

## Assembling the calculator - IN-16 / B-5870 / IN-17 - versions

**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

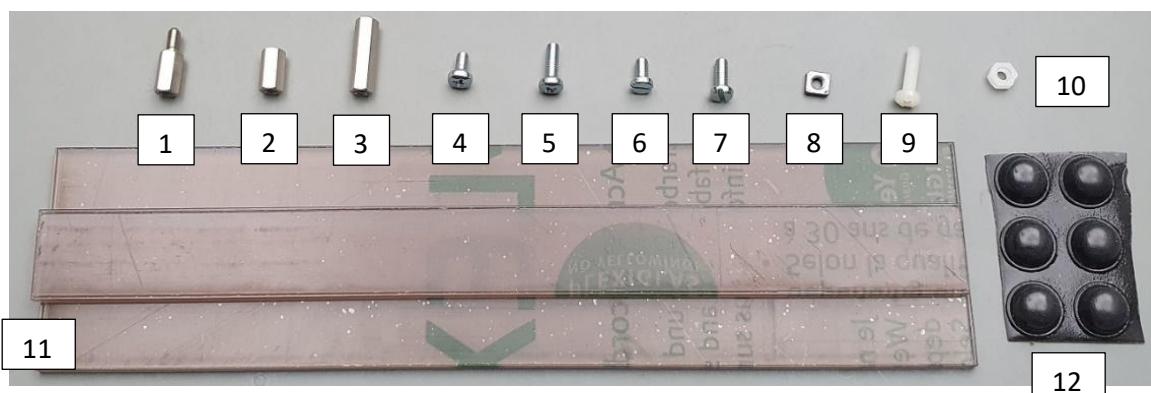
- Assembled boards, including the socket boards with the nixies
- High voltage power supply
- Keycaps
- Connection cables and connectors:

| ID       | Qty | Wires | Mode     | Comment  |
|----------|-----|-------|----------|--|
| SWITCH   | 1   | 2     | straight | Mount connectors on both ends                    |
| LED      | 1   | 3     | straight | For IN-16 underlighting mount only one connector |
| KEYBOARD | 1   | 5     | straight | Mount connectors on both ends                    |
| DRIVER   | 1   | 6     | straight | Mount connectors on both ends                    |
| TOHVPSU  | 3   | 1     |          |  |
| HV       | 1   | 1     |          | IN-16, B-5870                                    |
| HV       | 2   | 1     |          | IN-17  |

**⚠ 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  | 10  | Standoff, 10mm, M3, female/female                            |                     |
| 3  | 3   | Standoff, 16mm, M3, female/female                            |                     |
| 4  | 4   | Pan head screw, 6mm, M3                                      |                     |
| 5  | 11  | Pan head screw, 10mm, M3                                     |                     |
| 6  | 21  | Screw, 6mm, M3   |                     |
| 7  | 10  | Screw, 8mm, M3   |                     |
| 8  | 20  | Square nut, M3, 5.5 x 5.5 x 1.8mm, DIN562                    |                     |
| 9  | 2   | Plastic screw, 8mm, M3                                       | IN-16 underlighting |
| 10 | 2   | Plastic nut, M3  | IN-16 underlighting |
| 11 | 1   | Piece of transparent acrylic 203mm x 50mm x 3mm (e.g., 7C22) |                     |
| 12 | 6   | Rubber foot  |                     |



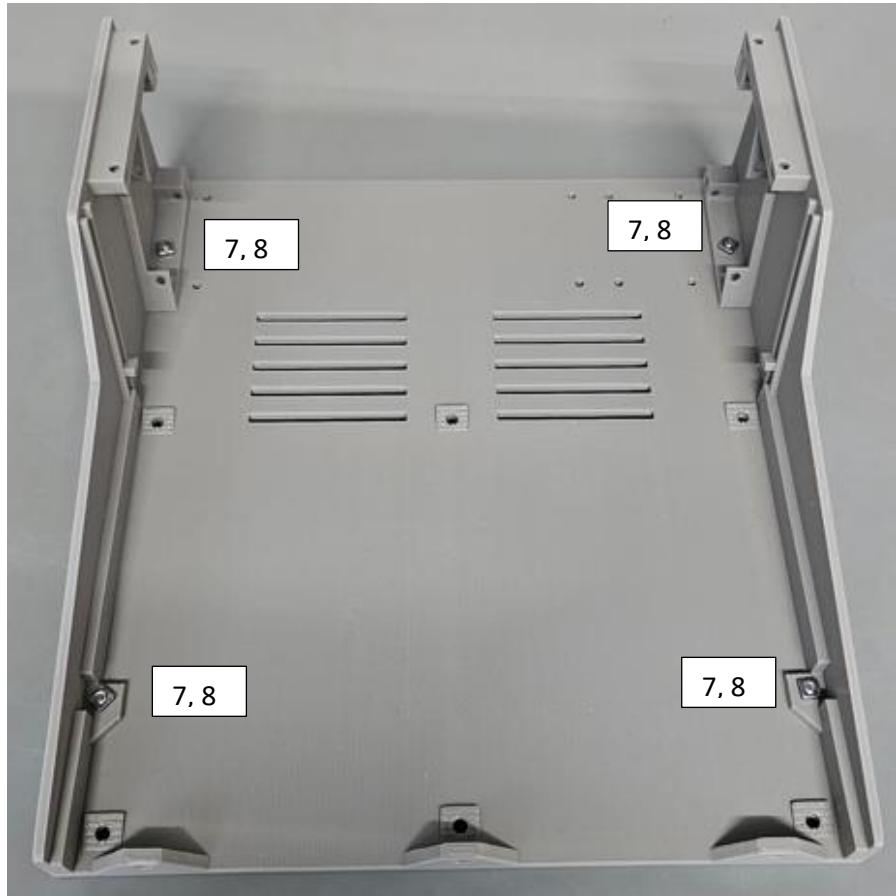
## Assembly

⚠ Make sure you don't overtighten the screws.

### Mount the keycaps



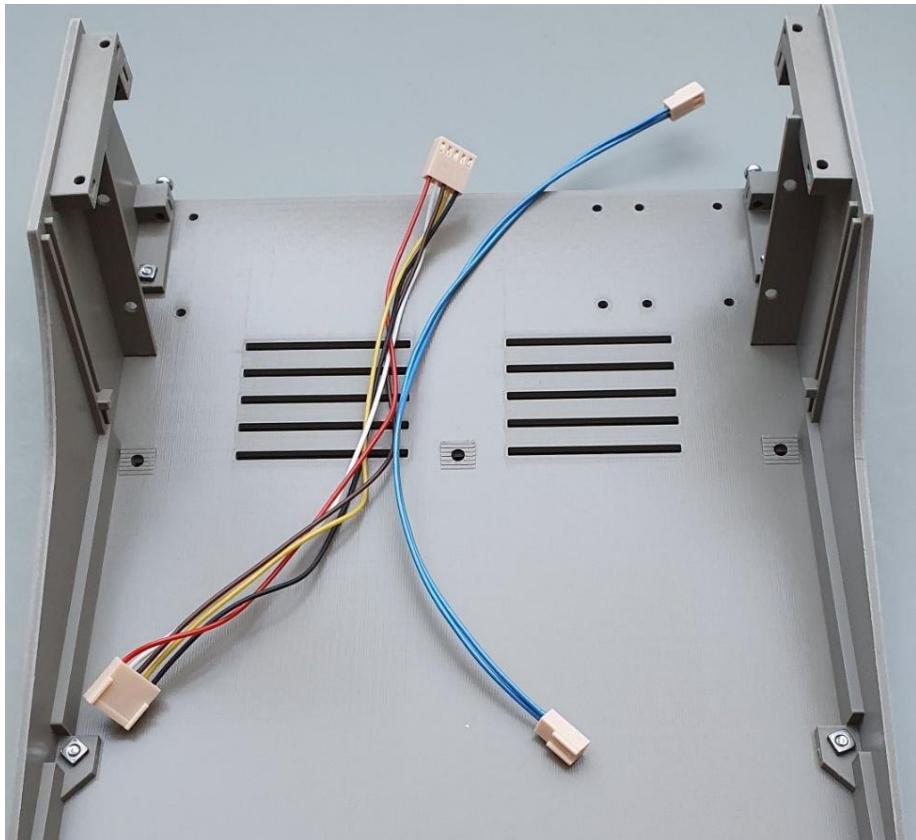
### Install the side panels



Place and secure two nuts in advanced



Place the KEYBOARD and SWITCH cables



Install the additional LED board (for the IN-16 version with underlighting only)  
I recommend using underlighting, it looks nicer than backlighting.

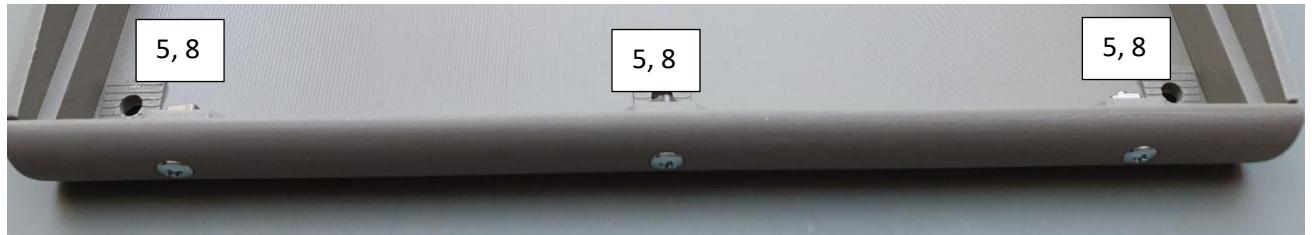
Place the two 3D printed spacers between the boards and screw the boards together.



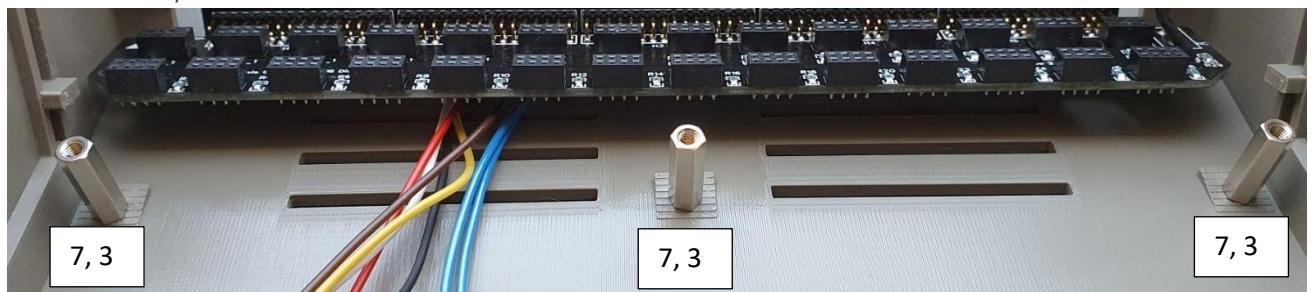
Install the display and driver board(s)



Install the front part



Install the keyboard standoffs



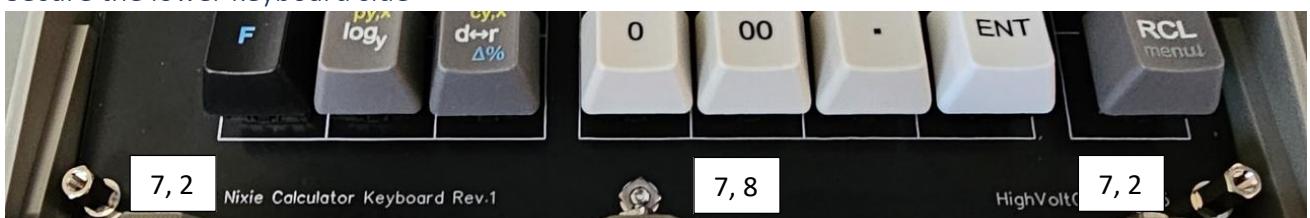
Connect cables to the keyboard



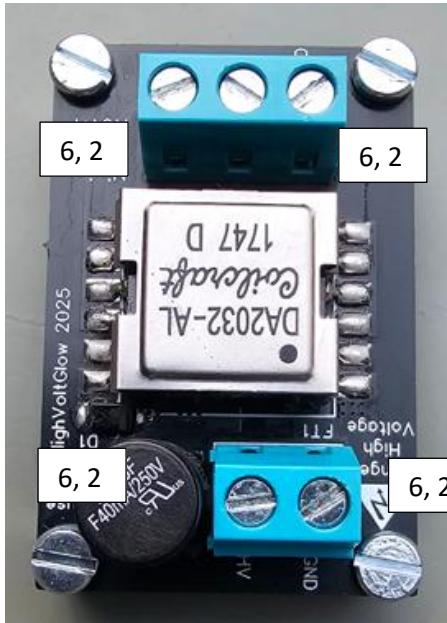
Secure the upper keyboard side



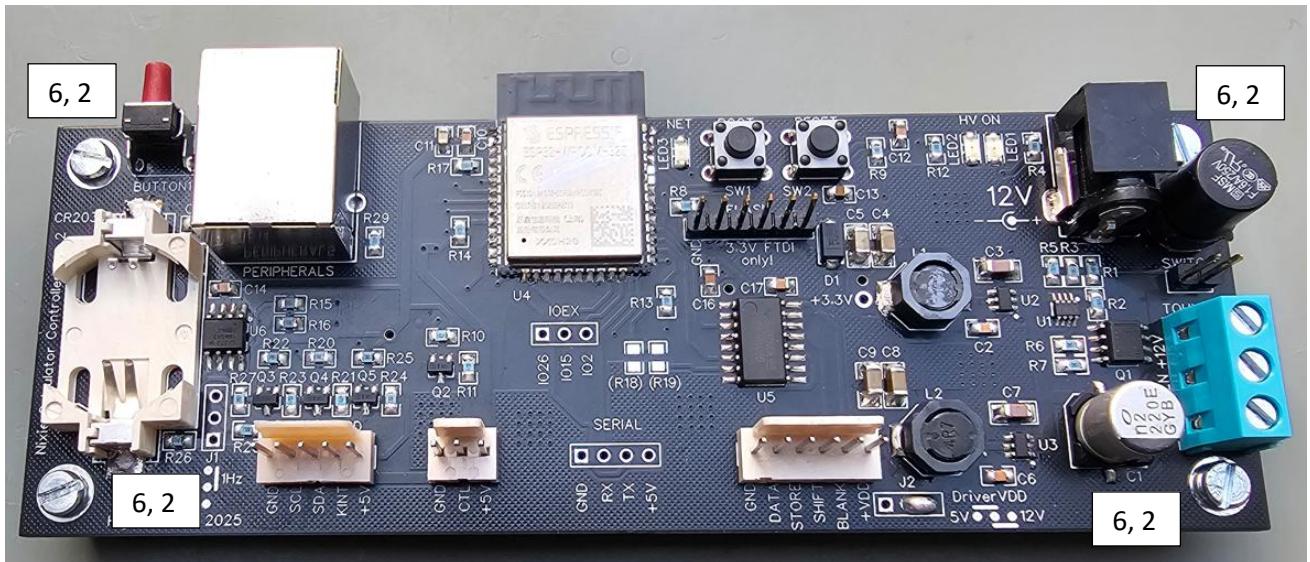
Secure the lower keyboard side



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



Install the controller standoffs

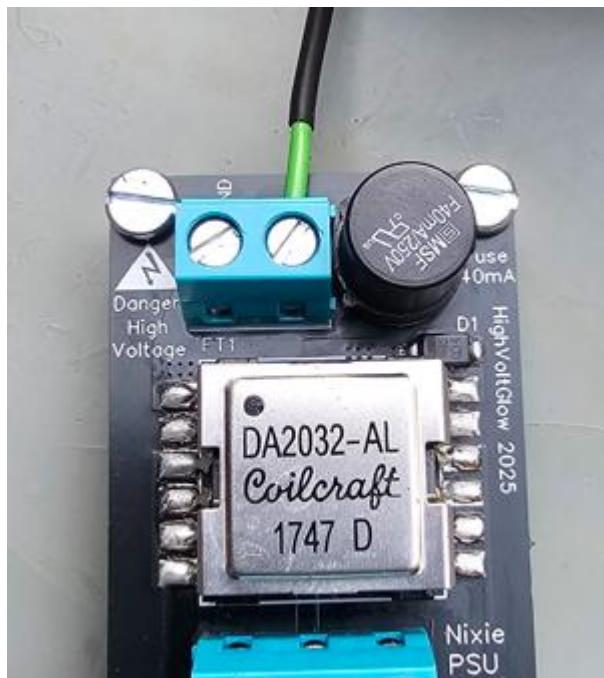


⚠ Make sure you have bridged the 12V option for the driver



Connect the display HV wire(s) to HV power supply (could be different for your model)

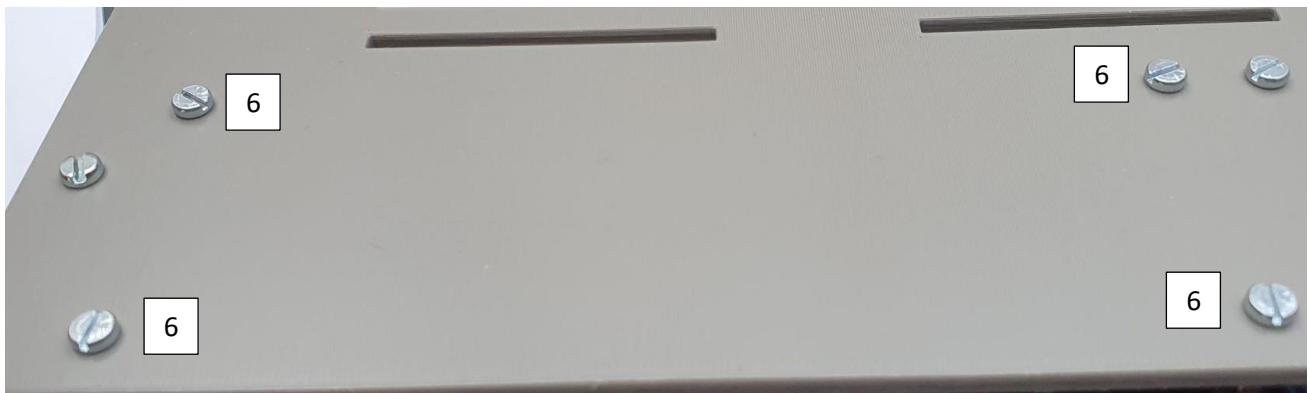
For the IN-16 and B-5870 version only the HV wire is connected. For the IN-17 version you must also connect the ground wire.



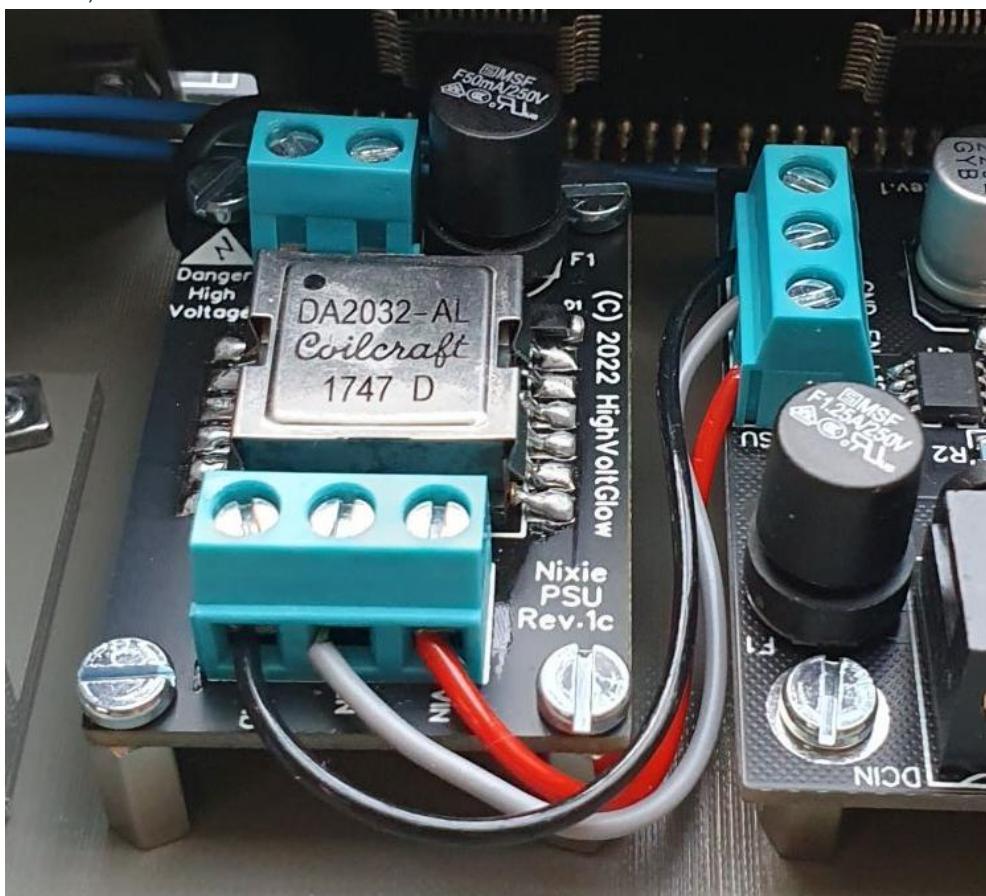
Secure the HV power supply (could be different for your model)



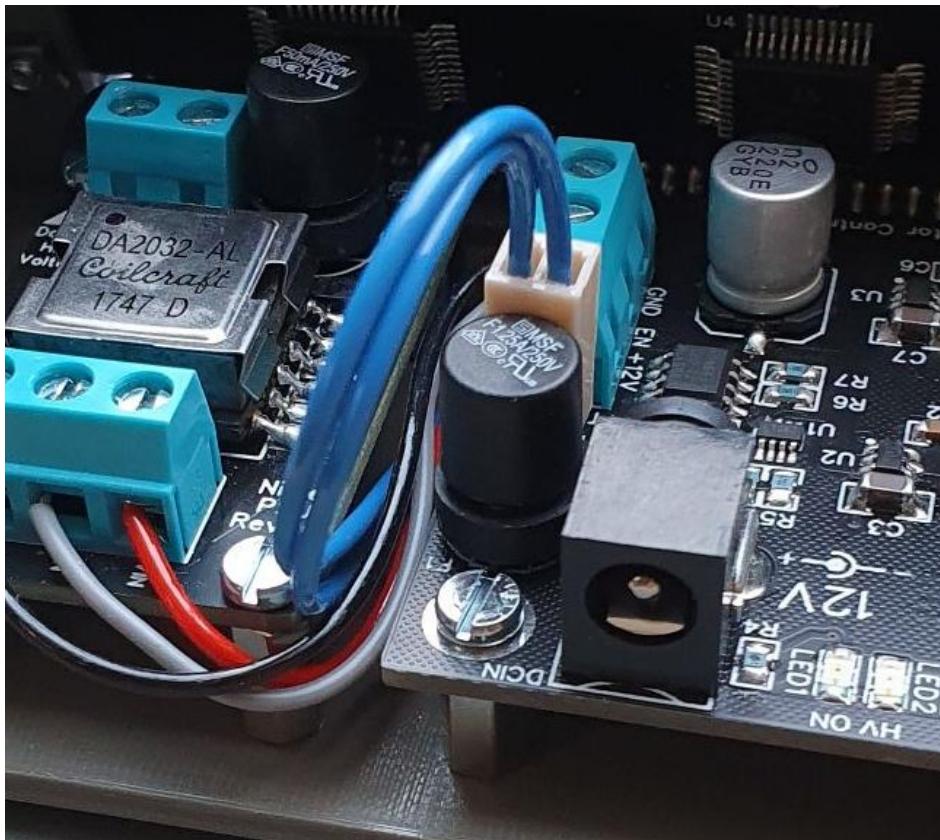
Secure the controller



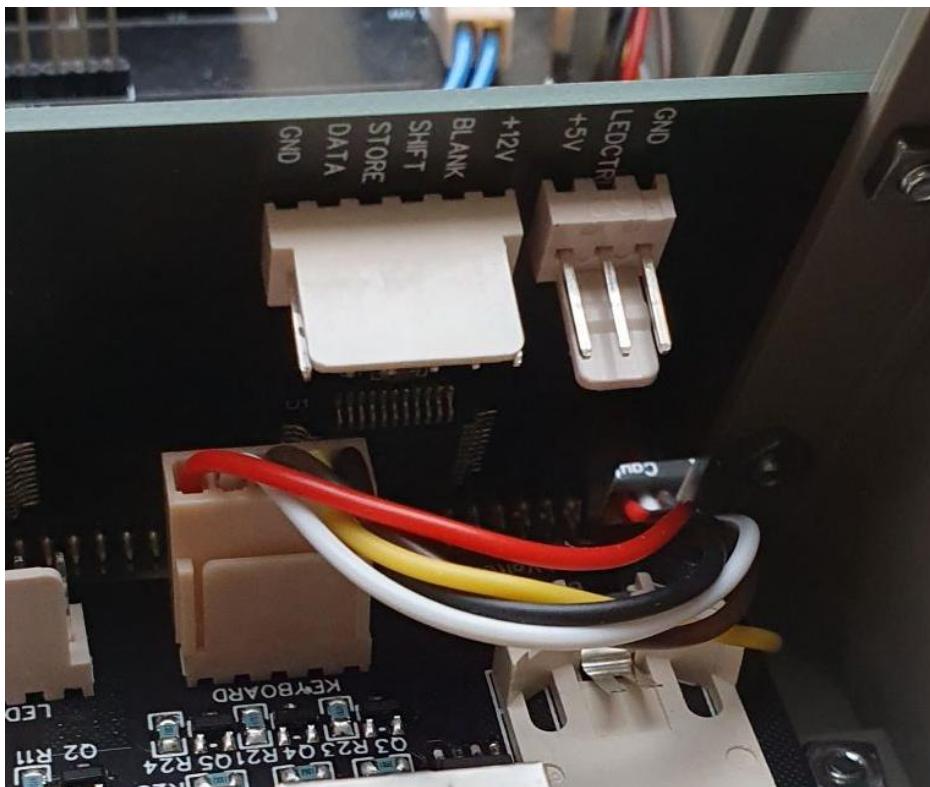
Connect +12V, EN and GND from controller to the HV power supply (could be different for your model)



Connect the SWITCH cable to the controller



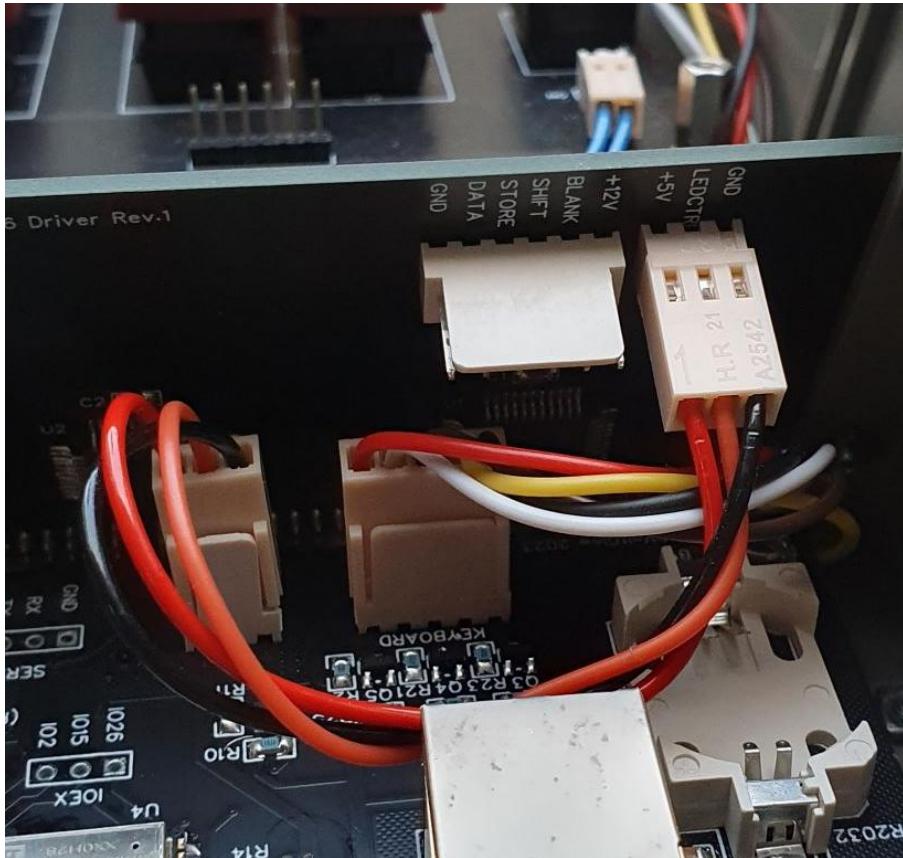
Connect the KEYBOARD cable to the controller



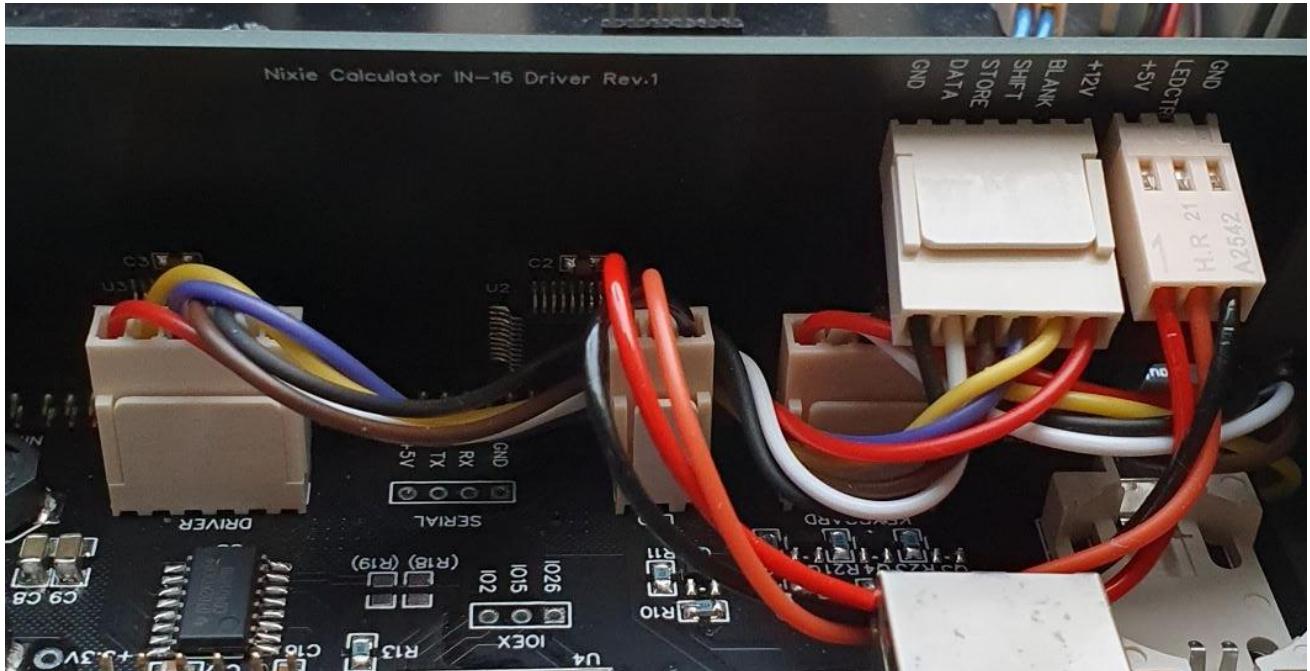
Connect the LED cable from the driver board to the controller

For the IN-16 version with underlighting connect the wires from the separate LED board to the controller.

For the other versions connect the wires between driver and controller board.



Connect the DRIVER cable from the driver board to the controller



Insert the nixies

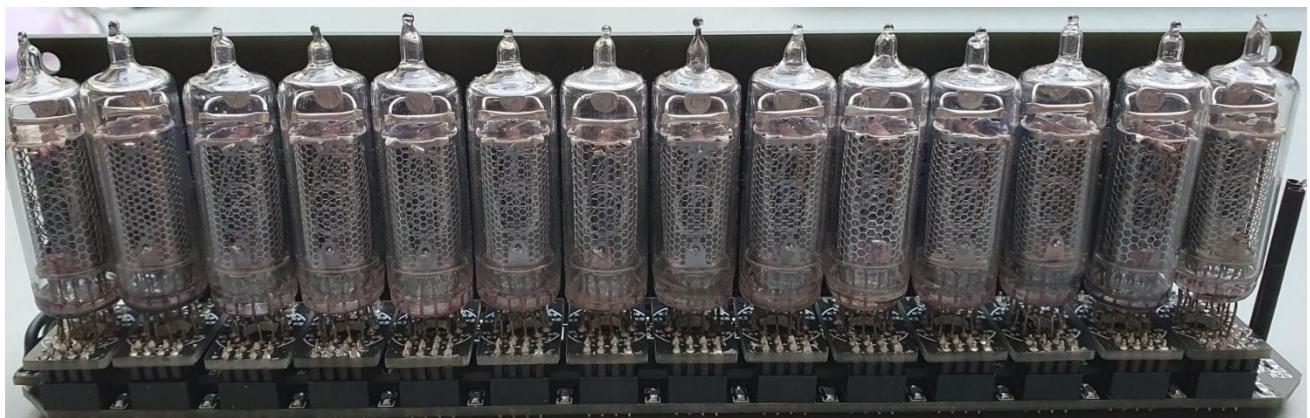
B-5870



IN-17



IN-16



Install the 3D printed socket cover (B-5870 version without display frame only)



Install the keyboard shield



Insert the acrylic panel

I prefer the acrylic type 7C22 (56% light transmission). Depending on the provider, the color is described as gray or brown or umbra.



If you have chosen the side panels with the frame option, place the 3D printed frame behind the acrylic.



Install the back shield



Install the top shield



Glue the label board



Place the rubber feet

