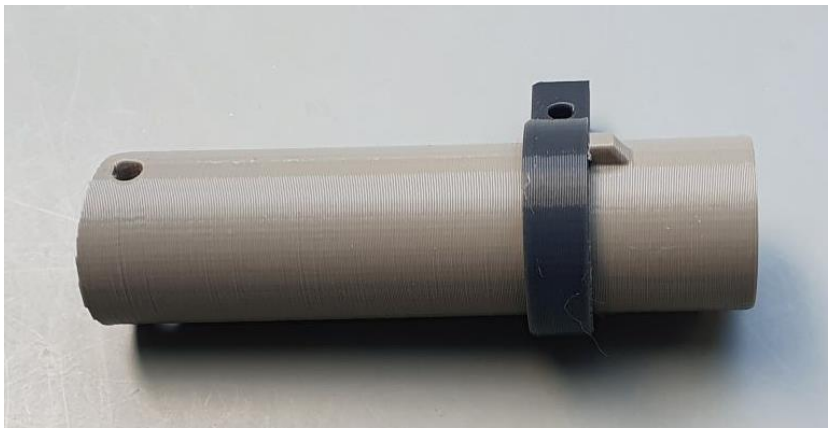
ID	Qty	Description	Comment
1	2	Standoff, 10mm, female/male	
2	18	Standoff, 10mm, M3, female/female	
3	9	Standoff, 18mm, M3, female/female	
4	12	Pan head screw, 6mm, M3	
5	17	Pan head screw, 10mm, M3	
6	31	Screw, 6mm, M3	
7	10	Screw, 8mm, M3	
8	4	Screw, 10mm, M3	
9	5	Screw, 12mm, M3	
10	3	Screw, 35mm, M3	
11	8	Square nut, M3, 5.5 x 5.5 x 1.8mm, DIN 562	
12	20	Hex nut, M3, DIN 934	
13	1	Heat shrink tube	
14	6	Rubber foot	



Assembly

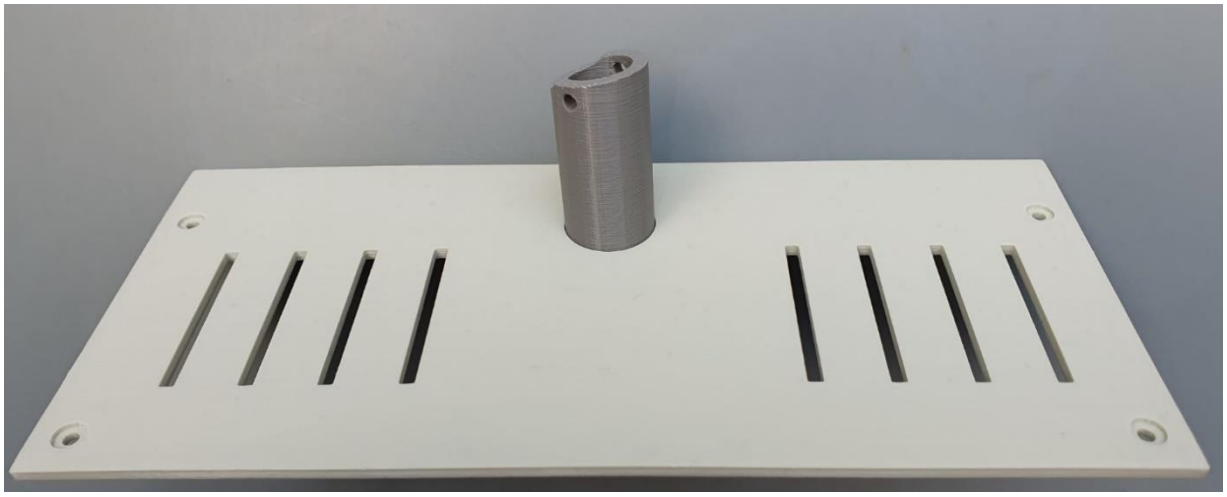
⚠️ Make sure you don't overtighten the screws.

Put the bracket on the union tube

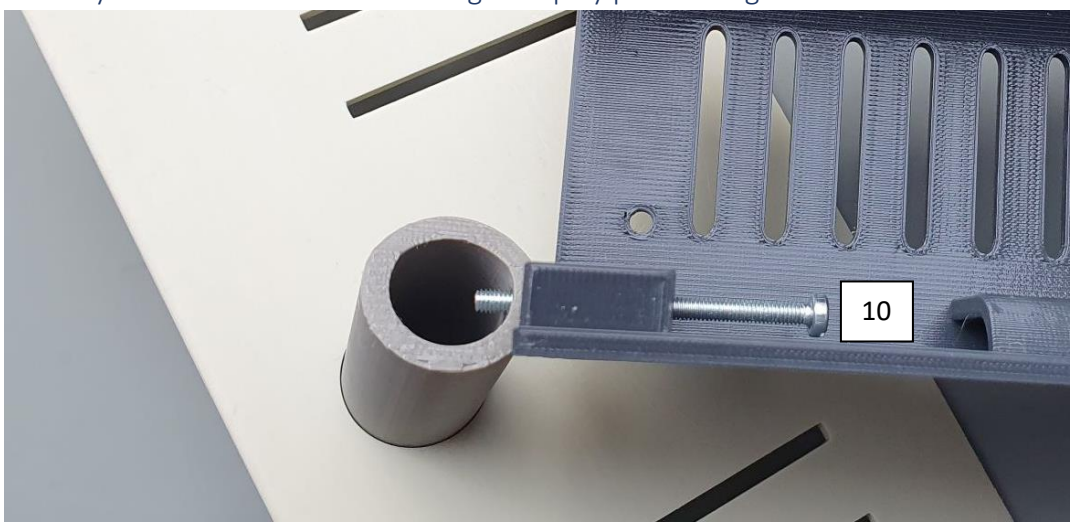


Insert the union tube through the top panel

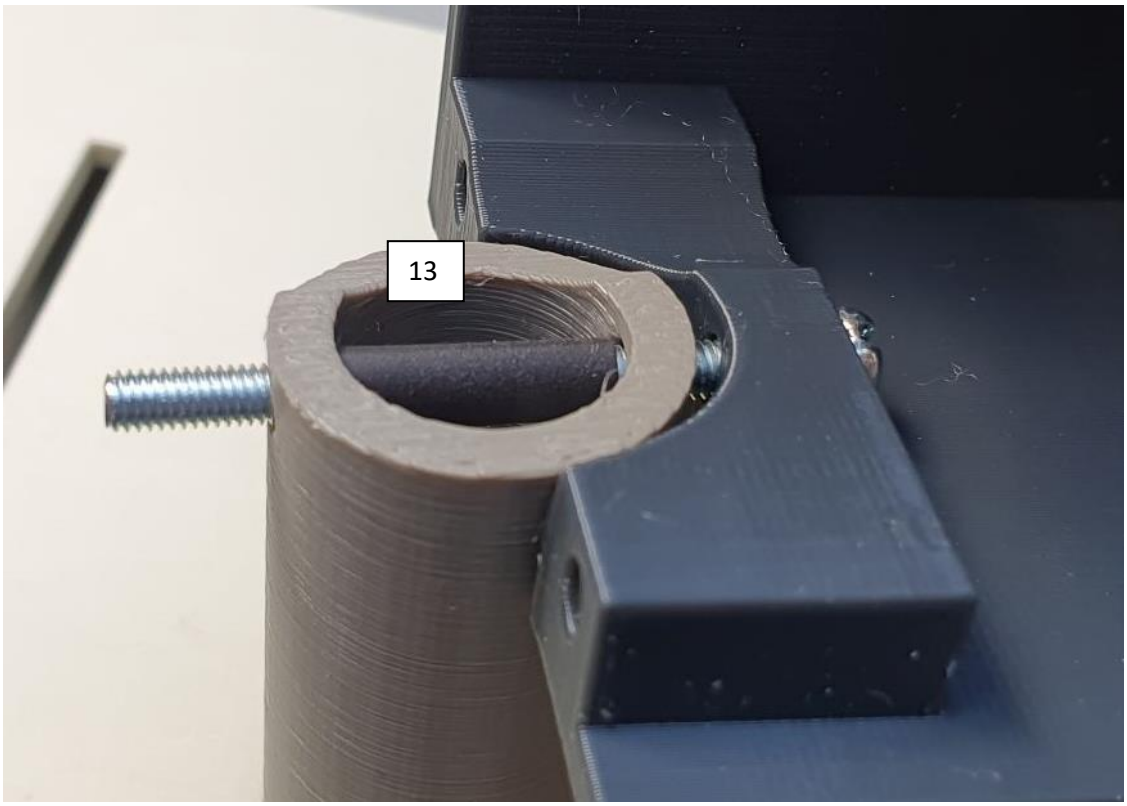
Make sure that the top of the panel is facing up



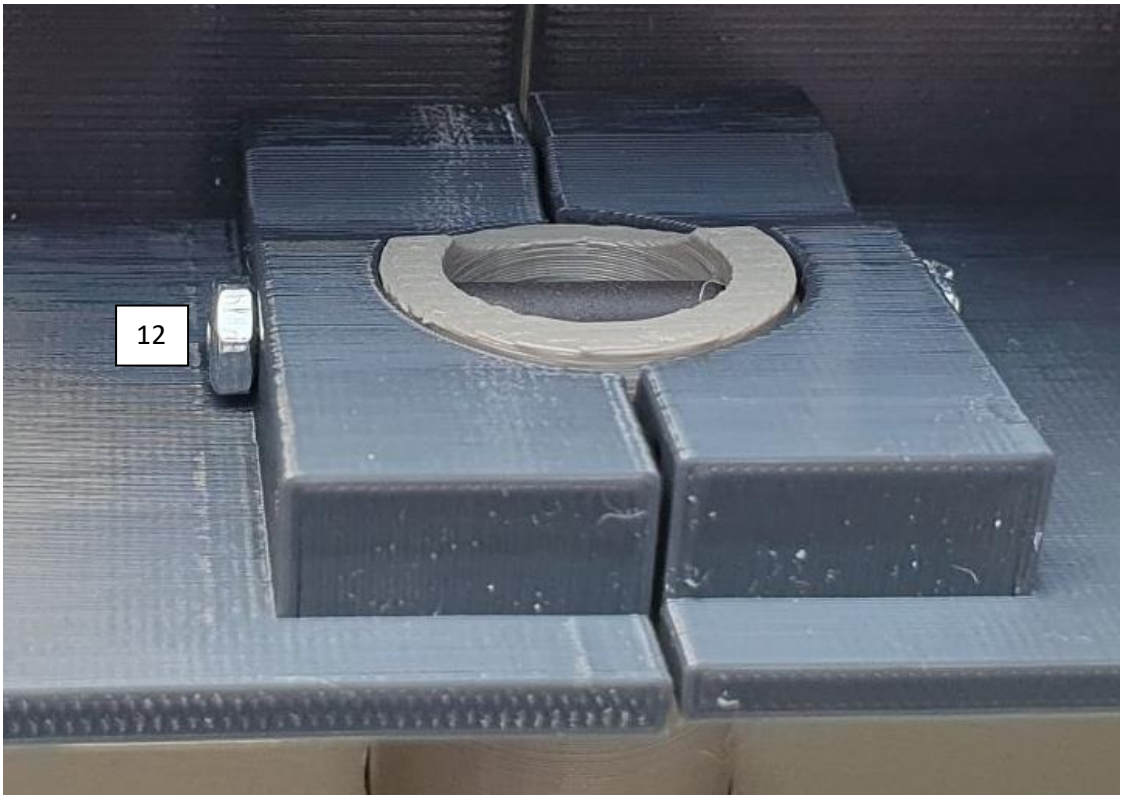
Partially insert the screw from the right display part through the union tube



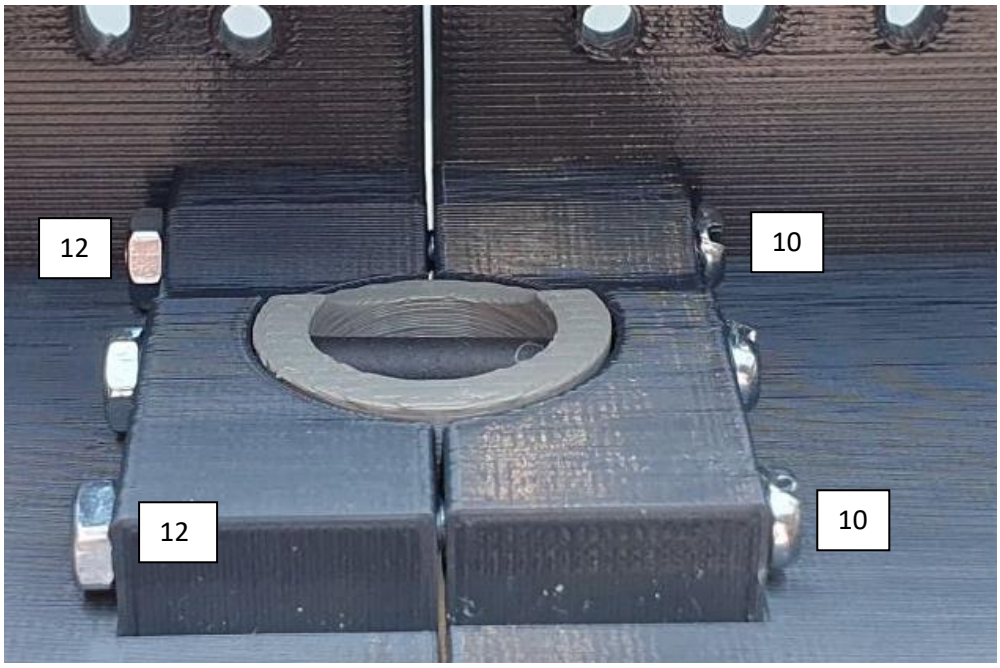
Add a piece of heat shrink tube in the middle of the union tube



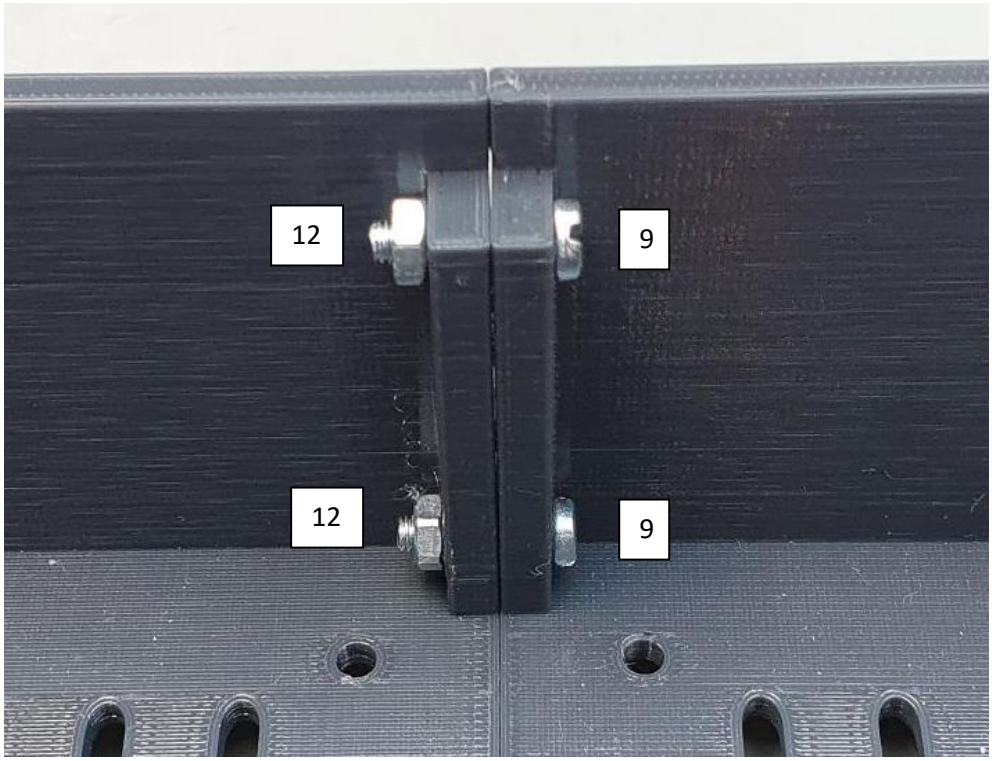
Attach the left display part with the first screw



Mount the second and the third screw

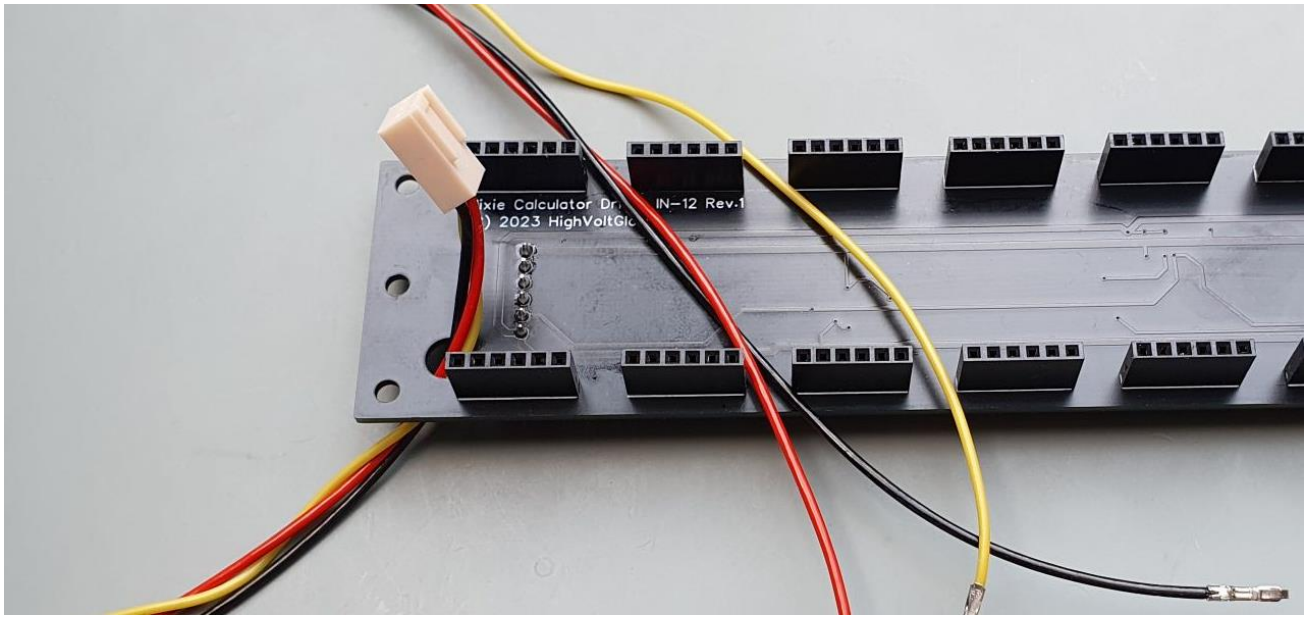


Mount the upper screws



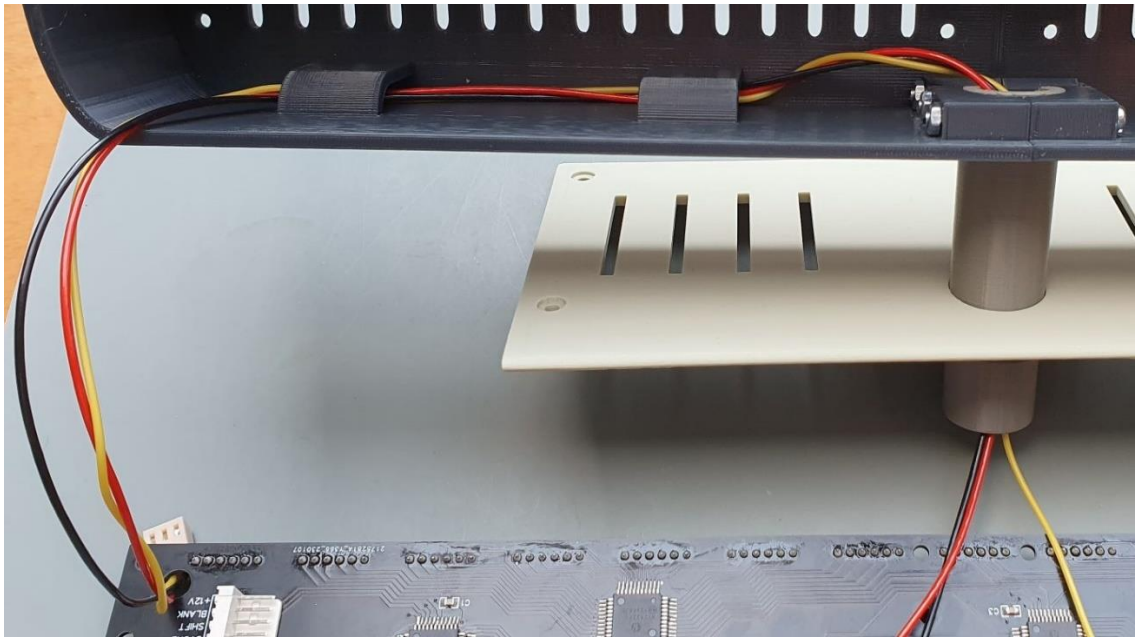
Tighten all the screws

Run the LED cable through the driver board



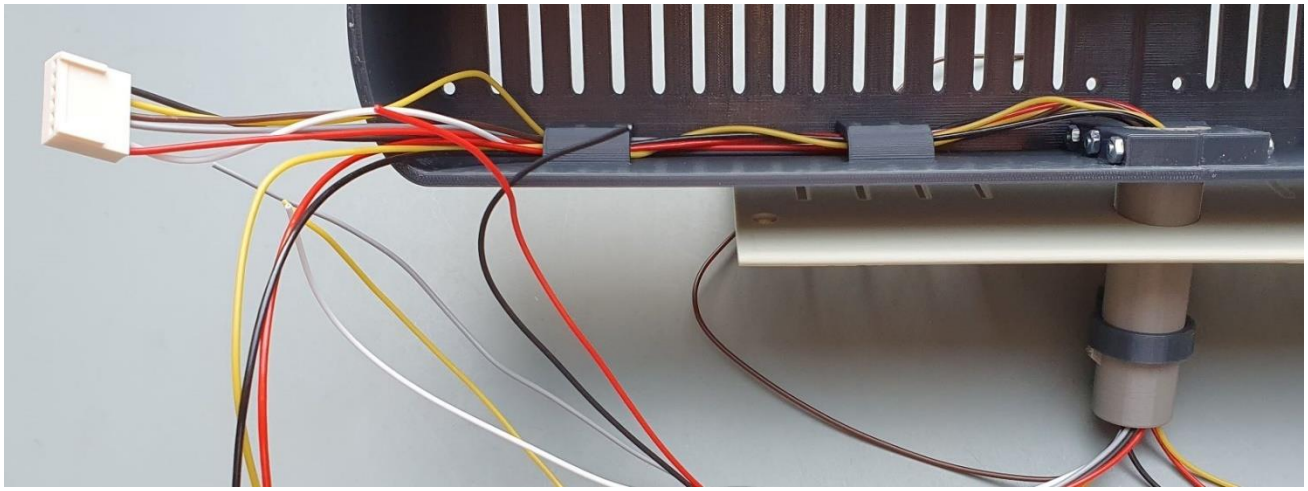
Manage the LED cable

Run the wires behind the screw with the shrink tube.



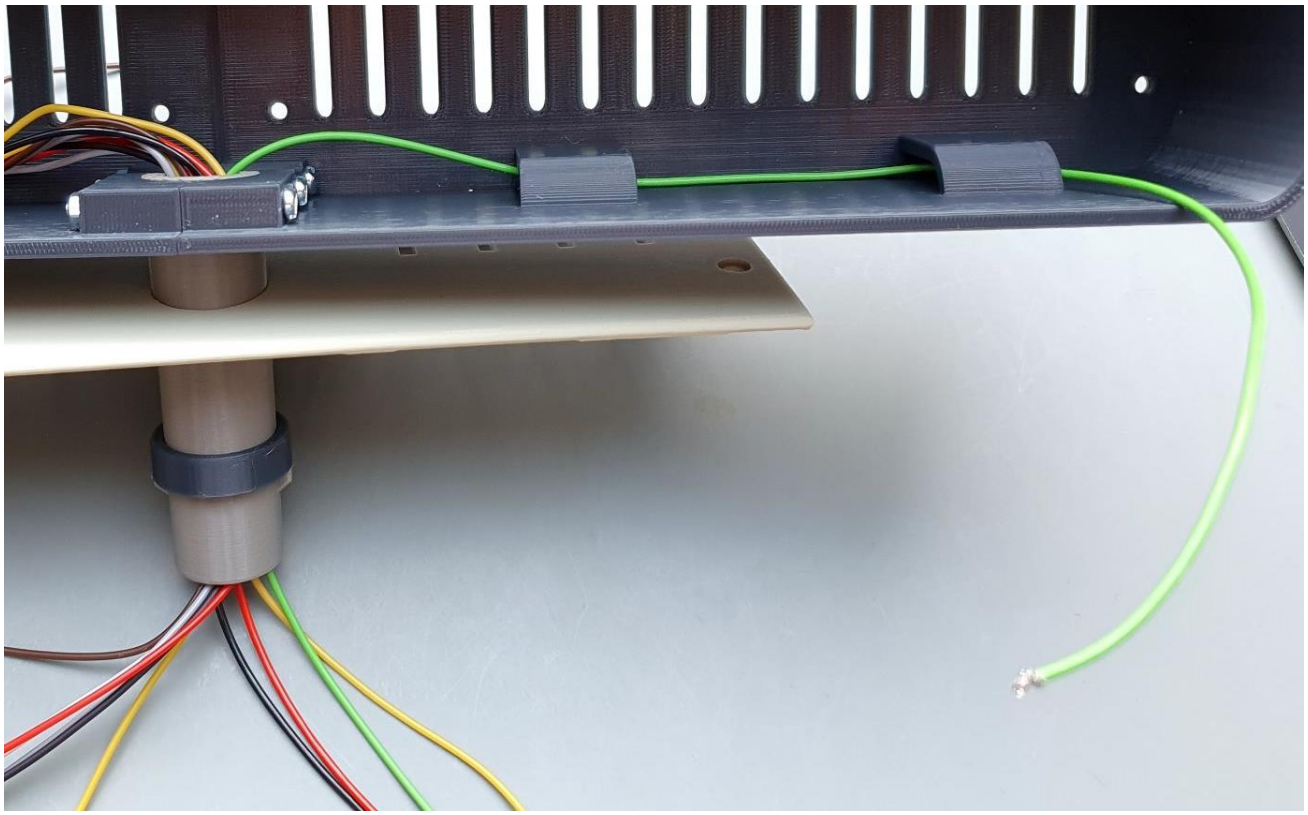
Manage the DRIVER cable

Run the wires behind the screw with the shrink tube.

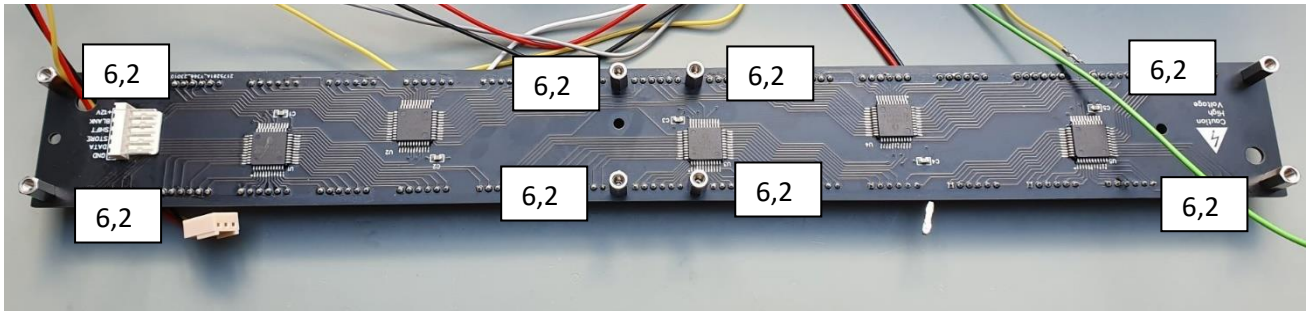


Manage the HV cable

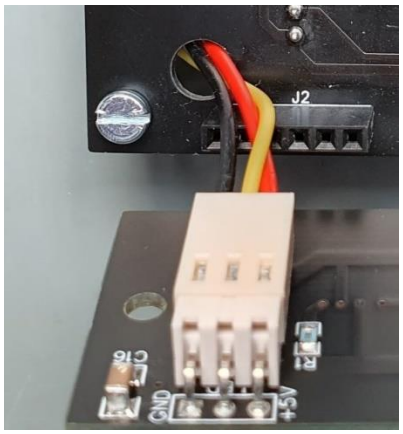
Run the wire behind the screw with the shrink tube.



Firmly mount the standoffs on the driver board

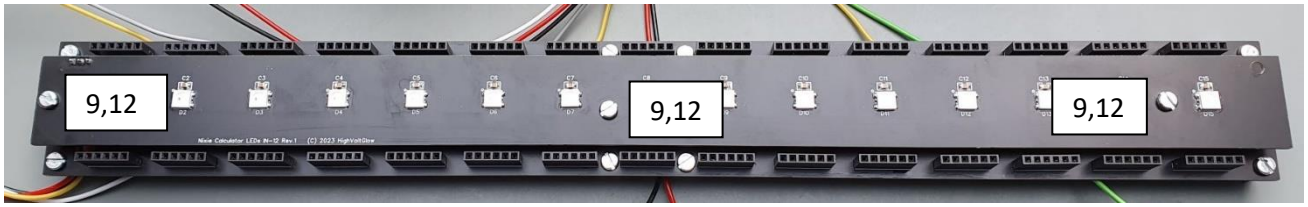


Connect the LED cable to the LED board

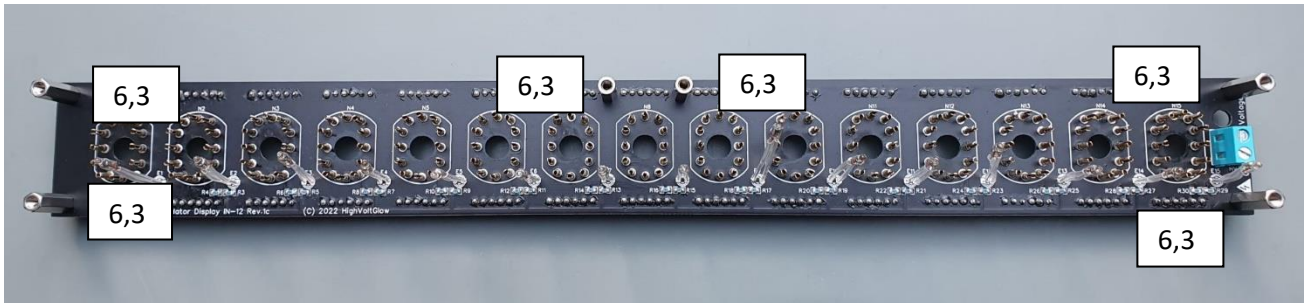


Mount the LED board on the driver board

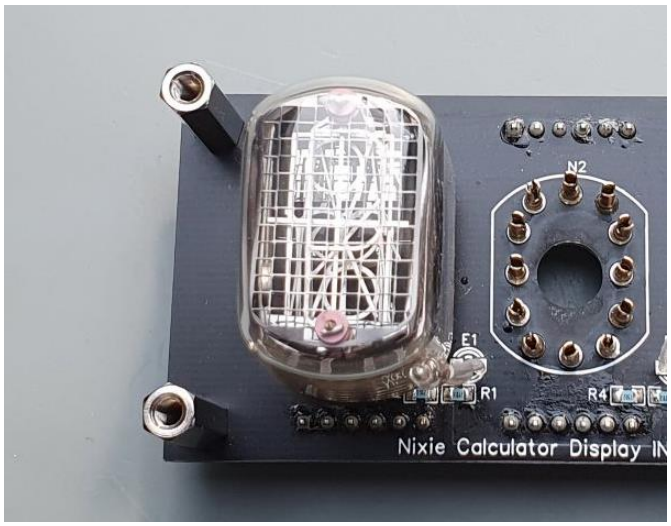
Place the three 3D printed spacers between the boards and screw the boards together.



Firmly mount the standoffs on the display board

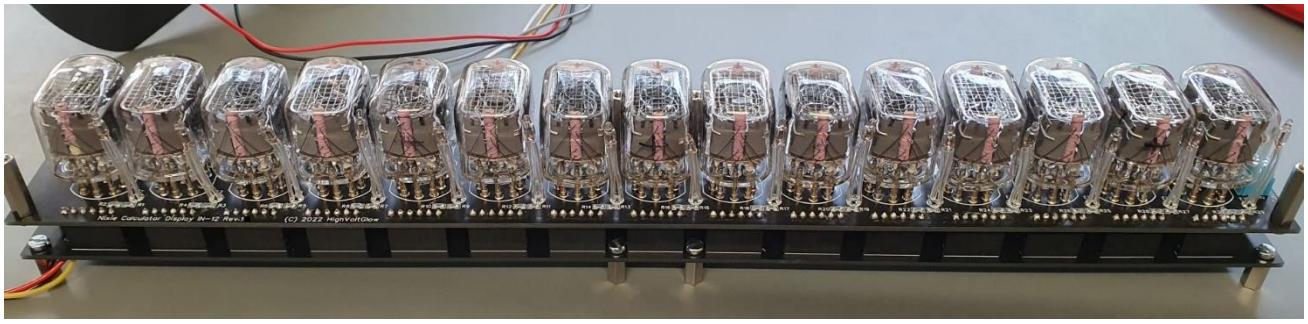


Mount the IN-15A

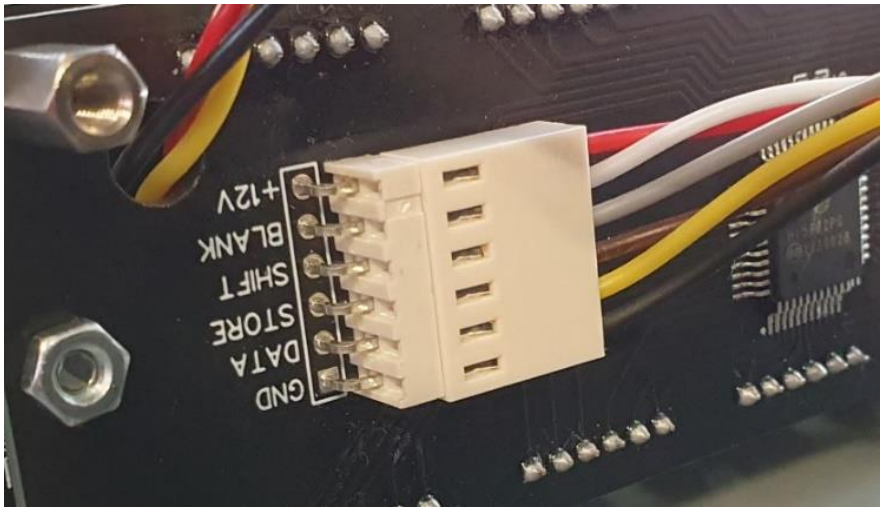


Mount the IN-12

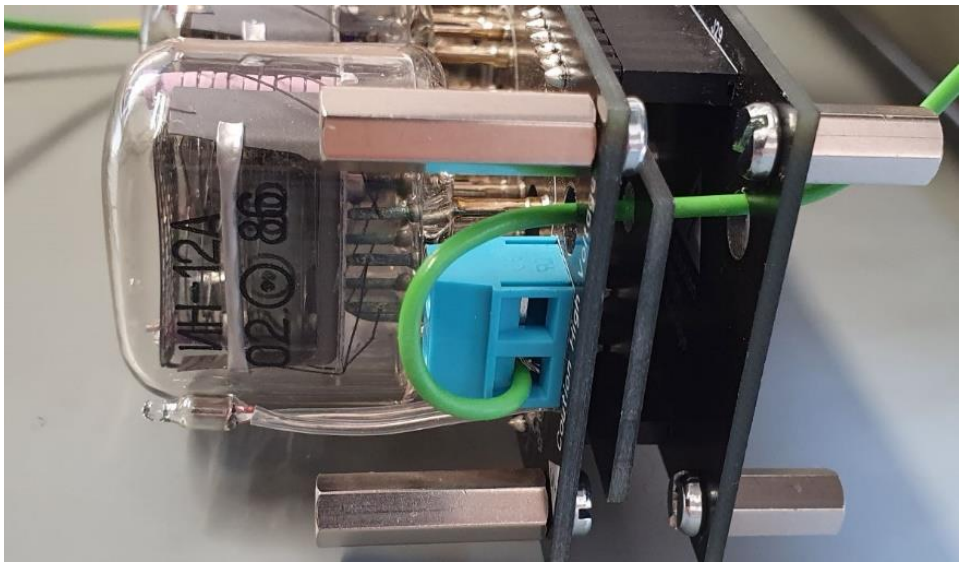
Connect the display board with the driver board



Connect the DRIVER cable

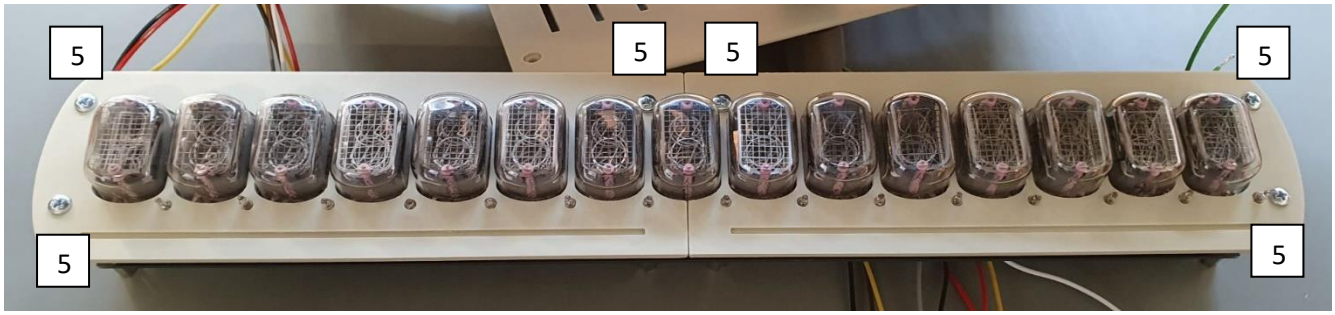


Connect the HV cable to the display board



Mount the display front panels

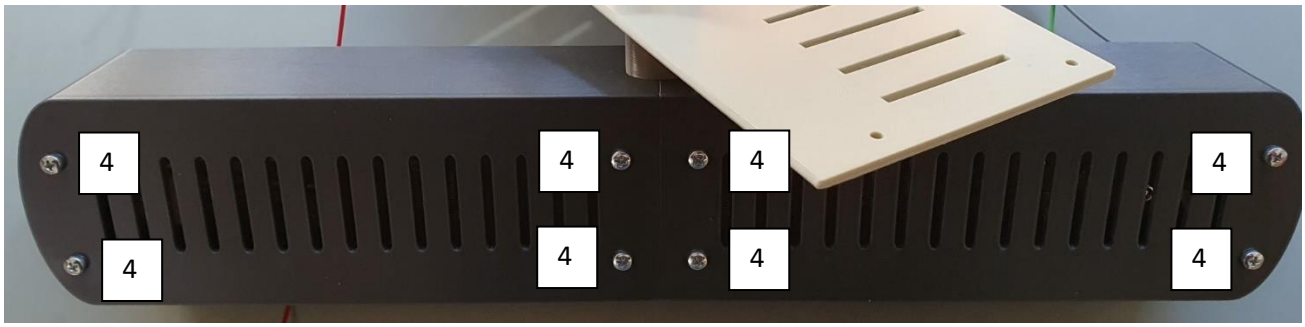
Make sure all the neon bulbs go halfway through the holes.



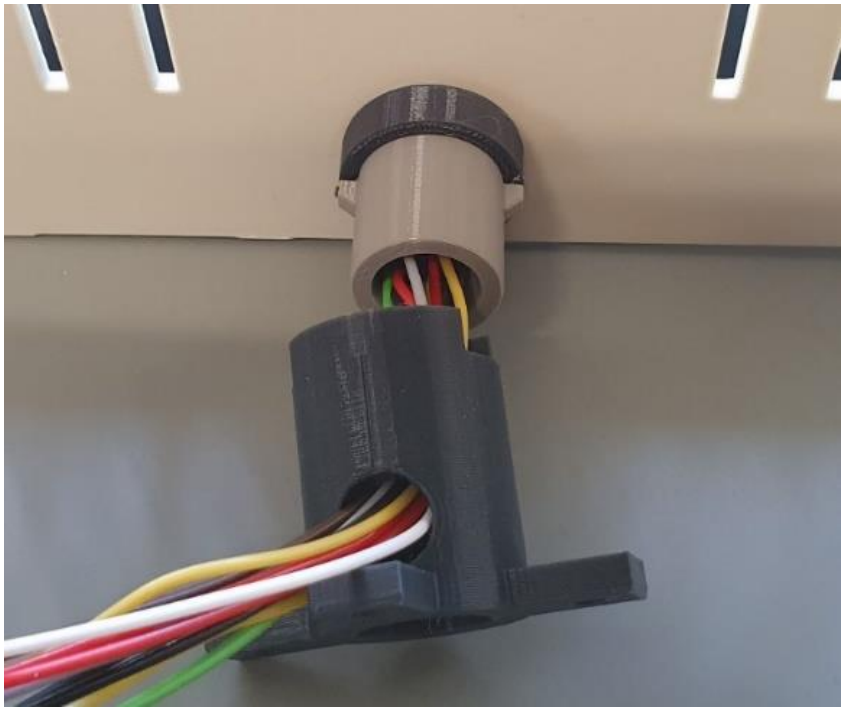
Carefully put the display block into the case

⚠️ Make sure that no cables are damaged.

Secure the display block

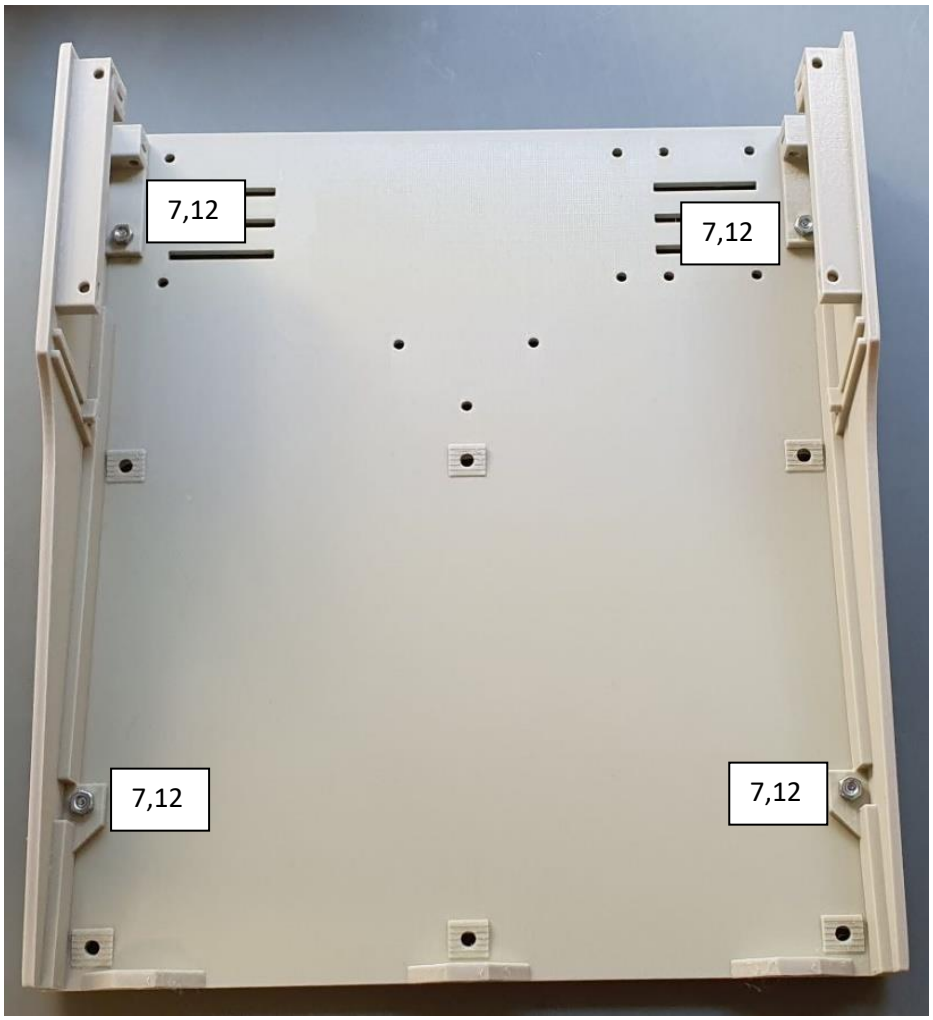


Pass the cables through the tube holder

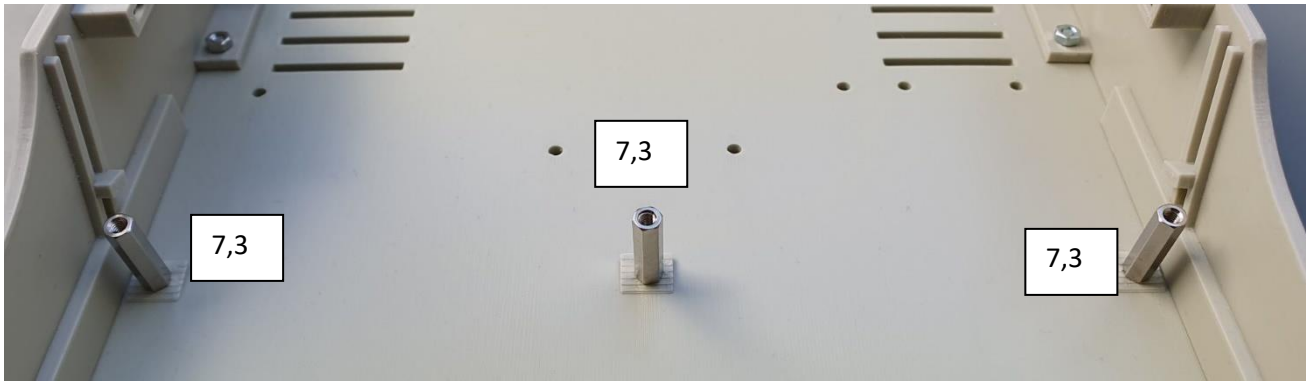


Mount the keycaps

Install the side panels

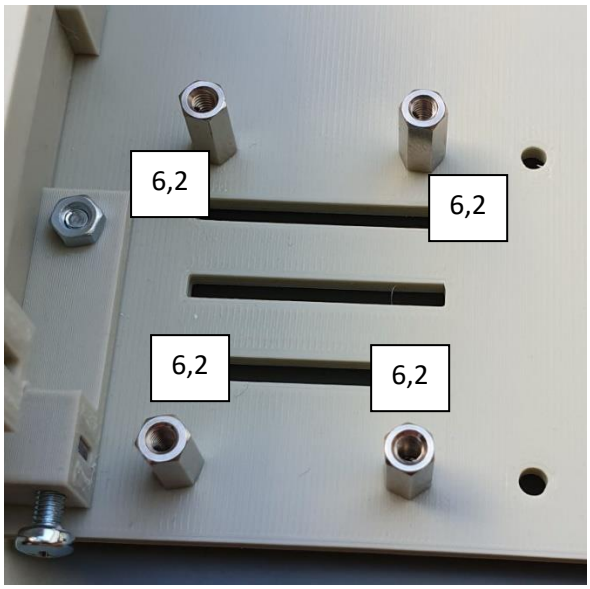


Install the keyboard standoffs



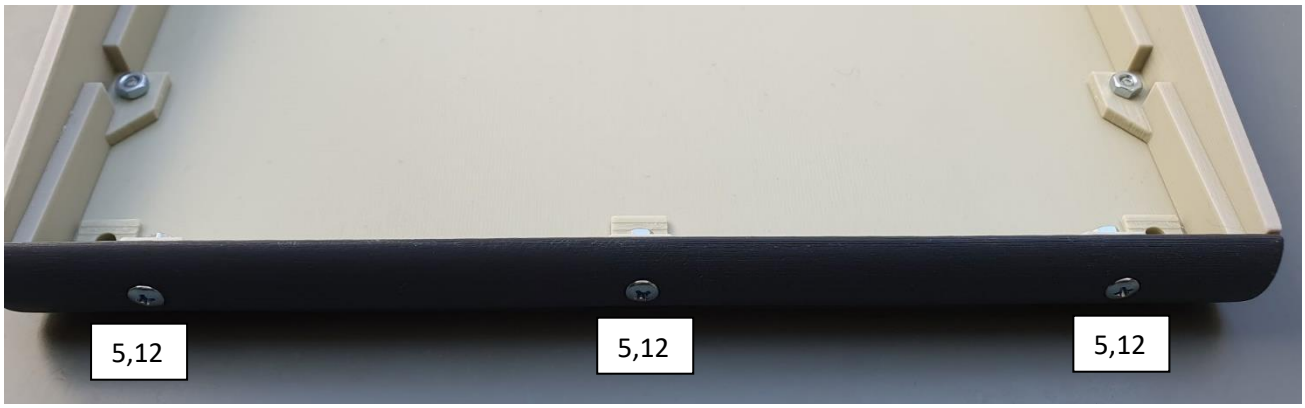
Place and secure two nuts in advanced

Mount the HV PSU standoffs (may not apply to your model)

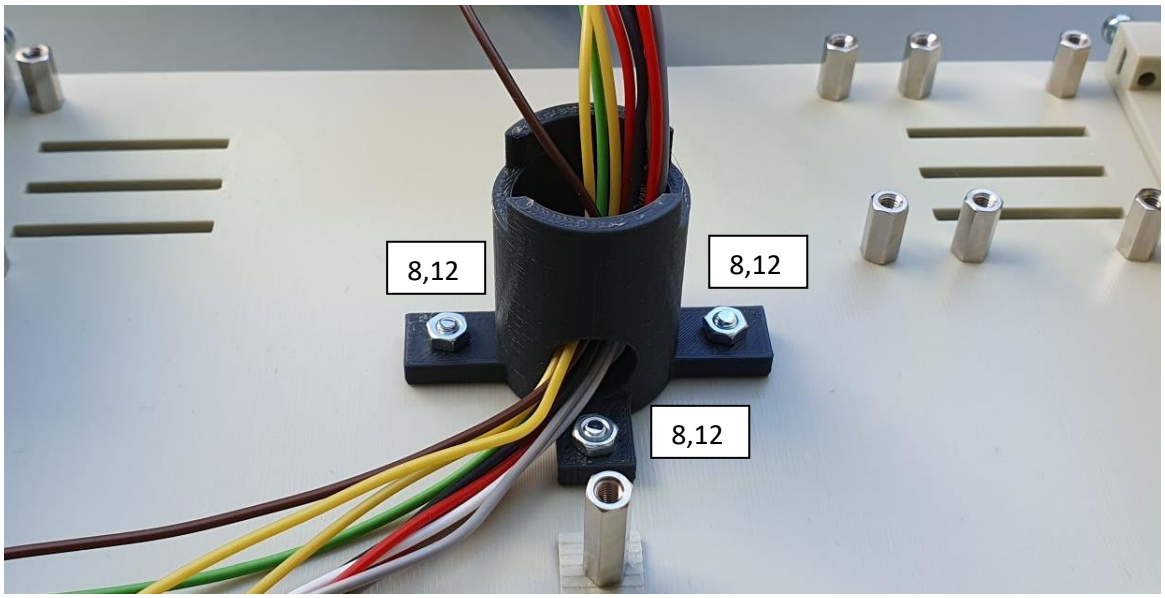


Mount the controller standoffs

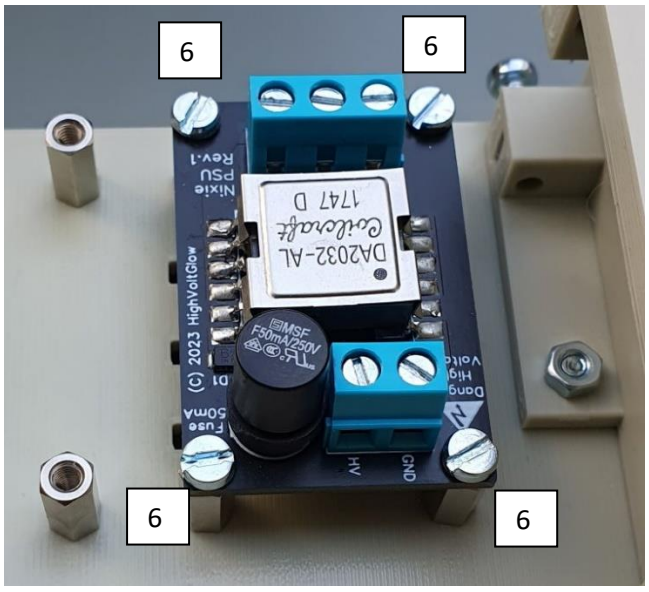
Install the front part



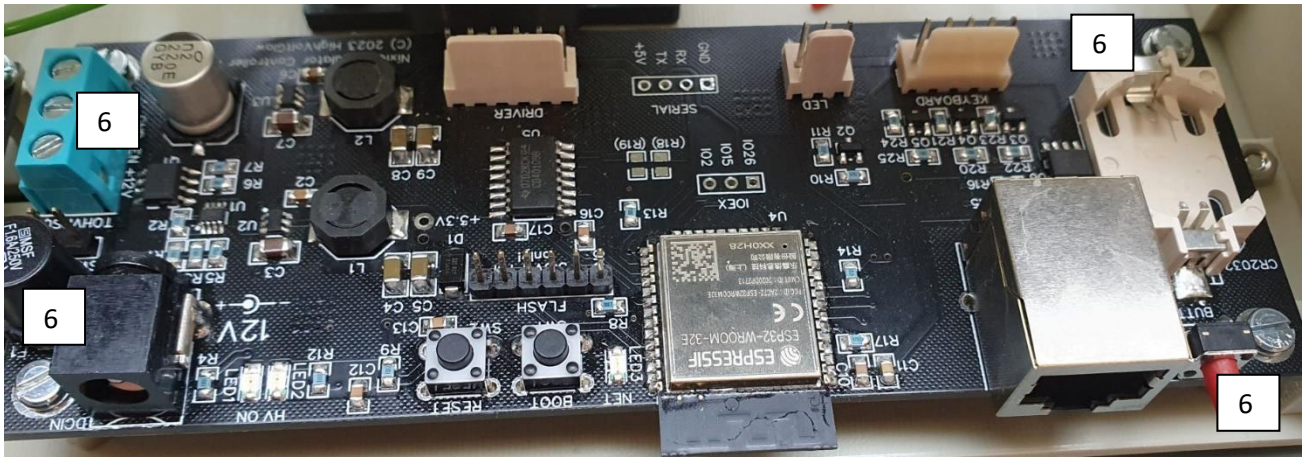
Mount the union tube holder



Install the HV PSU (could be different for your model)

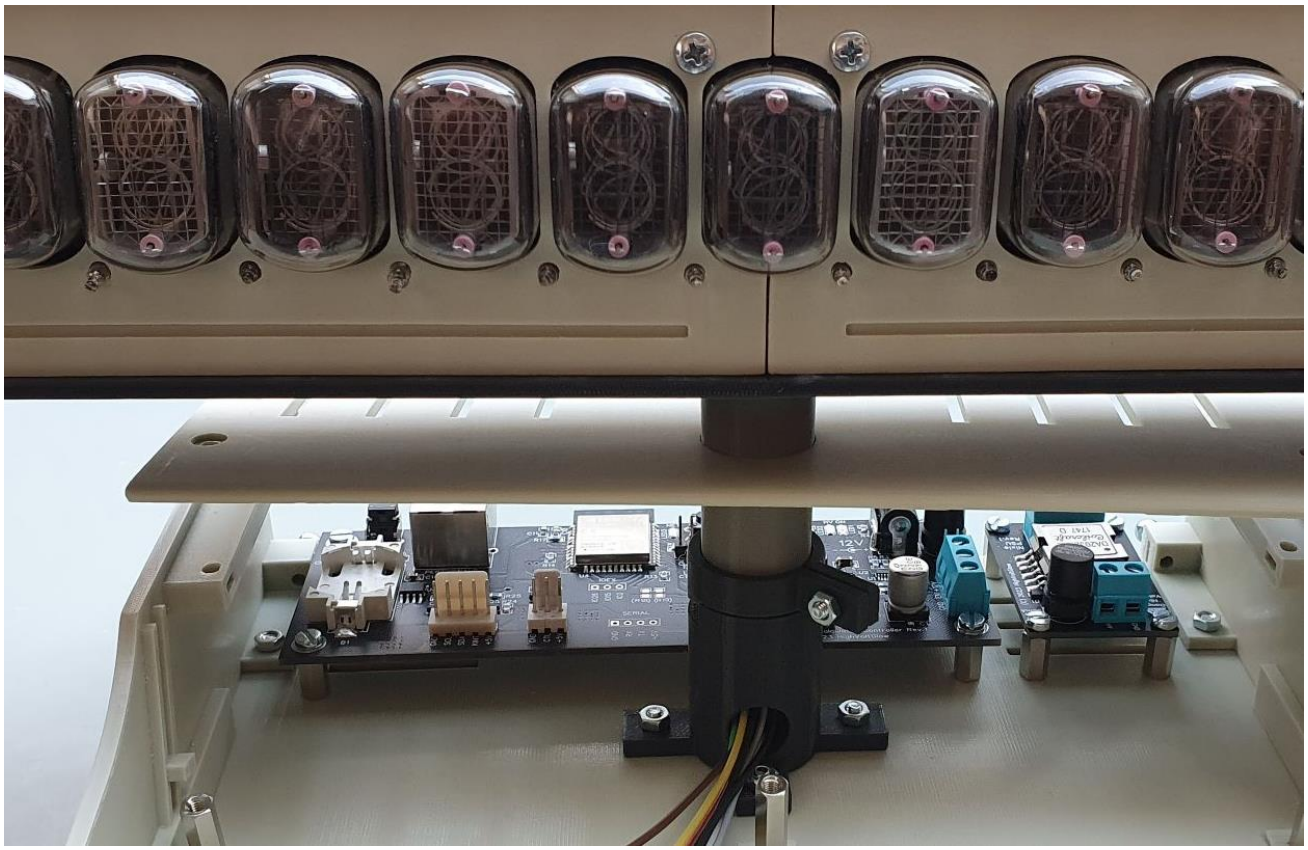


Install the controller



Mount the screw on the bracket leaving the nut loose

Insert the display into the tube holder

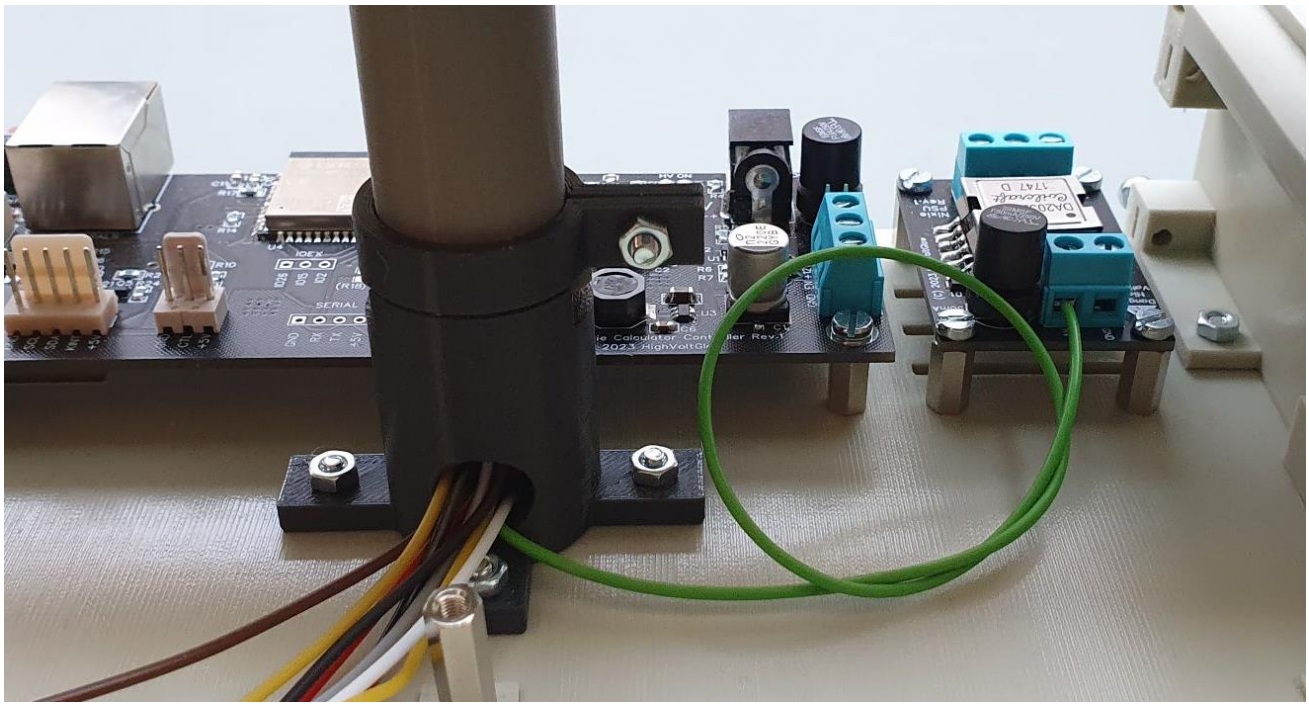


Firmly secure the bracket in position

The position must be parallel to the display.

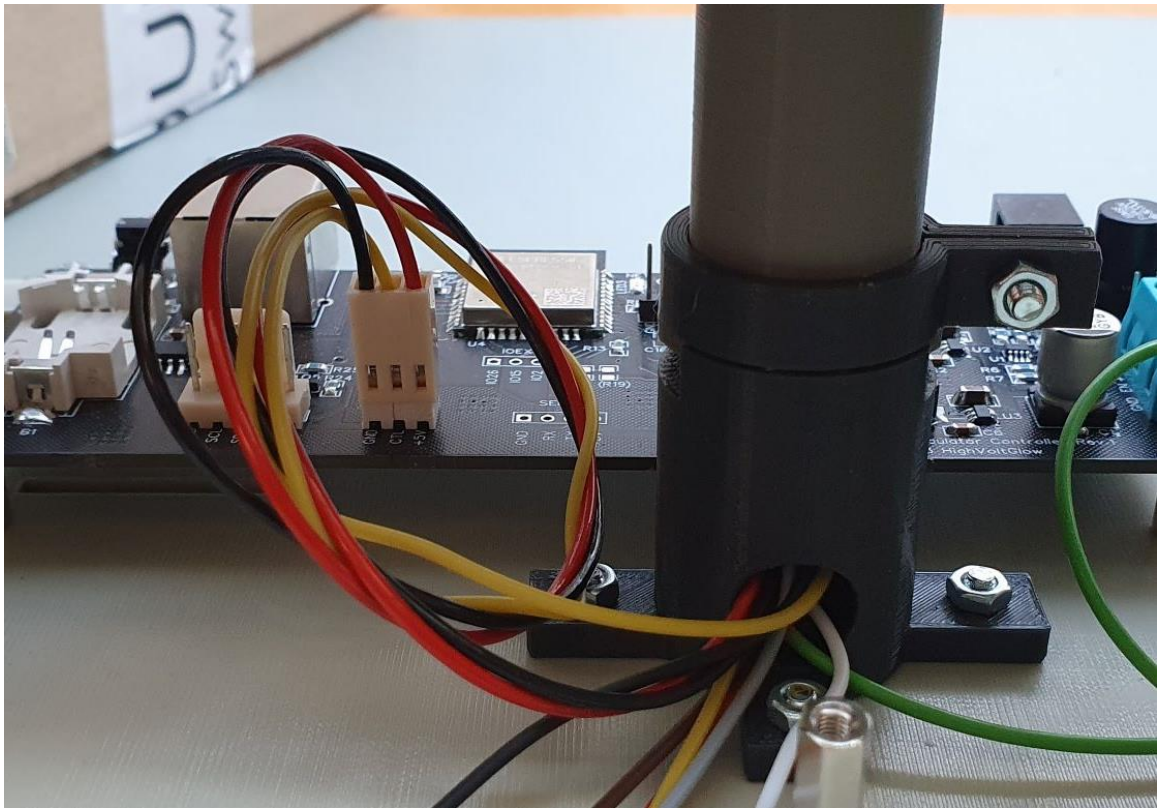
Connect the HV cable to the HV power supply (may be different for you model)

Leave some excess cable so you can still access the display if needed.



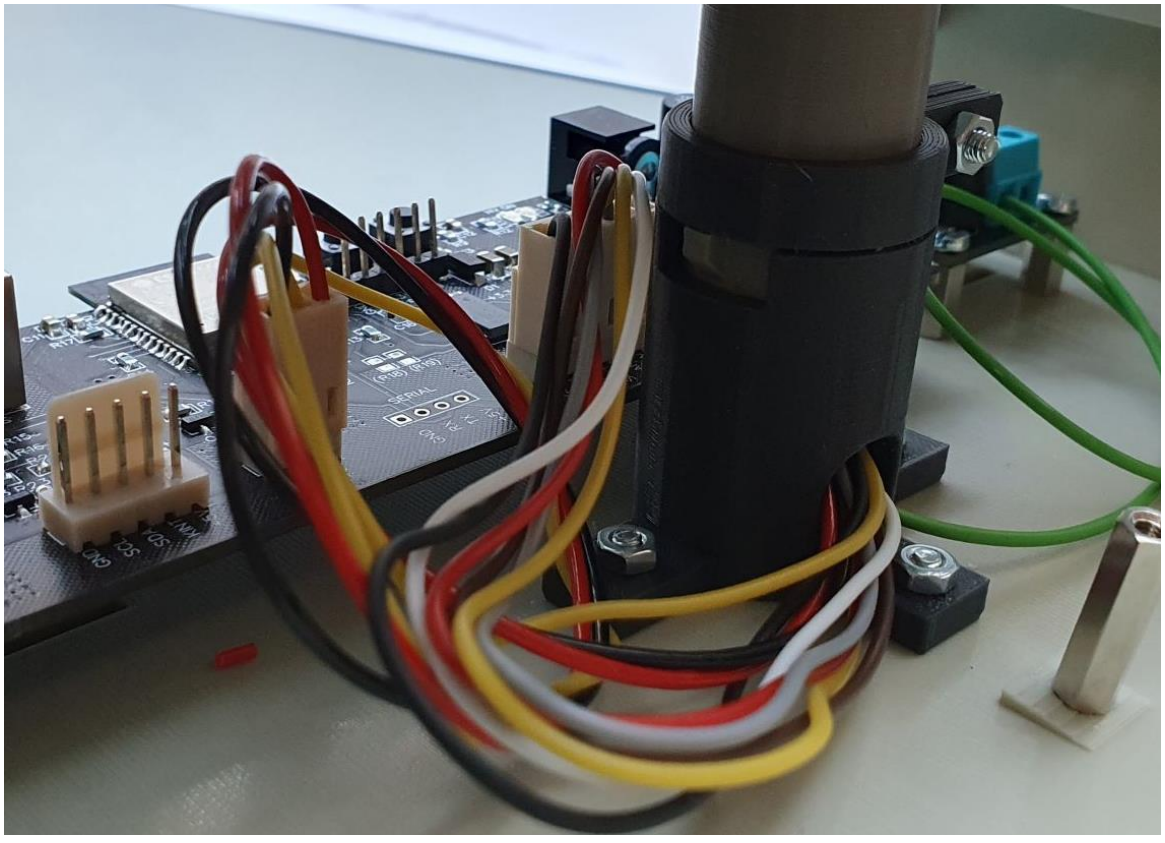
Mount the connector and connect the LED cable to the controller

Leave some excess cable so you can still access the display if needed.



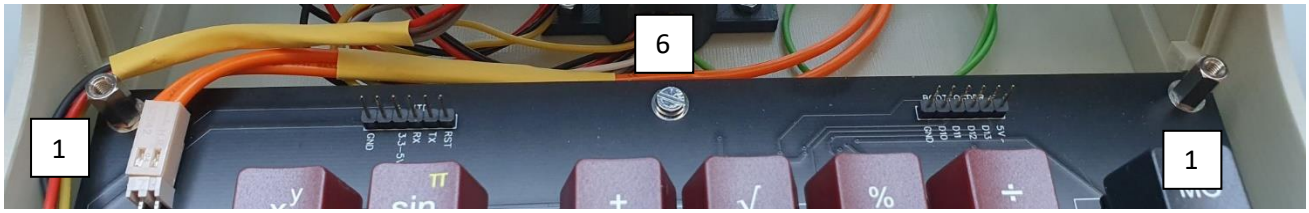
Mount the connector and connect the DRIVER cable to the controller

Leave some excess cable so you can still access the display if needed.

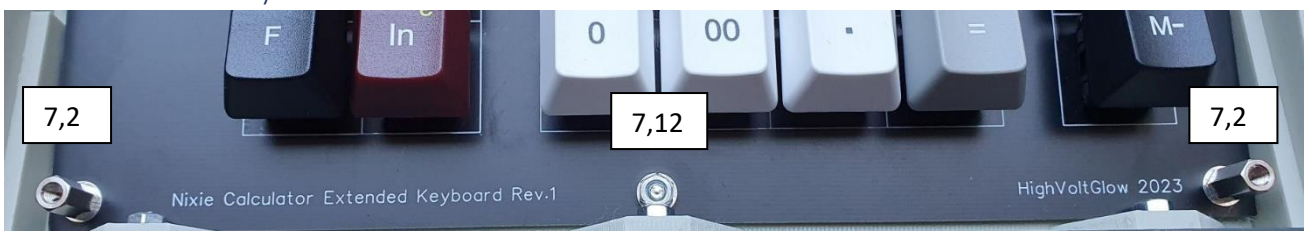


Connect the KEYBOARD and the SWITCH cables from the keyboard to the controller

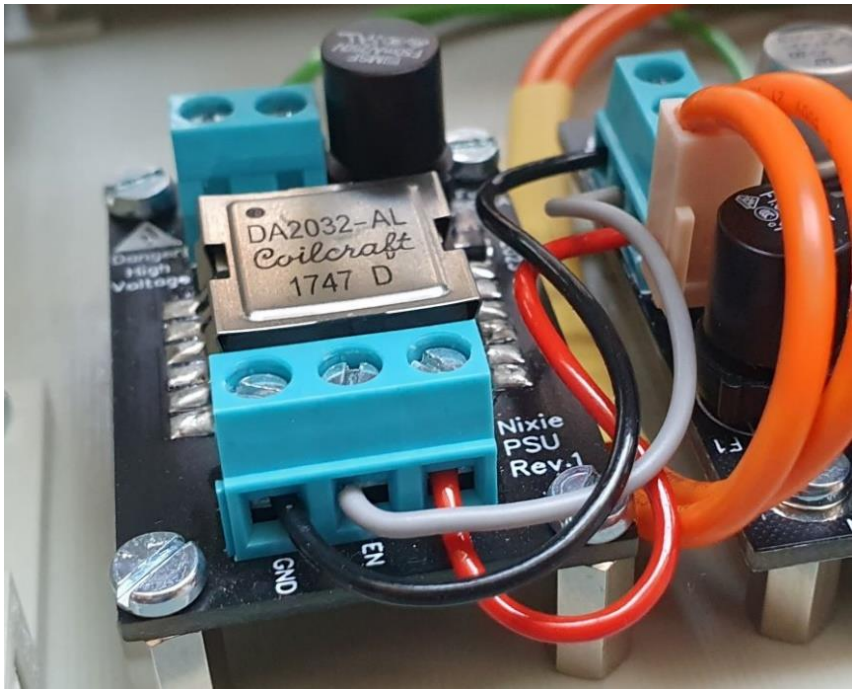
Secure the upper keyboard side



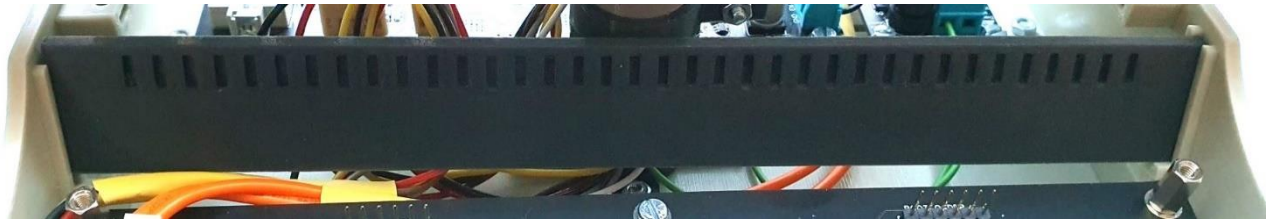
Secure the lower keyboard side



Connect +12V, EN and GND from controller to the HV power supply (could be different for your model)



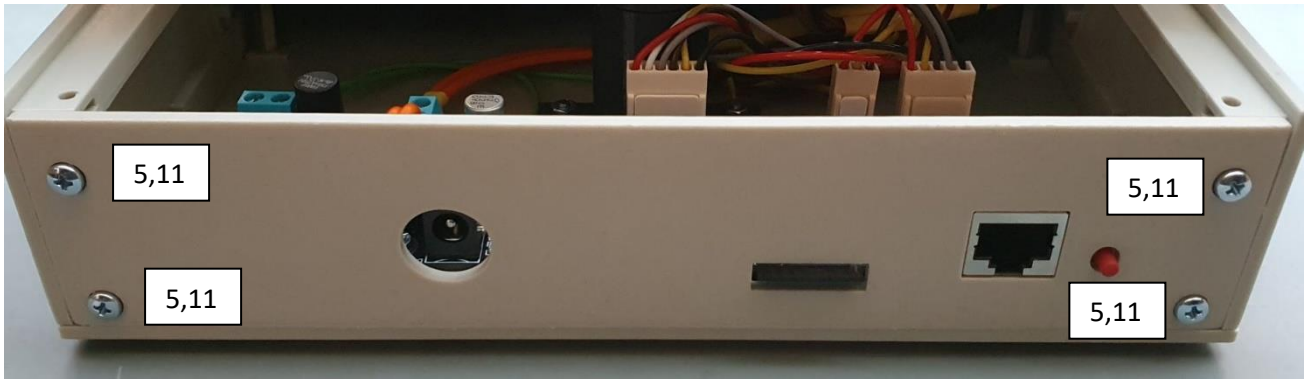
Insert the front panel



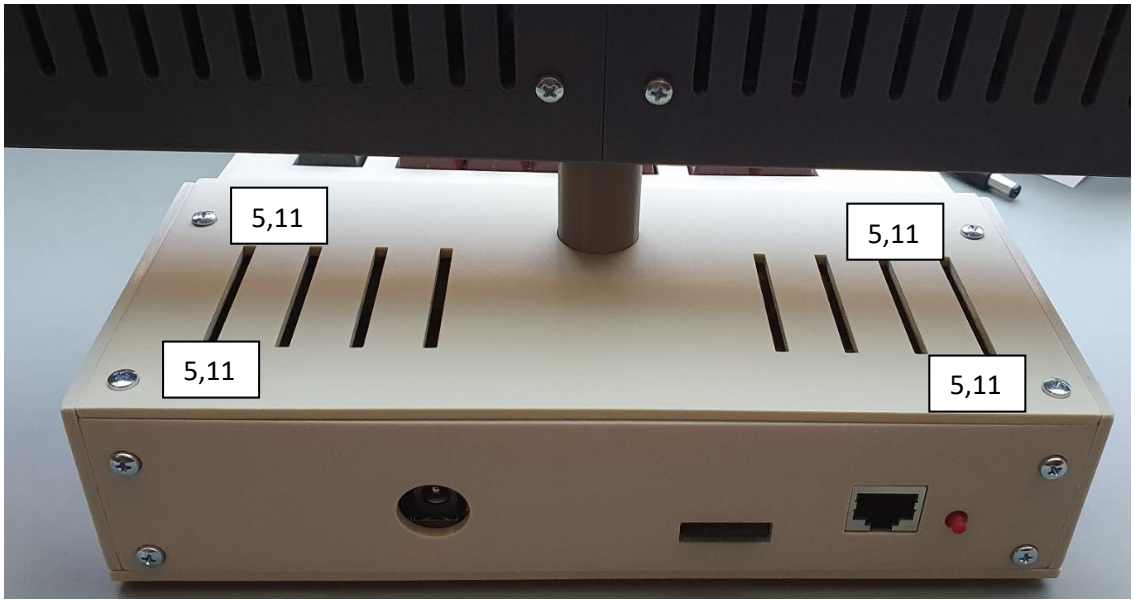
Glue the label

Install the keyboard shield

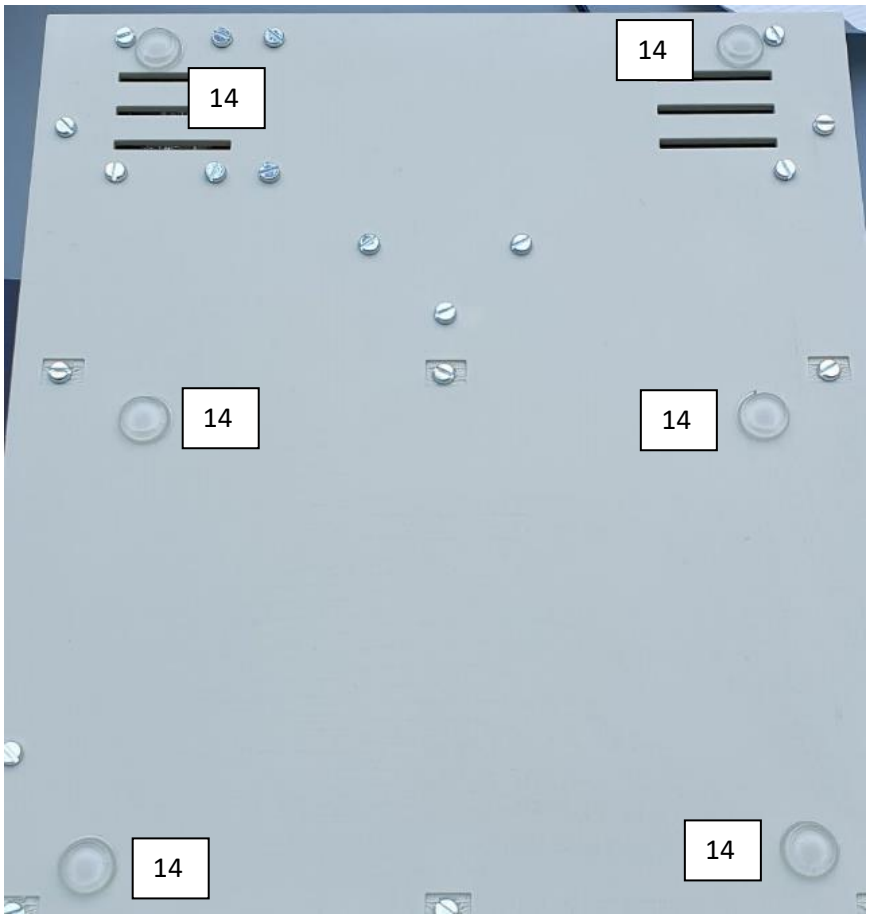
Install the back shield



Install the top shield



Place the rubber feet



Final adjustments

Check that everything is square and carefully tighten the screws.