Instructions

Congratulations for buying your Desktop housing AZ/EL for ERC-M. This document will guide you through the needed steps for assembly of the Desktop-housing and integration of the ERC-M. You will reach the best result by following these instructions step by step.

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Safety-Instructions

- Don't continue using the product if it is damaged.
- Keep electronic assemblies and components away from children!
- Products that carry electric voltages must be handled by taking care about the valid instructions and regulations.
- If the product must be repaired, only use original spare parts! Using different parts may cause property damage and personal injury! The repair has only to be done by an expert!
- The installation has to be done by a skilled expert.
- Connection-cables have to be chosen according to the needed diameter.
- Before working on the product all supply-voltages have to be securely cut of.
- The product is designed to work in clean and dry areas inside buildings.
- Prevent the product of humidity, water and heat.
- Don't use the product in areas where explosive gases, vapour or dust are or may occur.
- Don't let the product fall or apply mechanical stress as the product may be damaged.

1. Description

The HID is a **h**uman-**i**nterface-**d**evice and provides a 2x16 character LCD-display, 6 LEDs and 4 pushbuttons to the user. The HID and ERC-M is mounted in a powder-coated and laser-marked black sheet-metal-housing.

2. Bill of material (BOM)

The BOM is in the order how you should use the parts.

QTY	Type	Value	Reference	Comments
HID V2.0 + Desktop housing AZ/EL Bill Of Material				
Assembly of bottom-side of PCB				
1	PCB	HID 2-layer 119.8x36.6mm V2.0		
4	Diode	1N4004	D1,D2,D3,D4	Alt. 1N4148
6	Resistor	300R 5%	R2,R3,R4,R5,R6,R7	Alt. 300R 1%
1	Resistor	54R 5%	R8	Alt. 53.6R 1% or 51R 5%
1	Potentiometer	10KA	R1	
1	Box-header	2x8 pole	X2	
Assembly of top-side of PCB				
4	Switch	3FTL6	S5,S6,S7,S8	
4	LED	green 3mm LC	LED5,LED6,LED7,LED8	
2	LED	yellow 3mm LC	LED9,LED10	
6	Spacer	3x12x4mm	for LEDs	
1	LCD	with backlight	DIS1	
1	Pinheader	1x16 pole		for LCD
4	Spacer	2.5x5x5mm		LCD-mounting
4	Screw	M2.5x12mm		LCD-mounting
4	Nut	M2.5		LCD-mounting
4	Dome	19mm		for switches
Cableing				
1	Flat ribbon cable	330mm 16 pol.		for cables
2	Connector	2x8 pole		for HID to ERC-M cable
1	DSUB-connector	15 pole male flat ribbon		for D-SUB-cable
1	DSUB-connector	15 pole female flat ribbon		for D-SUB-cable
1	DSUB mounting-kit	UNC		for D-SUB
Mechanical integration				
1	Housing	steel AZ/EL		bottom and cover
4	Rubberfeet	d=12mm		for housing
4	Screw	2.9mm x 6.5mm blank		for rubberfeet, alt. black
4	Screw	M3x6mm Allen		HID-mounting
1	Tool	Allen-key 2.5mm		
4	Screw	M3x6mm		PCB-mounting, alt. Allen
4	Screw	2.9mm x 6.5mm black		for housing
1	Blind cap	LAN		

3. Assembly bottom-side of PCB

Assemble and solder the components according to the following drawings.

Please read the following instructions before you start:

Take care of polarization of the following components:
- Diodes D1,D2,D3,D4
- Box-header X2

Those components are marked red in the following drawing.
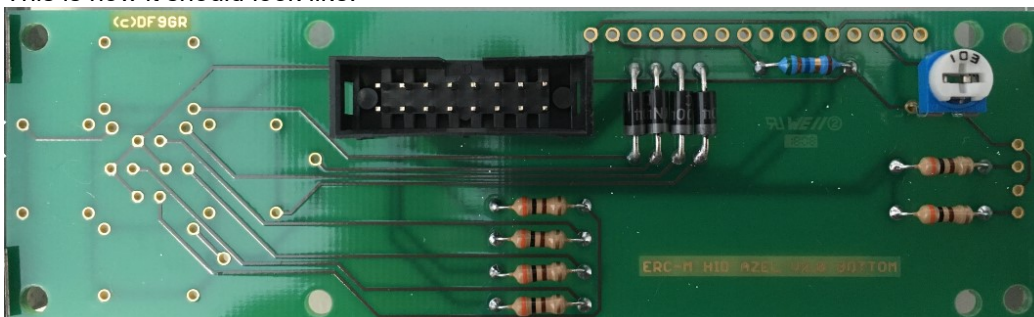Carefully compare the position of the PCB with the drawings before you start to assemble it.

Components :

Colour-code of Resistors:
54R 5%	green-yellow-black-gold
alt.: 53.6R 1%	green-orange-blue-gold-brown
alt. 51R 5%	green-brown-black-gold
300R 5%	orange-black-brown-gold
alt.: 300R 1%	orange-black-black-black-brown
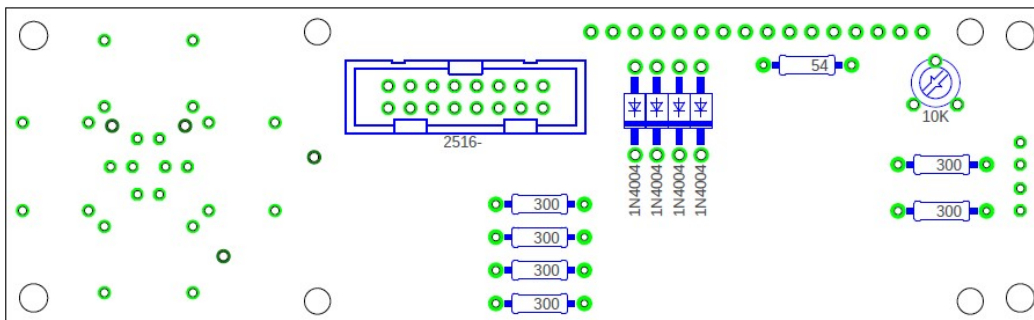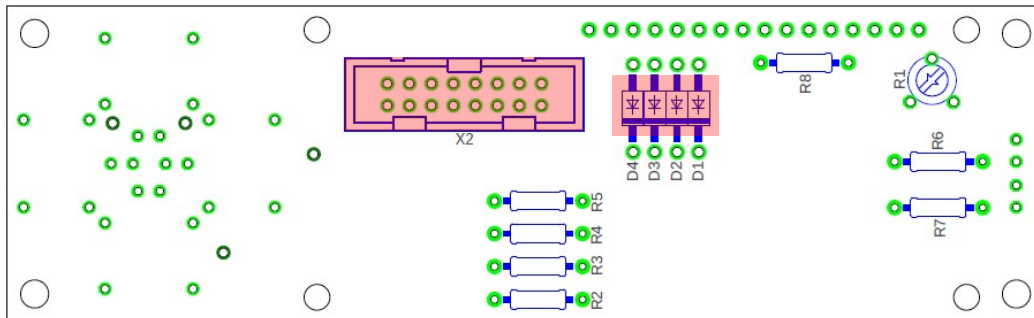
This is how it should look like:

Inspect carefully the assembly and soldering. Once the LCD is mounted (next step),
it becomes quite difficult to rework any soldering or assembly of the bottom-side !
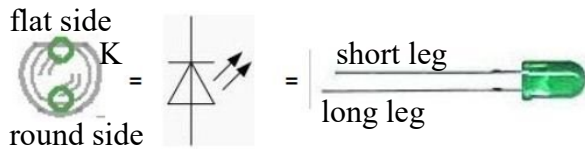
4. Assembly top-side of PCB

Assemble and solder the components according to the following drawings.

Please read the following instructions before you proceed:

LEDs:

flat side

K   =   = | short leg
round side | long leg

Take care of polarization of the following components :
-   LED1,LED2,LED3,LED4,LED9,LED10
Those components are marked red in the following drawing.

Assemble and solder the switches and LEDs according to the following drawings.

Use the 3x12x4mm spacers for the LEDs to fix them in the right distance from the PCB.
Take care that the switches fit plane to the PCB. Otherwise you will have problems with sticky switches later when the HID is mounted to the front-panel.
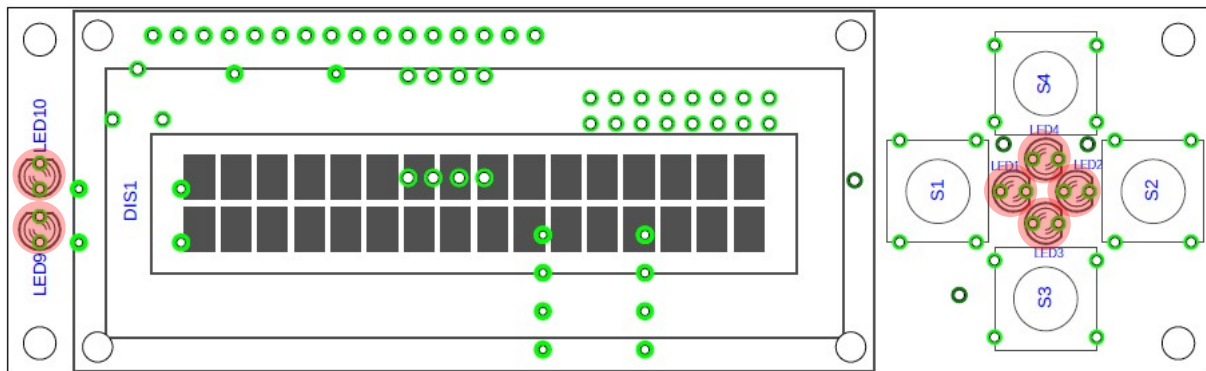
Hint: Only solder 1 leg of the switches and LEDs, check for alignment and than solder the remaining pins.
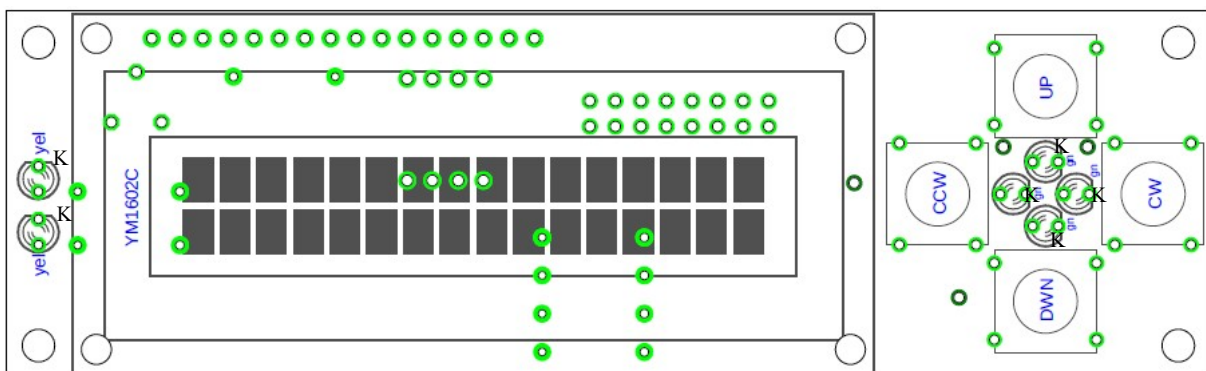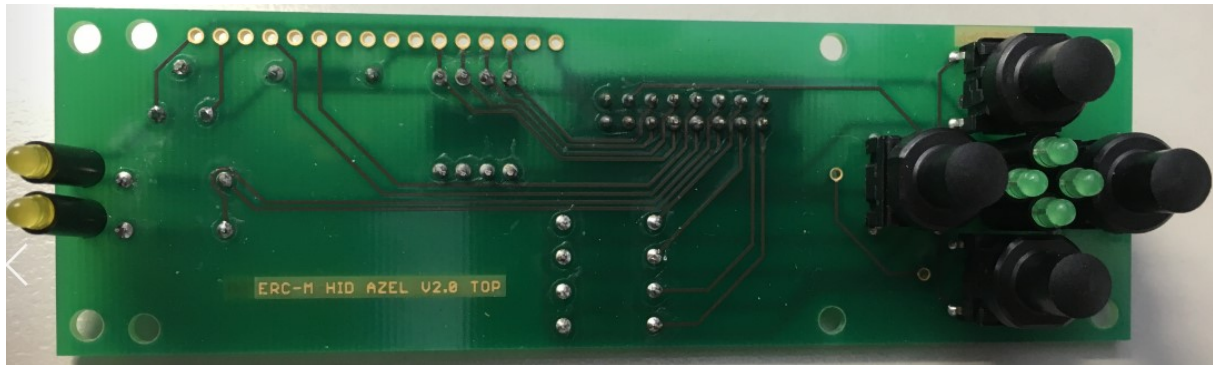

Put the 19mm domes on top of the switches.
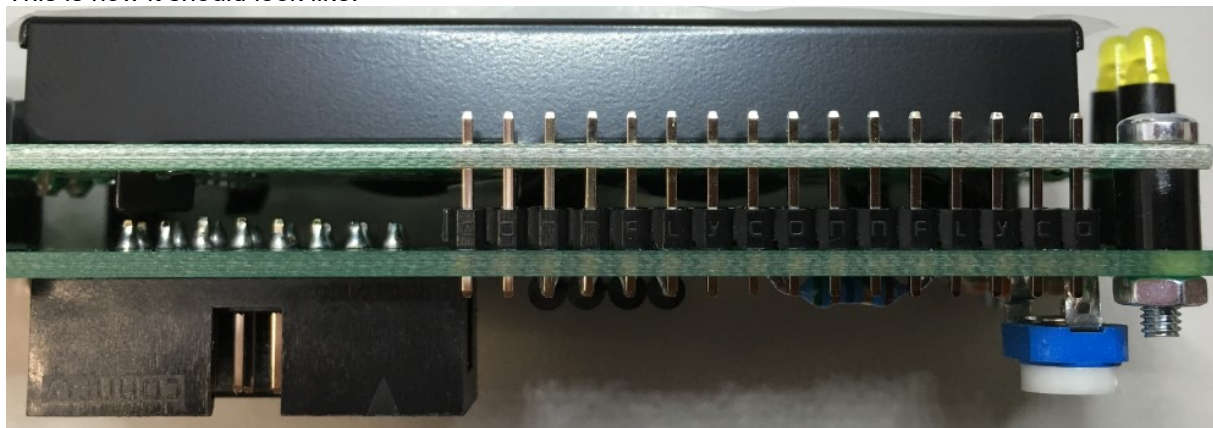
This is how it should look like:

Assemble the LCD with the 5mm spacers, screws, nuts to the PCB. Put the 16-pole pin-header between PCB and LCD before mounting. Leave the protection-foil on the LCD until the HID will be mounted into the housing.
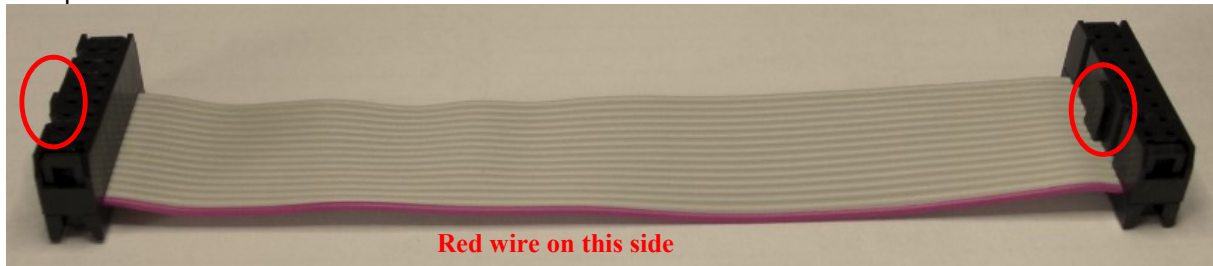
Now solder the 16-pole pin-header first to the LCD and than to the PCB.
This is how it should look like:

5. Cable to connect the HID to ERC-M

Cut 130mm from the flat-ribbon-cable and press the 2x8 pole connectors to both ends as shown in the next picture.
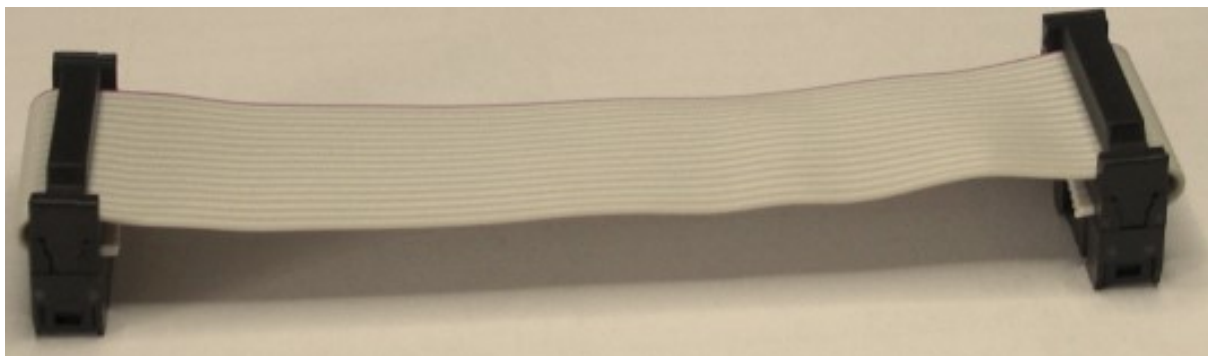

Red wire on this side

Take care of the orientation of the connectors (red circle) and the position of the red wire.

Use a bench-vise to properly press the connectors to the flat-ribbon-cable. Those connectors are quite sensible and may damage if you don't press them properly.
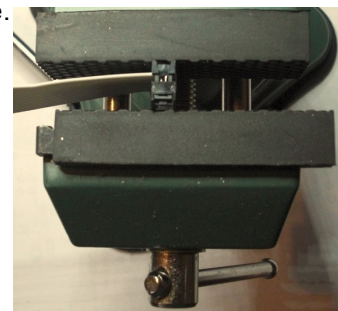

Bend the flat-ribbon-cable on both ends over the top of the connector and put the strain-relief on.

6. Cable to connect the ERC-M to rear-side D-SUB

Take the remaining 200mm of the flat-ribbon-cable and remove 1 wire from the 16-pole cable to get a 15-pole cable (don't remove the red wire, take the opposite site)
Press the 2 DSUB-connectors to both ends as shown in the next picture. The red wire always has to show to pin 1 of the connectors. The pin-number of the connectors is printed in the plastics of the connectors.
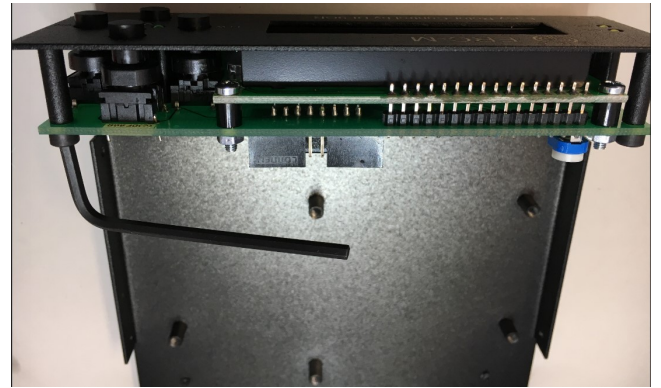

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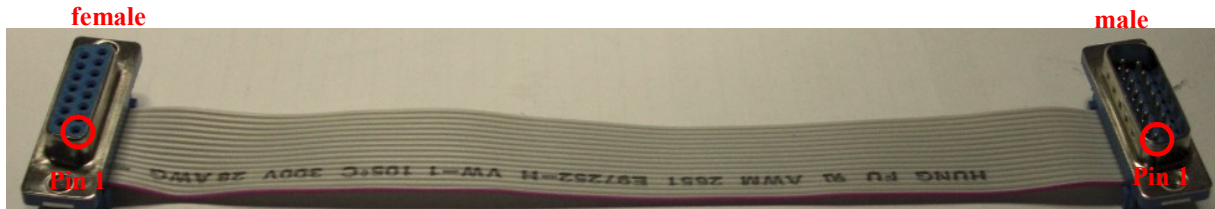
7. Mechanical integration into the desktop-housing
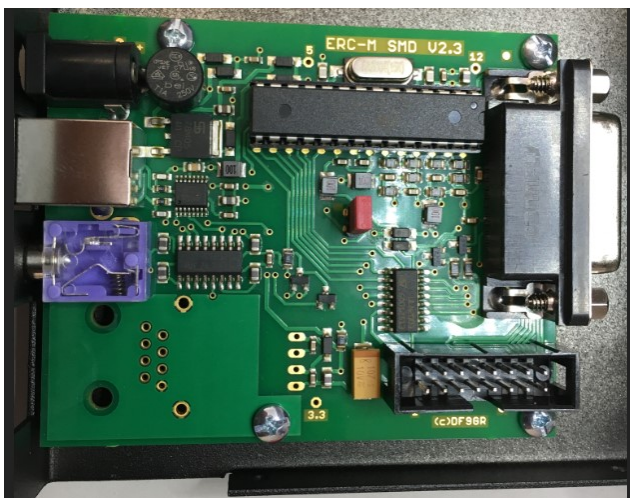
|	
Mount the 4 rubber-feet to the desktop housing using 4 screws 2.9x6.5mm. 	Remove the protection-foil from the LCD and mount the HID into the desktop-housing with 4 Allen-screws M3x6 using the Allen-tool provided with the kit.
Mount the ERC-M-PCB to the housing with 4 screws M3x6. 	Fold the 15-pole flat-ribbon-cable as shown and put the DSUB-connectors as shown and mount the female-DSUB-connector to the back-panel of the housing with the 2 UNC-distance-bolts and 2 washers from the DSUB-mounting kit.
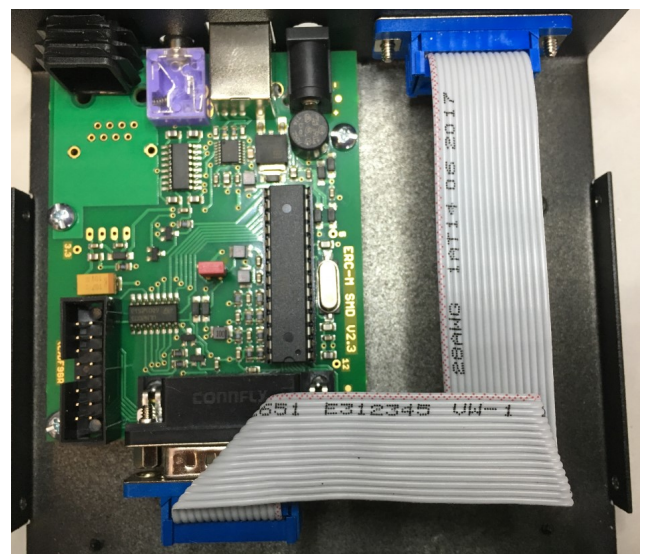
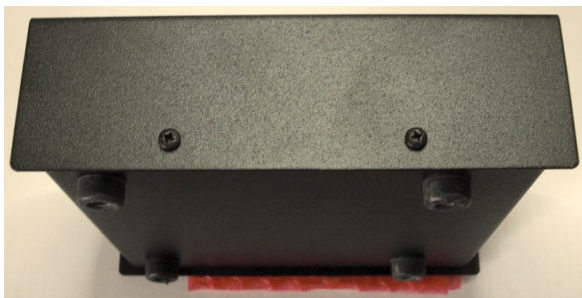Attach the 16-pole flat-ribbon-cable into the connectors as shown.

Connect the ERC-M to DC-supply or USB to adjust contrast settings. After start-up you should see a screen like this:
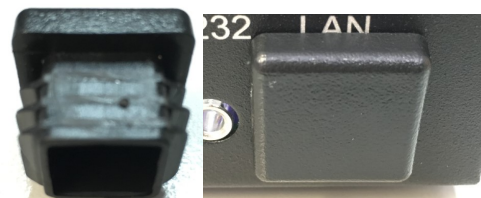

Adjust the contrast with the potentiometer R1 on the backside of the HID-PCB.
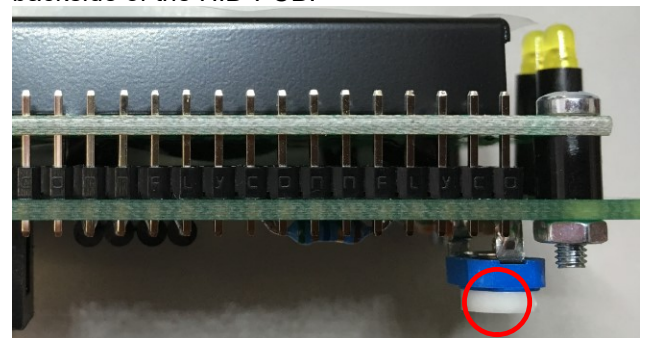
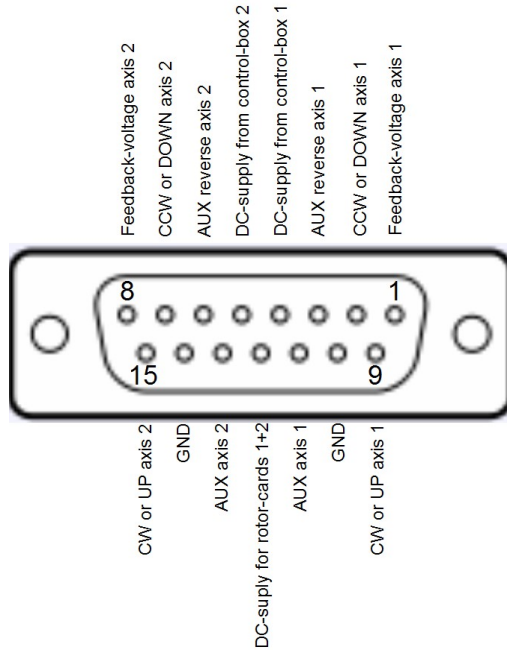Put the top-cover onto the housing and fix it with 4 screws 2.9x6.5mm

If you don't use the LAN-Option of the ERC-M, you can covert he the hole with the blind cap. Therefore cut the lamellas on one side of the cap with a knife and press the cap into the back-panel of the housing.

Appendix

Appendix 1: Pin-out of D-SUB15 ERC-M

Connector seen from outside to the female connector on the back of the desktop-housing.

Appendix 2: Schematics HID