

Assembling the calculator - IN-12 - version

Note: the pictures are only intended for a better understanding of the instructions and may not correspond to the latest hardware revision

Things you will need

- Assembled boards
- 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
0	3	Standoff, 16mm, M3, female/female	
1	2	Standoff, 10mm, M3, female/male	
2	16	Standoff, 10mm, M3, female/female	
3	4	Standoff, 18mm, M3, female/female	
4	22	Pan head screw, 6mm, M3	
5	11	Pan head screw, 10mm, M3	
6	27	Screw, 6mm, M3	
7	10	Screw, 8mm, M3	
8	4	Screw, 10mm, M3	
9	3	Screw, 12mm, M3	
10	6	Screw, 35mm, M3	
11	16	Square nut, M3, 5.5 x 5.5 x 1.8mm, DIN 562	
12	21	Hex nut, M3, DIN 934	
13	2	Piece of heat shrink tube	
14	7	Rubber foot	

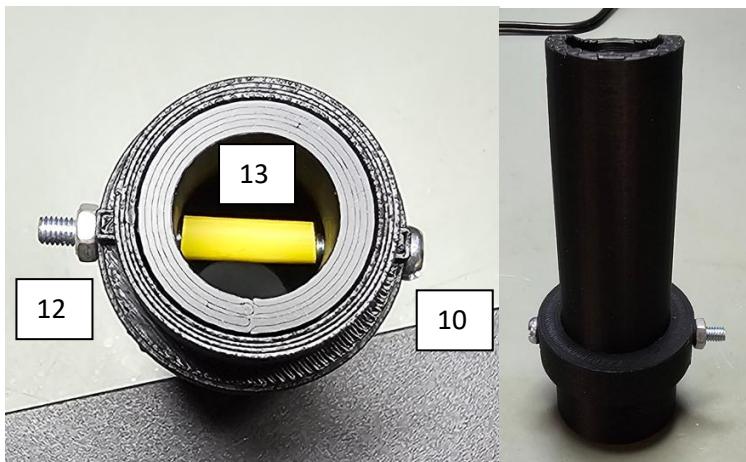


Assembly

⚠ Make sure you don't overtighten the screws.

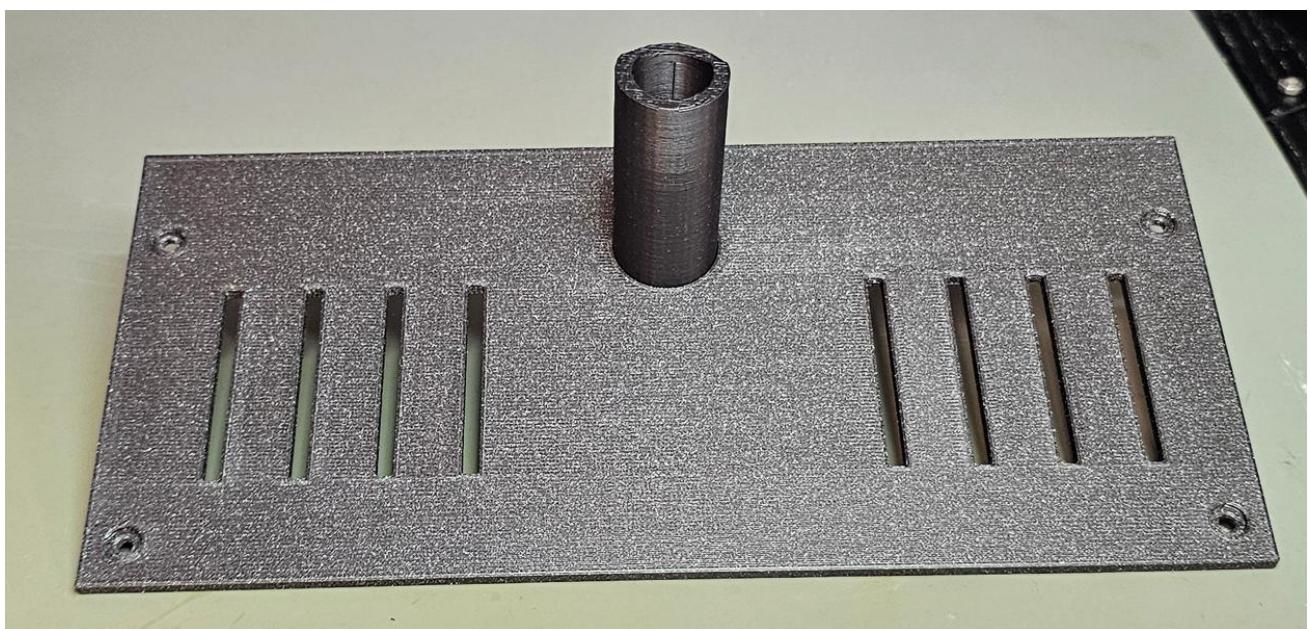
Mount the tube holder (part 1) on the union tube.

Guide the screw through the holes and a piece of heat shrink tube. You can hold it in position using tweezers.

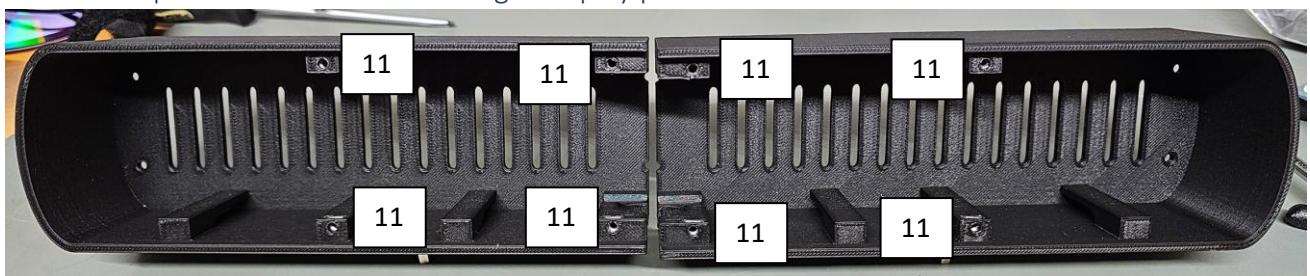


Insert the union tube through the top panel

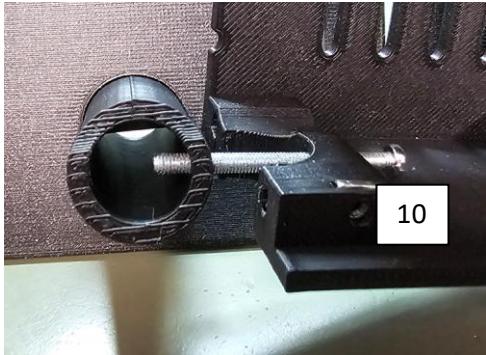
Make sure that the top of the panel is facing up



Place the square nuts in the left and right display parts



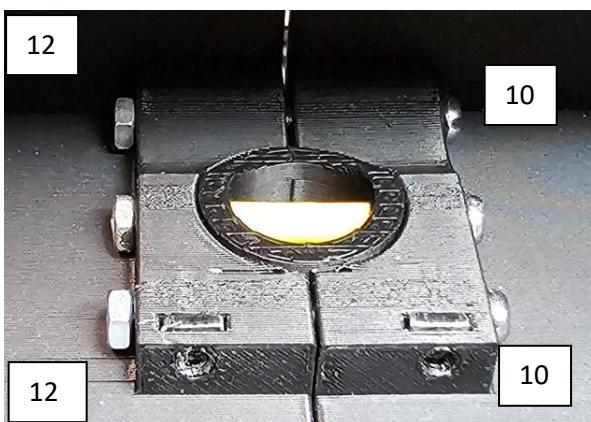
Partially insert the middle screw from the right display part through the union tube



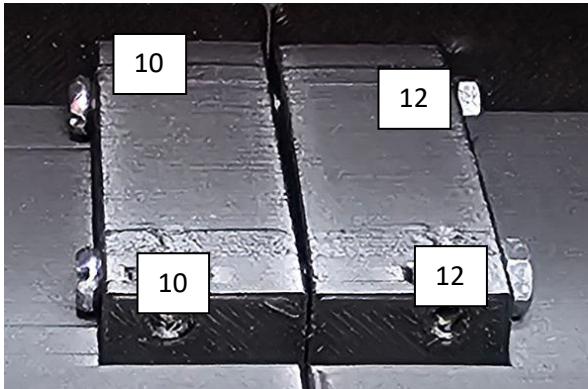
Add a piece of heat shrink tube in the middle of the union tube and attach the left display part



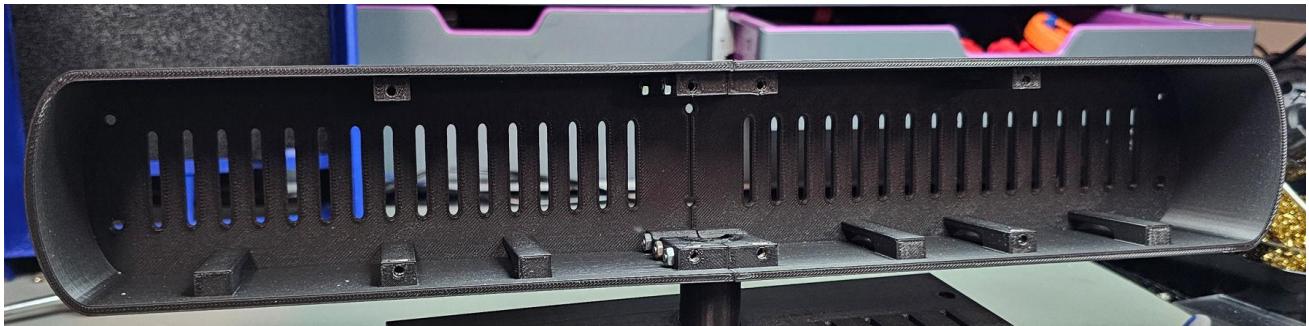
Mount the second and the third screw



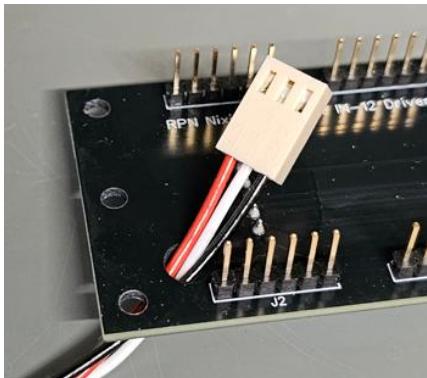
Mount the upper screws



Tighten all the screws

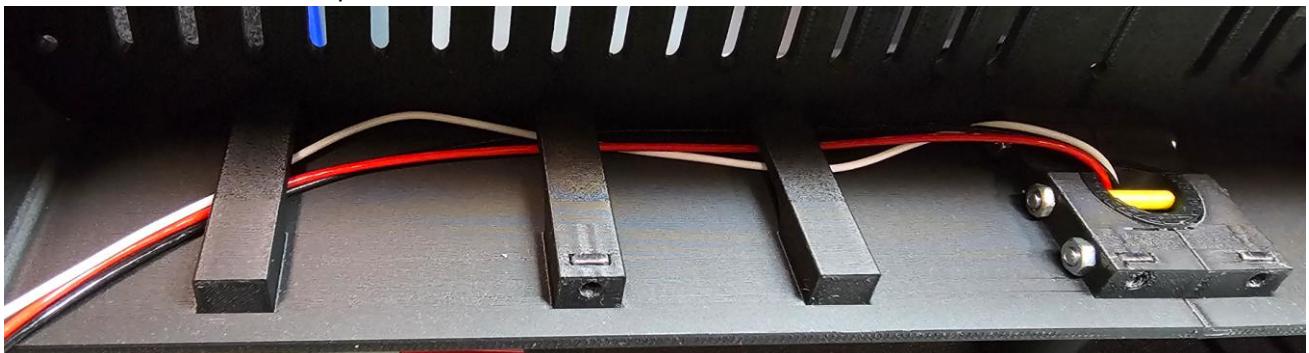


Run the LED cable through the driver board



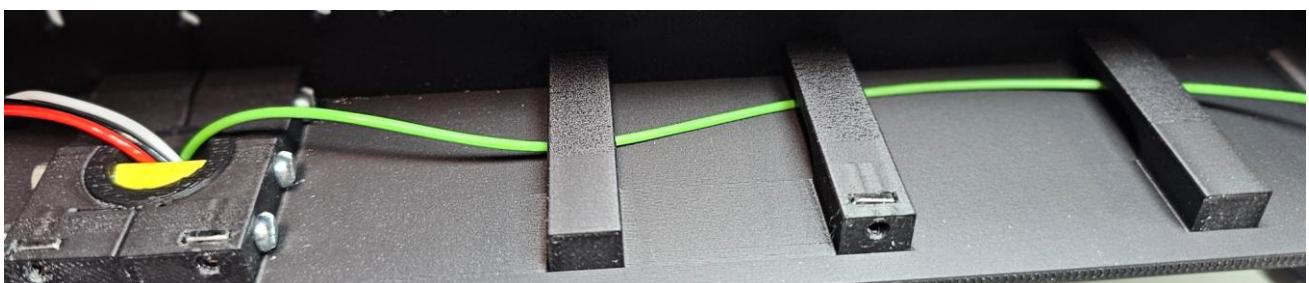
Manage the LED cable

Run the wires behind the top screw with the heat shrink tube.



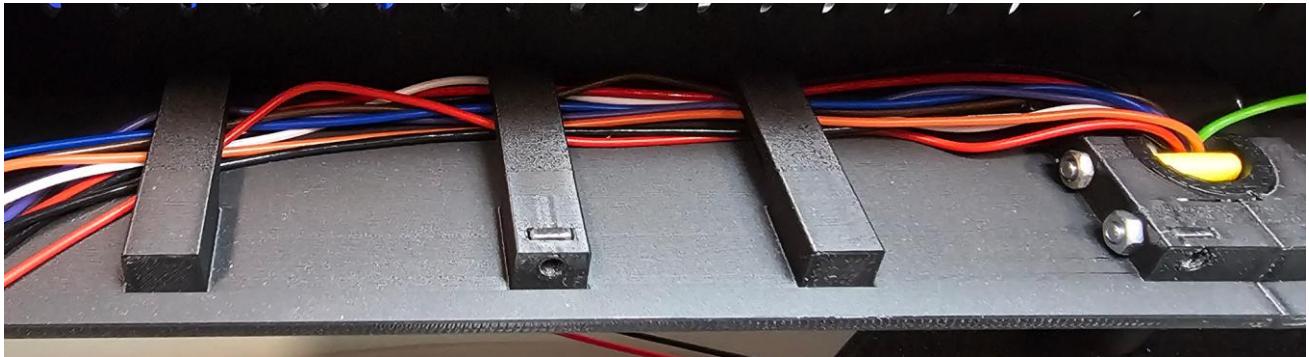
Manage the HV cable

Run the wire behind the top screw with the heat shrink tube.

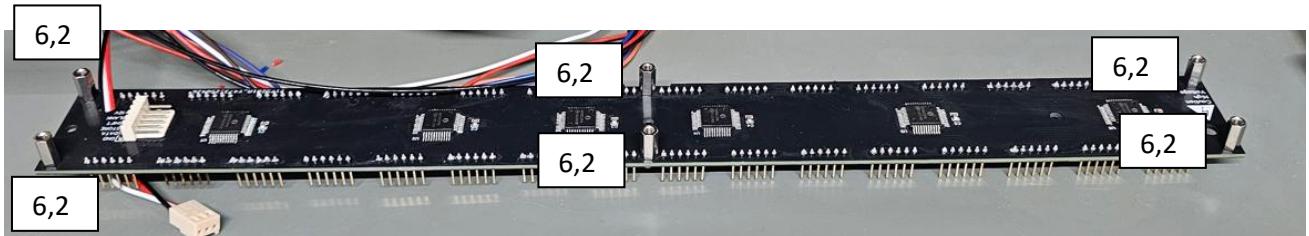


Manage the DRIVER cable

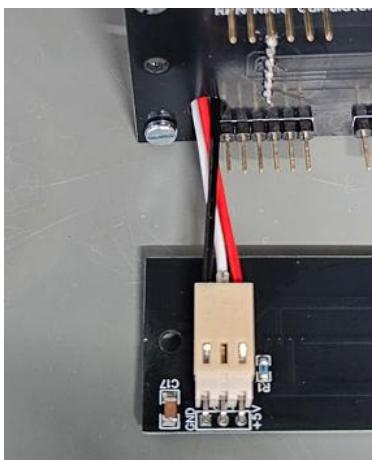
Run the wires behind the top screw with the heat shrink tube.



Firmly mount the standoffs on the driver board

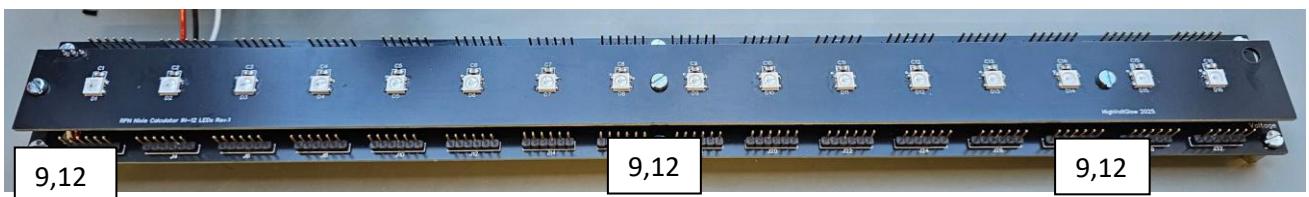


Connect the LED cable to the LED board



Mount the LED board on the driver board

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



Mount the IN-12 nixies

Check orientation and don't stress the pins.



Mount the two IN-15A nixies

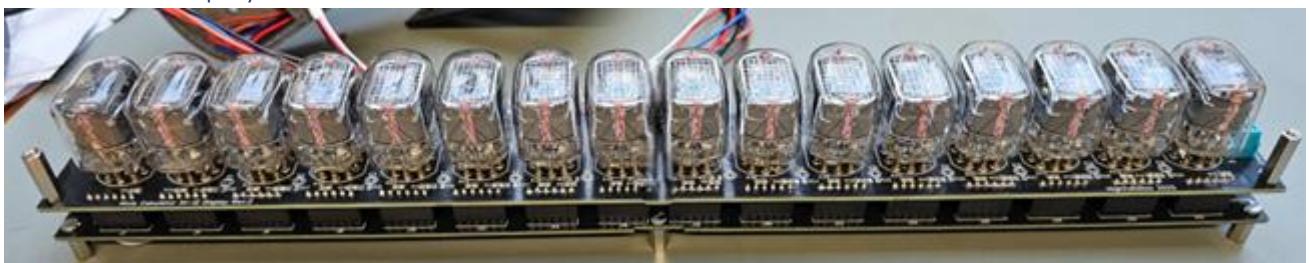
Check orientation and don't stress the pins.



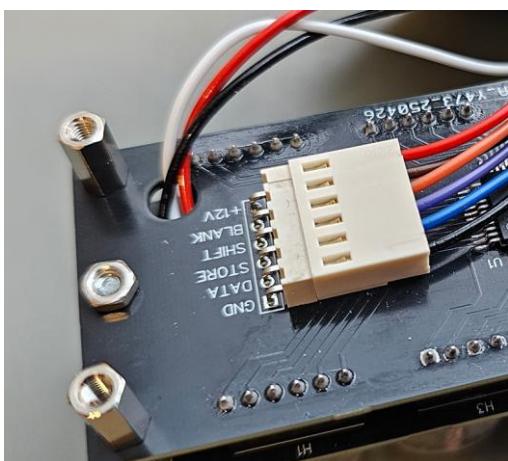
Firmly mount 4 standoffs on the display board



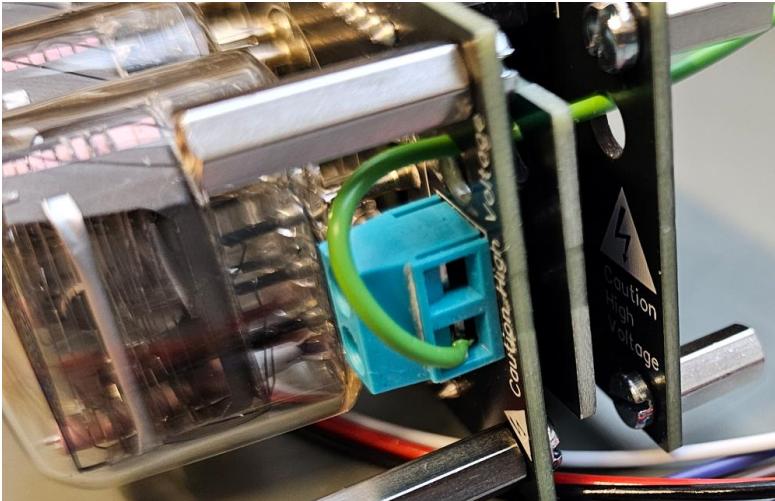
Connect the display board with the driver board



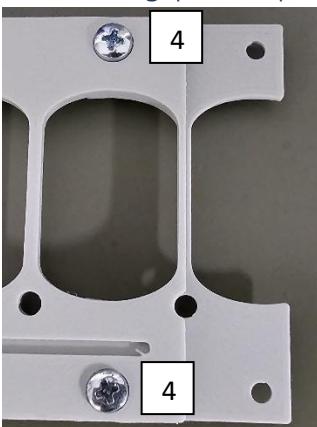
Connect the DRIVER cable



Connect the HV cable to the display board

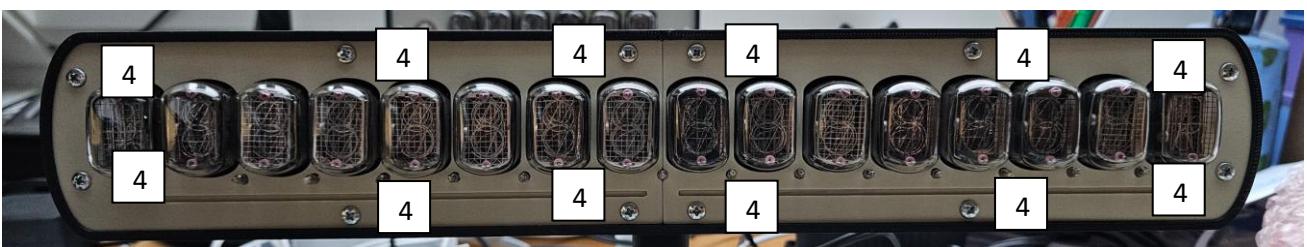


Attach the gap cover part



Mount the display front panels and carefully put the display block into the case

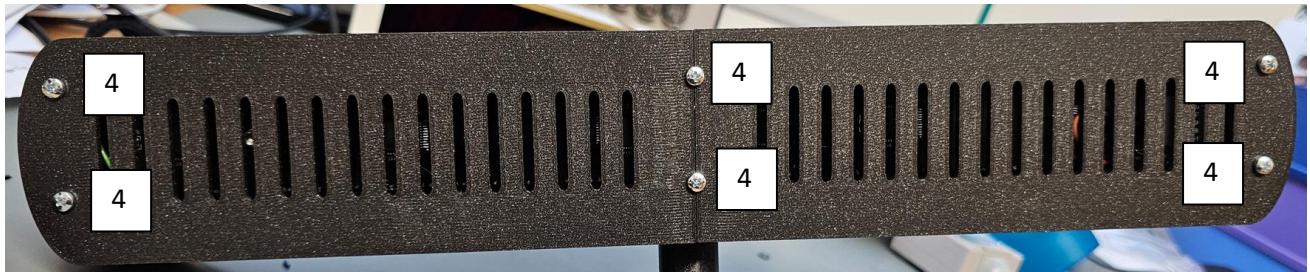
⚠ Make sure that no cables are damaged.



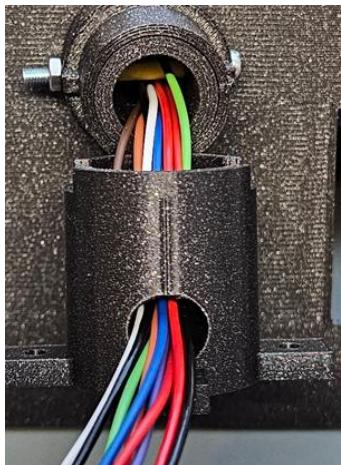
If you are using neon bulbs as decimal points, make sure that all bulbs go halfway through the holes.



Secure the display block



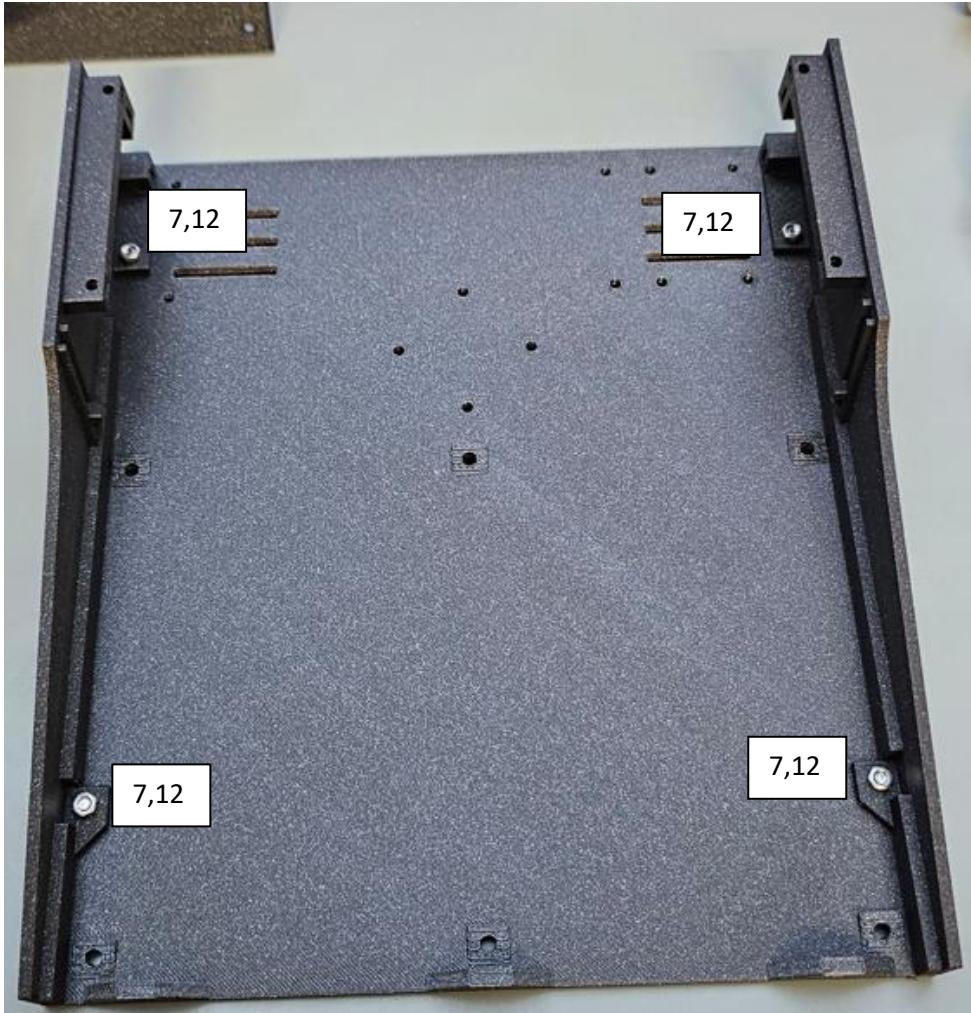
Pass the cables through the tube holder



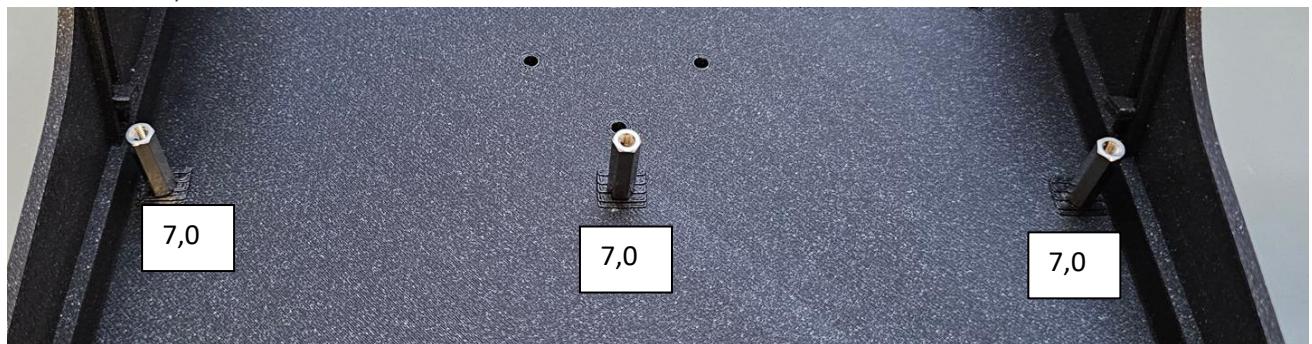
Mount the keycaps



Install the side panels



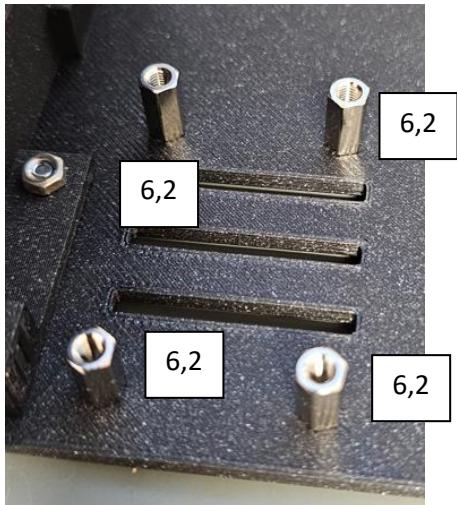
Install the keyboard standoffs



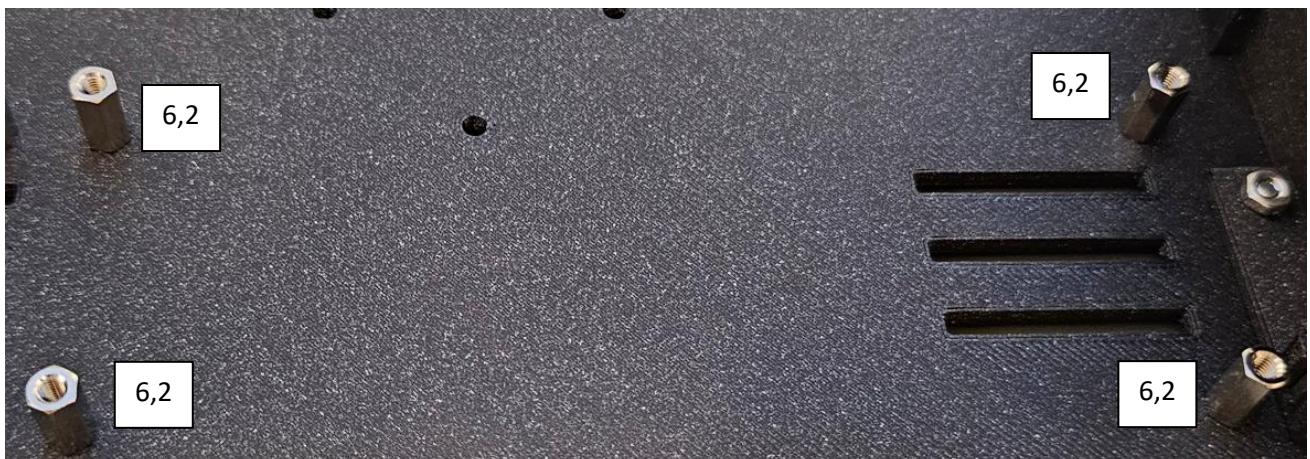
Place and secure two nuts in advanced



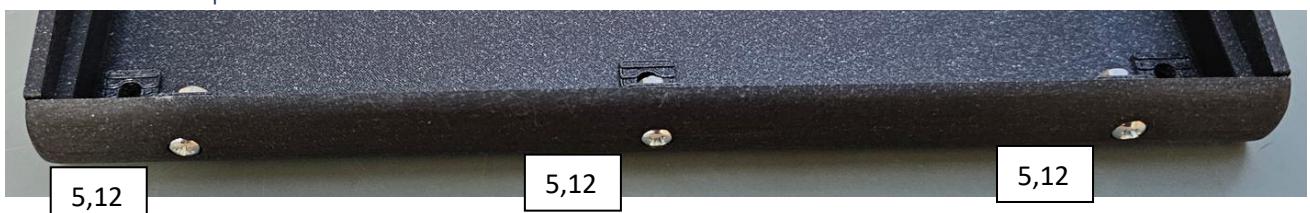
Mount the HV PSU standoffs (may not apply to your model)



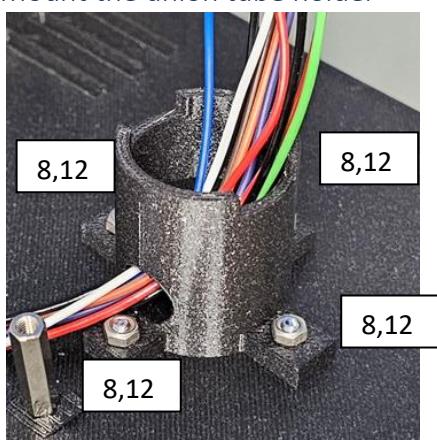
Mount the controller standoffs



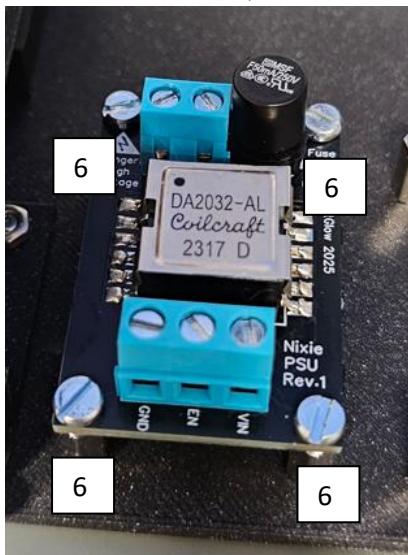
Install the front part



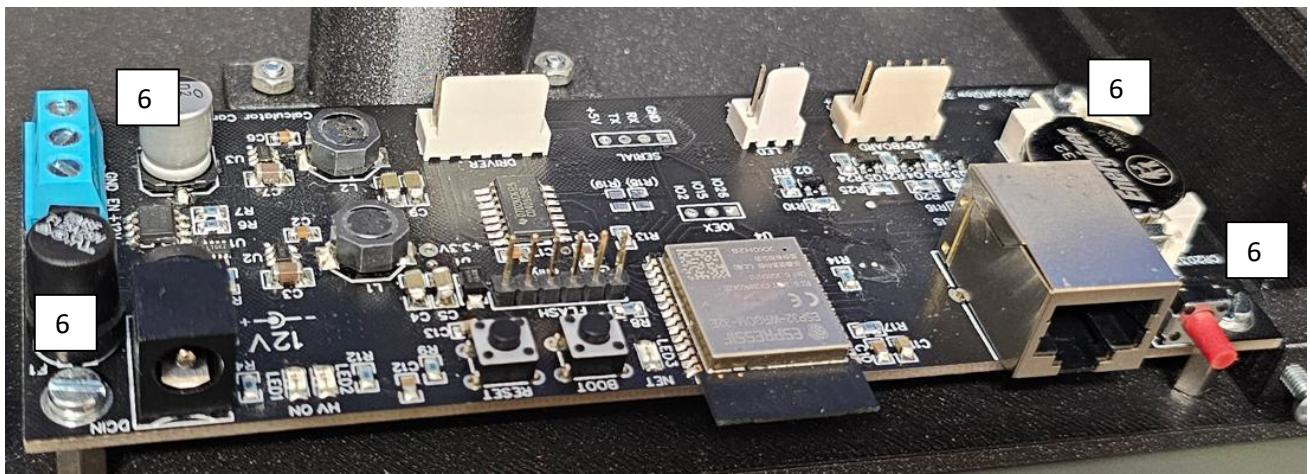
Mount the union tube holder



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



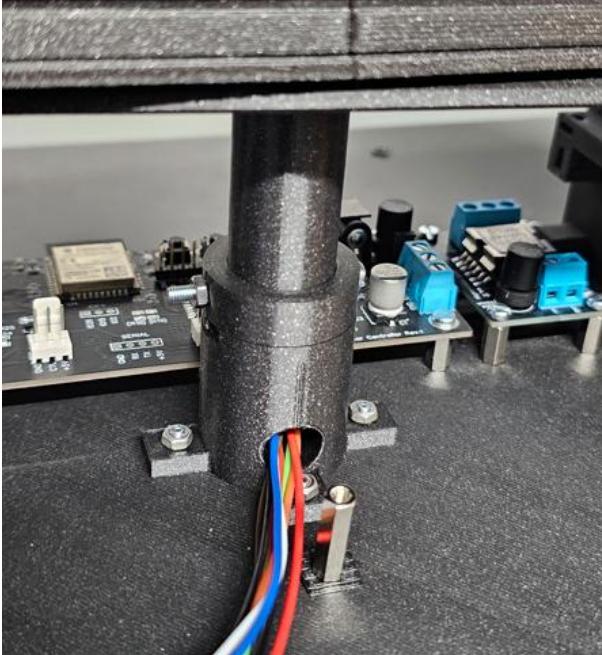
Install the controller



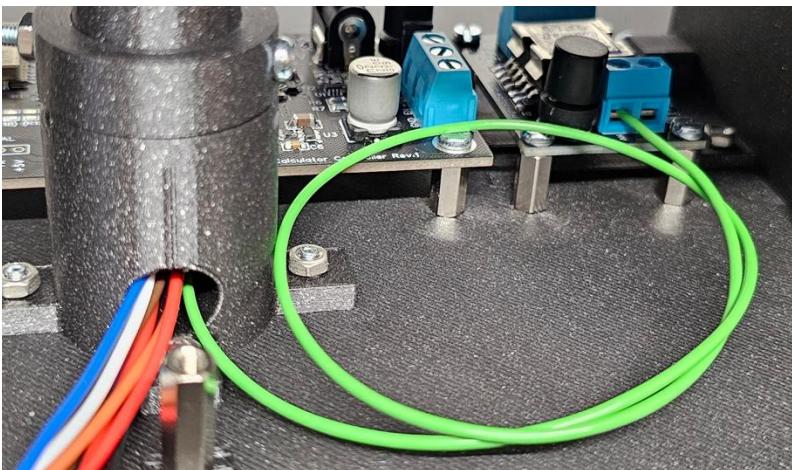
⚠ Make sure you have bridged the 12V option for the driver



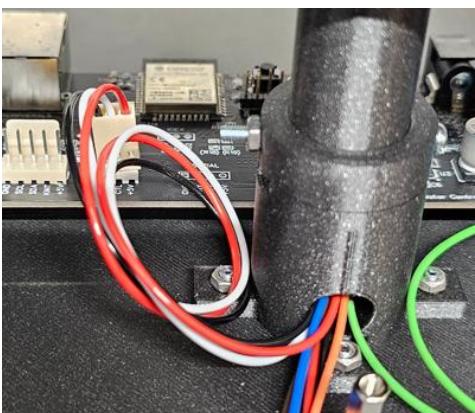
Insert the display into the tube holder



Connect the HV cable to the HV power supply (may be different for your model)
Leave some excess cable so you can still access the display if needed.



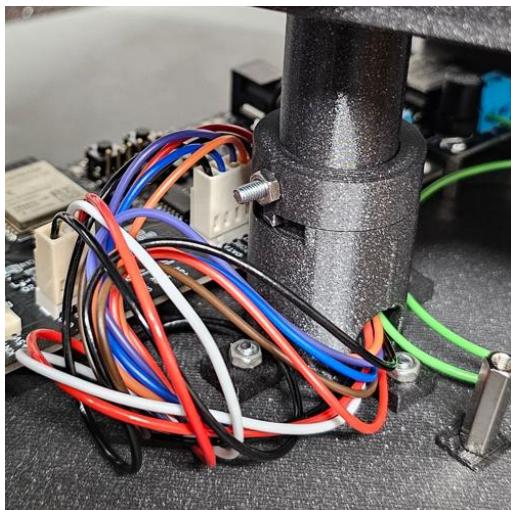
Mount the connector and connect the LED cable to the controller
Leave some excess cable so you can still access the display if needed.



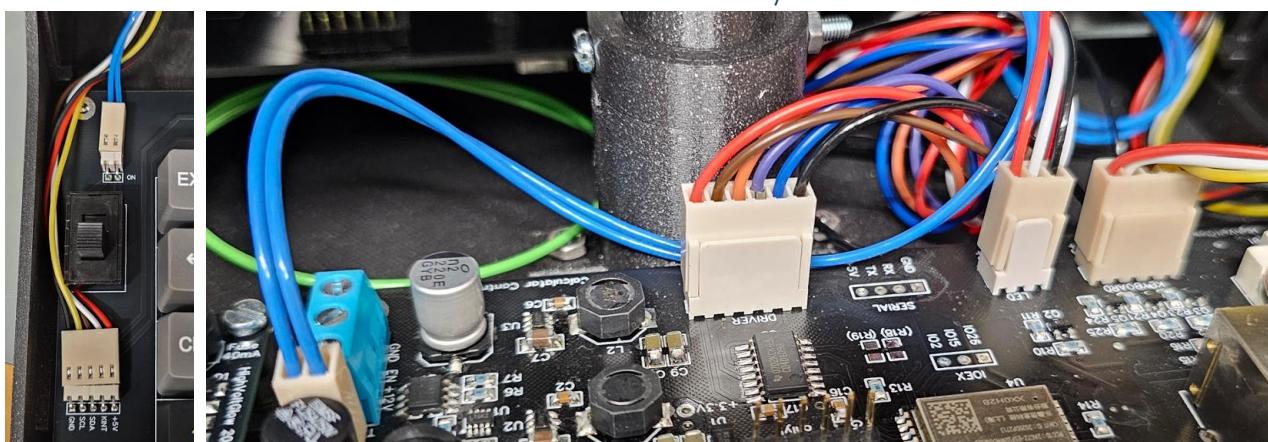
Mount the connector and connect the DRIVER cable to the controller

⚠ Remember that this cable is crossed.

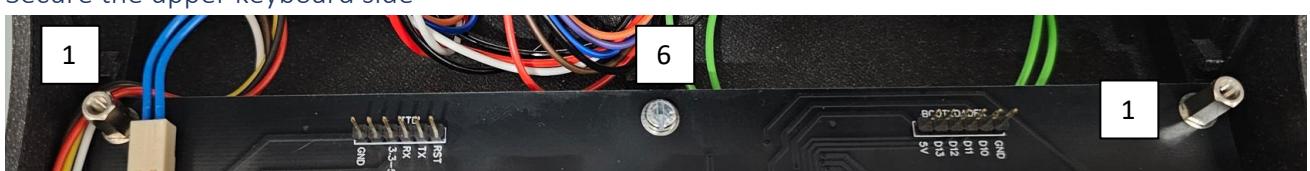
Leave some excess cable so you can still access the display if needed.



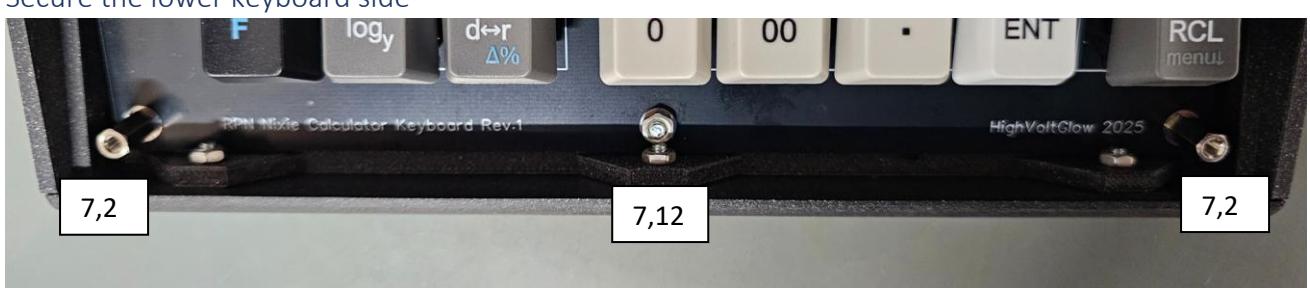
Connect the KEYBOARD and the SWITCH cables from the keyboard to the controller



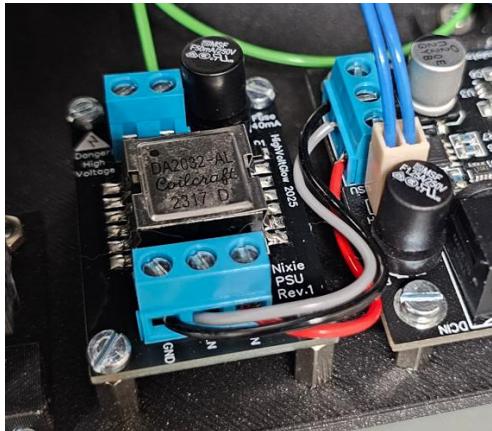
Secure the upper keyboard side



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

Add an additional foot in the red area

