Electronic Parts

Figure 1

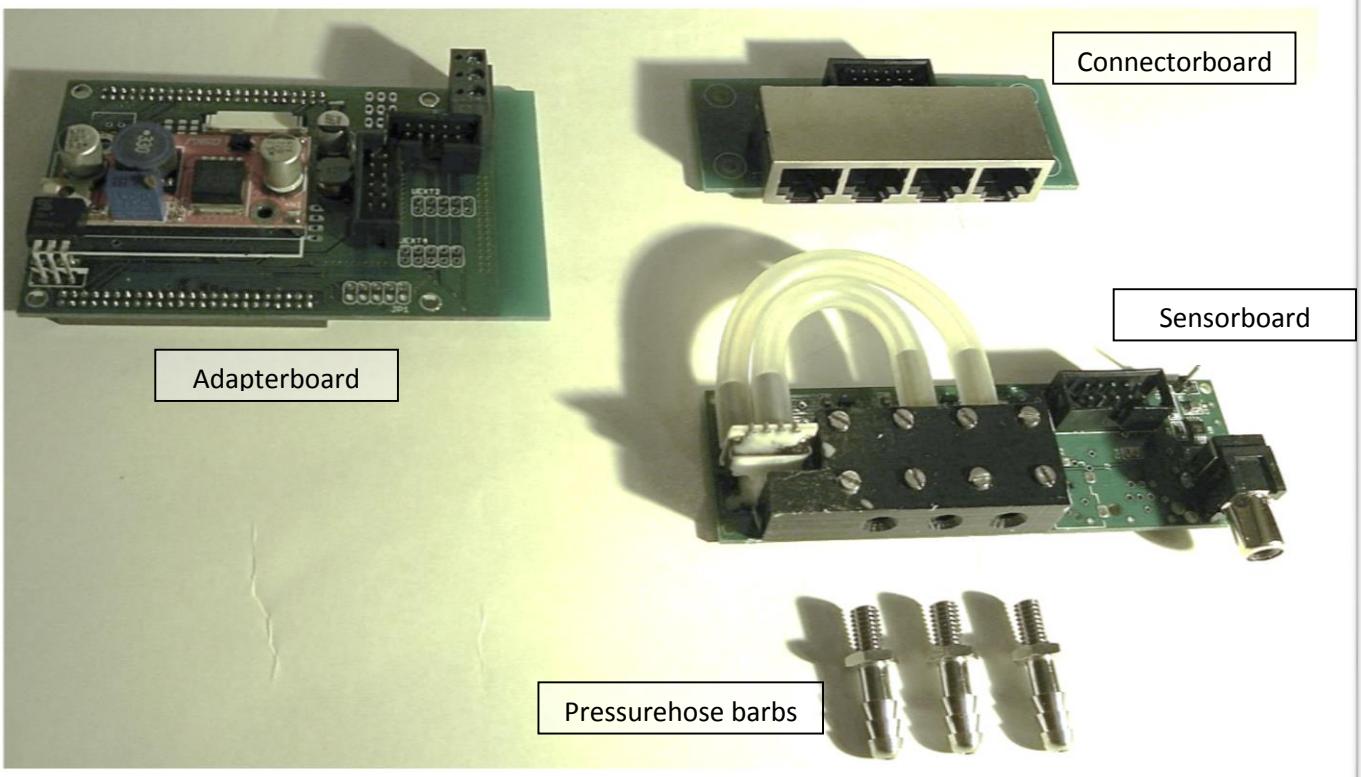


Figure 2

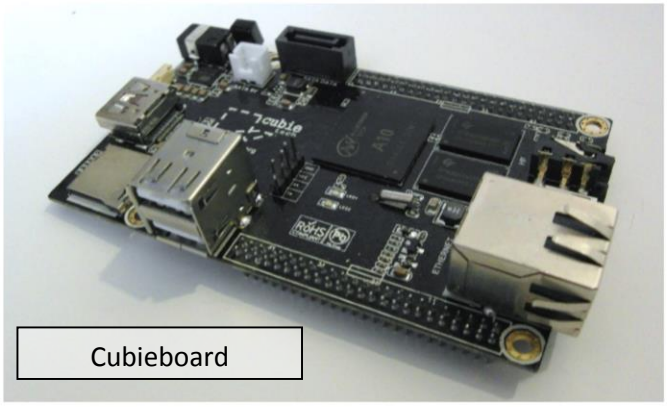
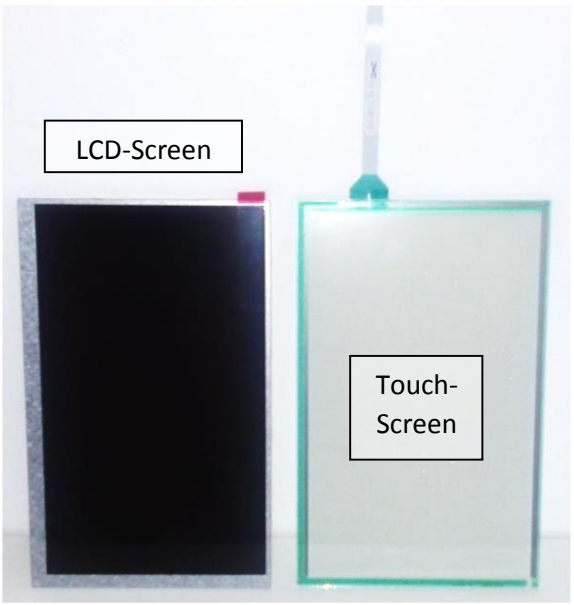


Figure 3



Housing

Figure 4

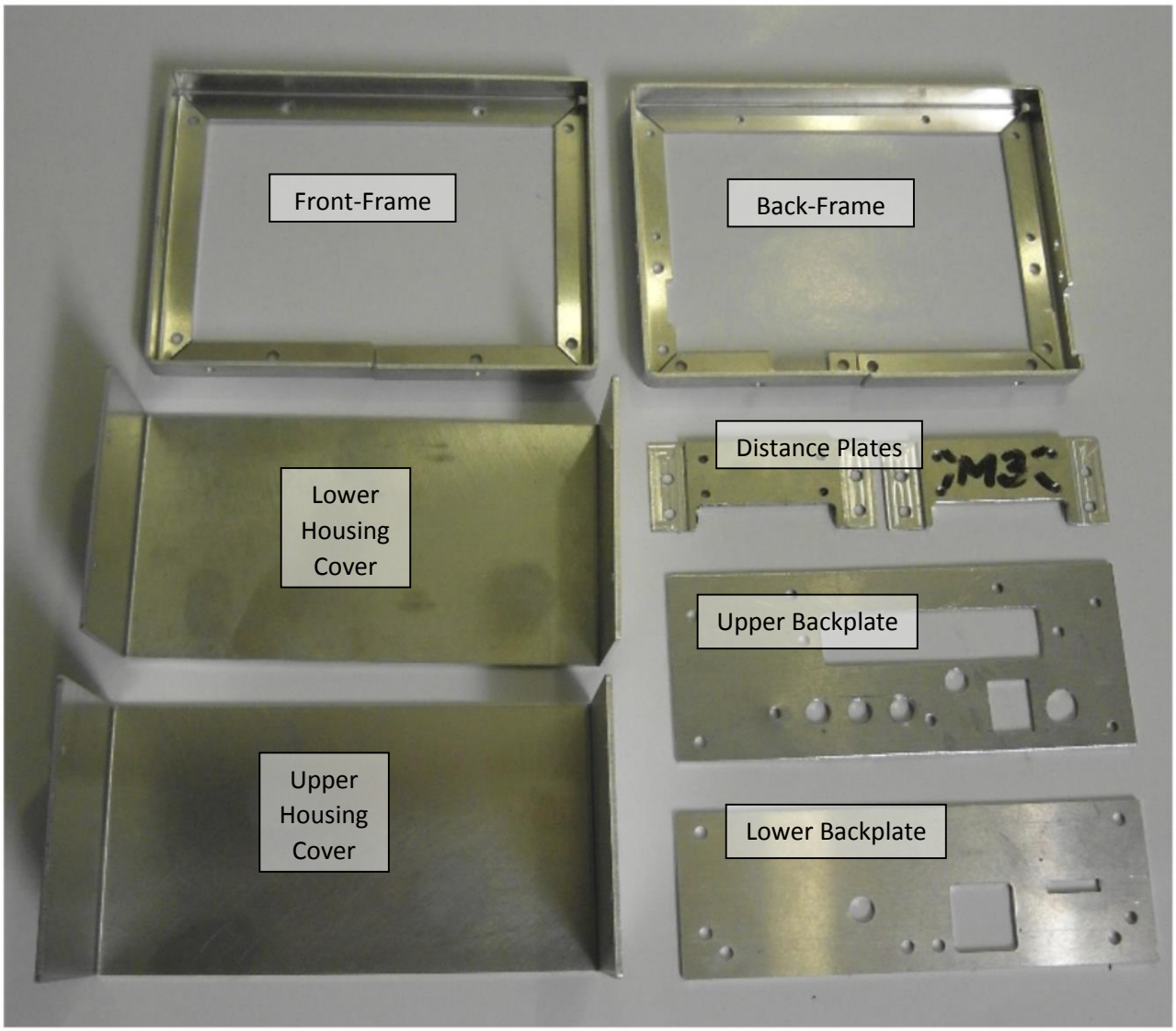


Figure 5

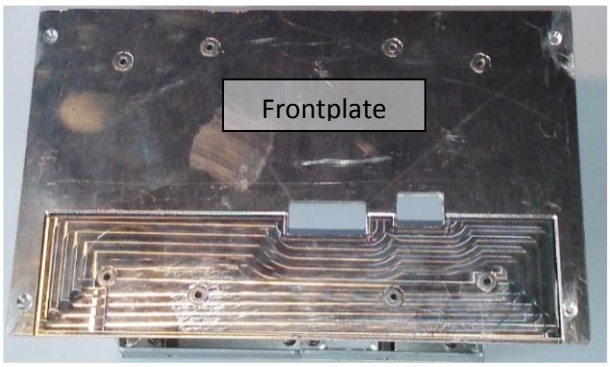


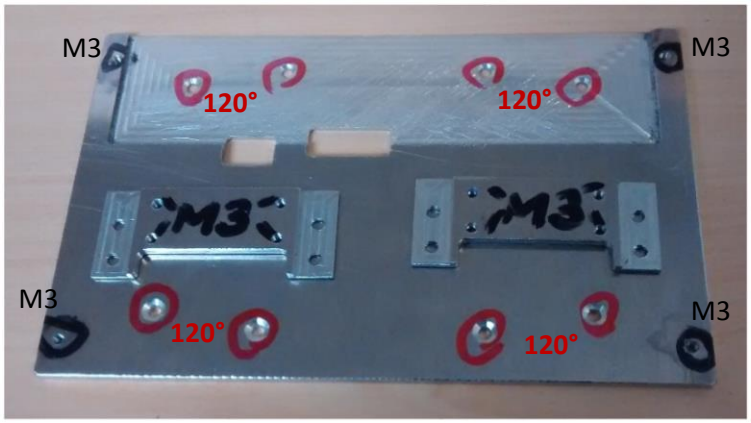
Figure 6

Housing:

- Countersink (best before bending the parts)

Figure 7

Figure 8



Red – 120° countersink for rivet (use 120° drill approx. 6mm diameter)

1.5mm sheet metal parts: Black – 90° countersink

3mm sheet metal parts: Black – M3 thread

- Rivet

8 rivets: connect the two frames with the two distance plates

Figure 9

Mount the front- and the lower backplate to the frames (holes for USB and LCD cables to the bottom)

Figure 10

- Screw

Mount the 4 threaded standoffs for the Cubieboard on the bottom,

Figure 11

and mount four M3x16 studs into the frontplate using high strength thread lock. Studs shall be flush on front side, hexagon head on aft side. Use M3 nuts and washer as shown to hold studs tight until thread lock has cured

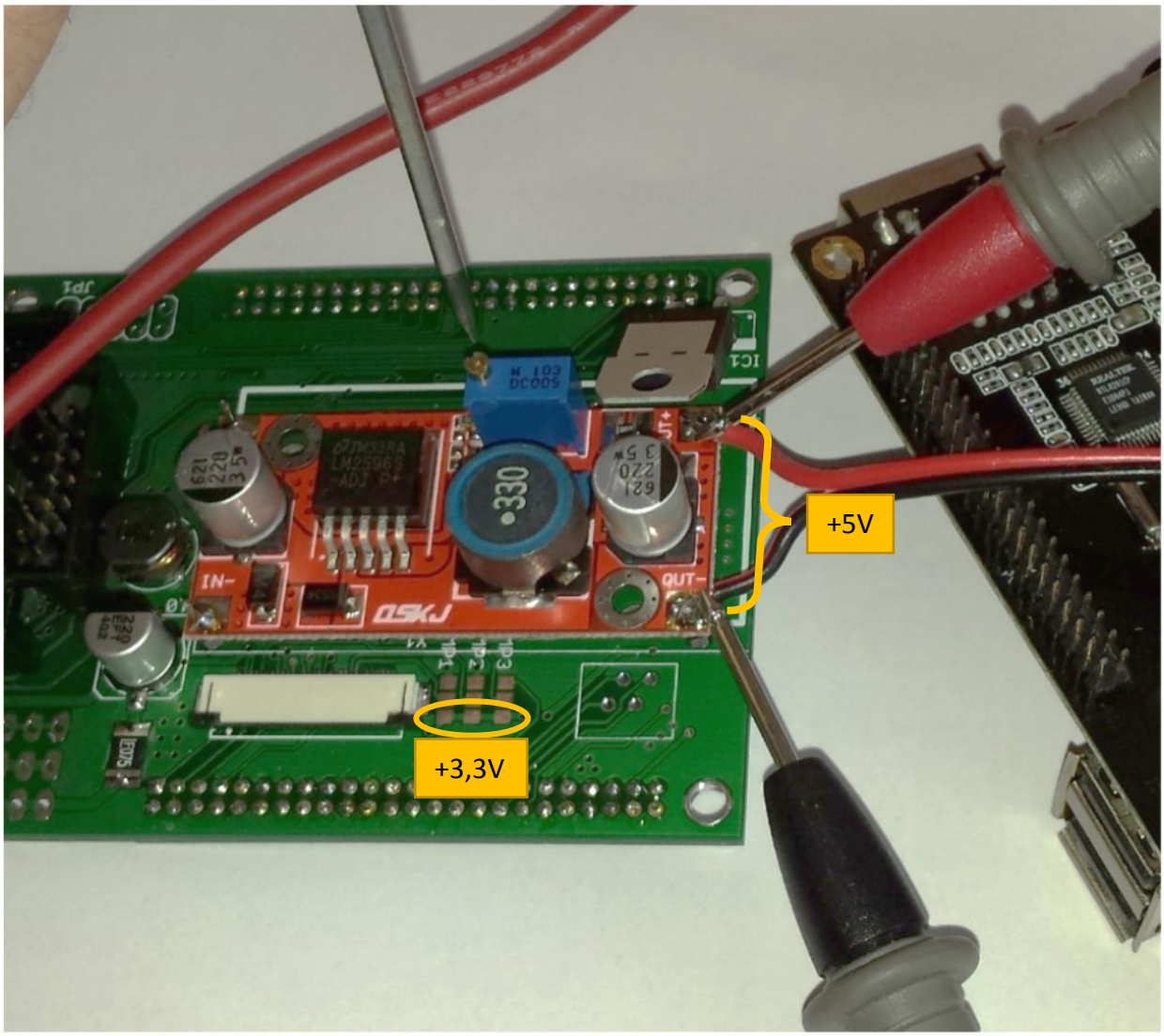
Figure 12

Electronic:

- Adapterboard and Cubieboard:

  - Adjust DC/DC converter on the adapterboard to 5VDC

Figure 13



  - Check 5VDC and 3.3VDC supplies **before connecting** to Cubieboard, LCD etc.

- Connect (solder) the power supply from the adapter board …..

Figure 14

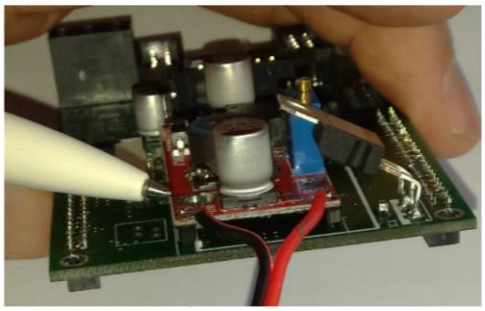
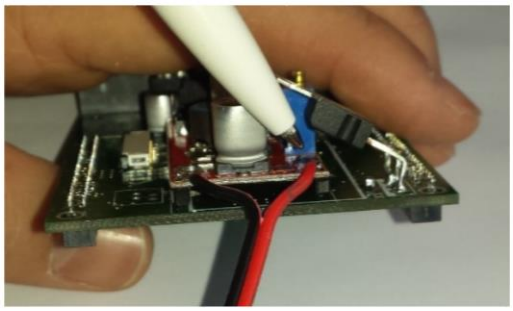
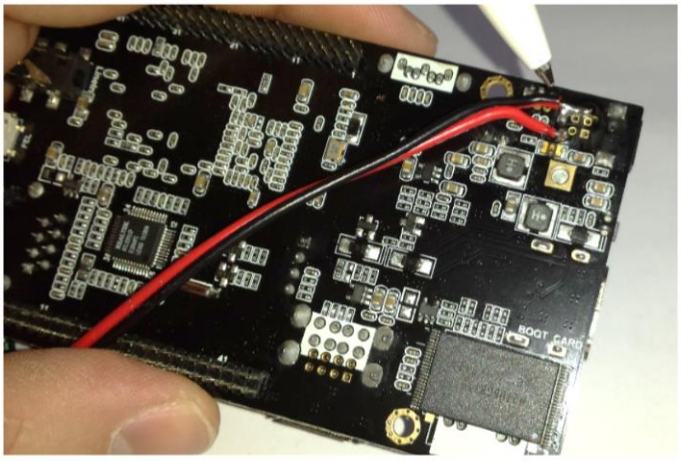


Figure 15



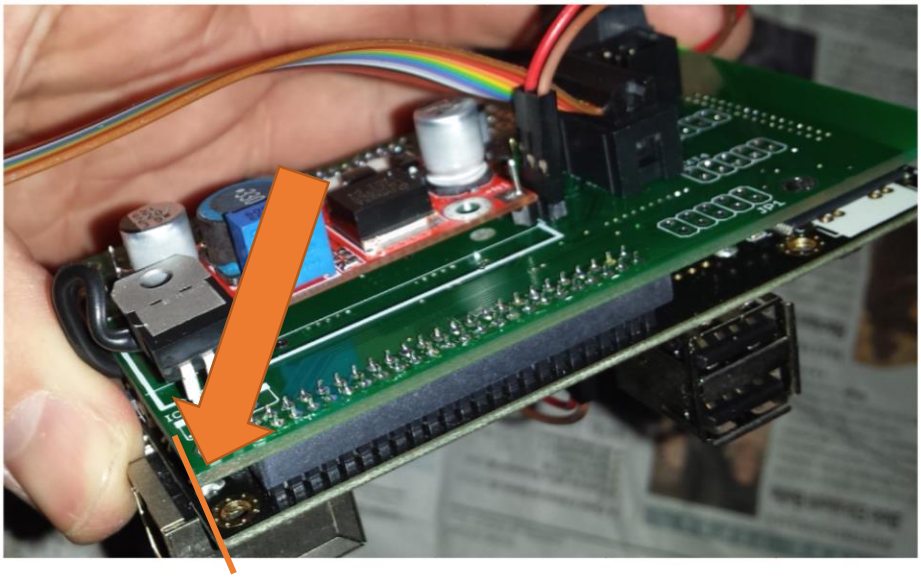
…. to the cubieboard

Figure 16



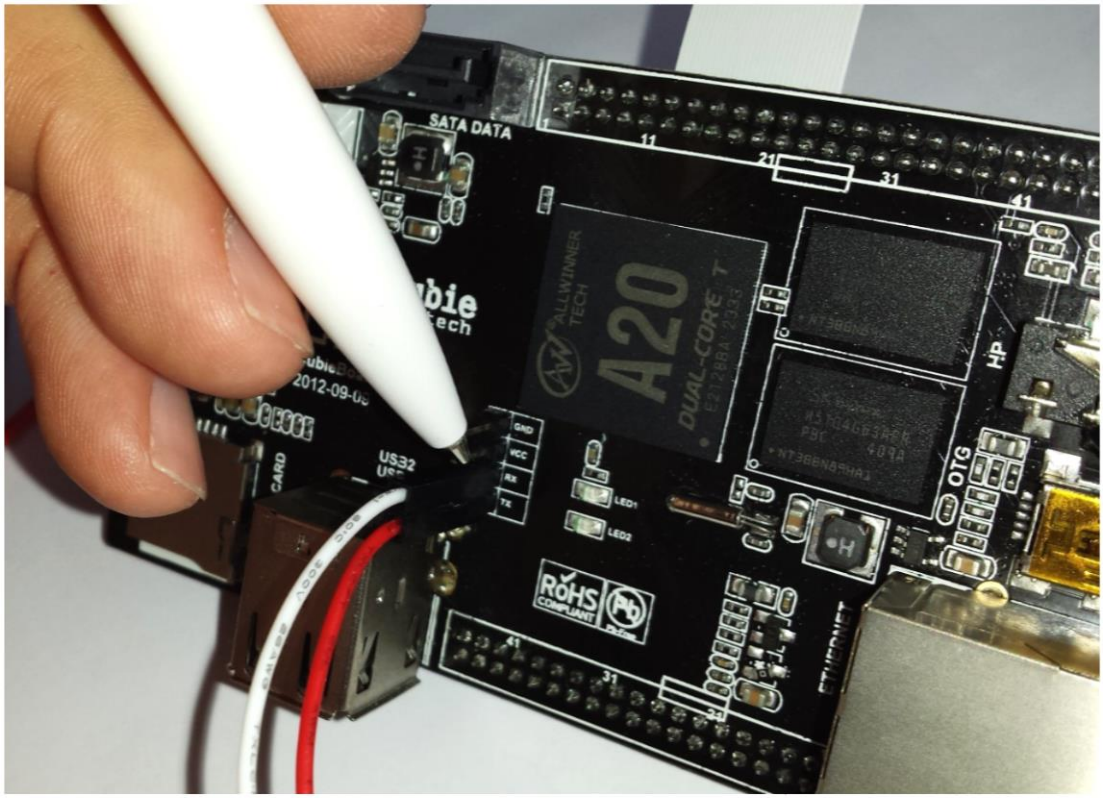
- Outside of Cubieboard and adapterboard need to line up (could be plugged in with an offset of 2mm)

Figure 17



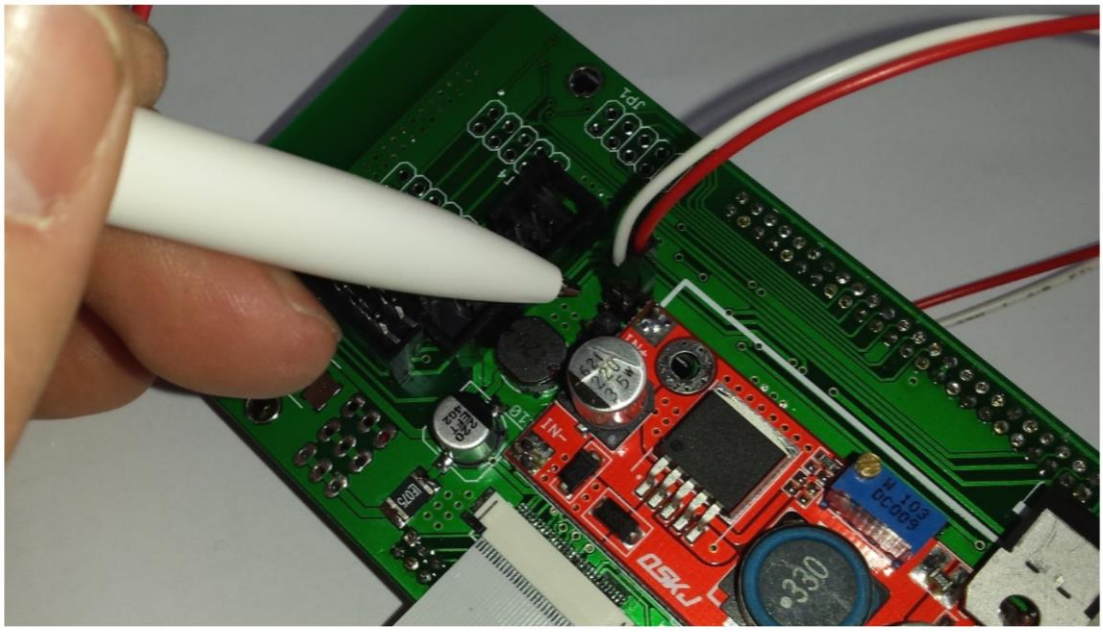
- Use jumper cables to connect UART0 RX and TX from Cubieboard …..

Figure 18



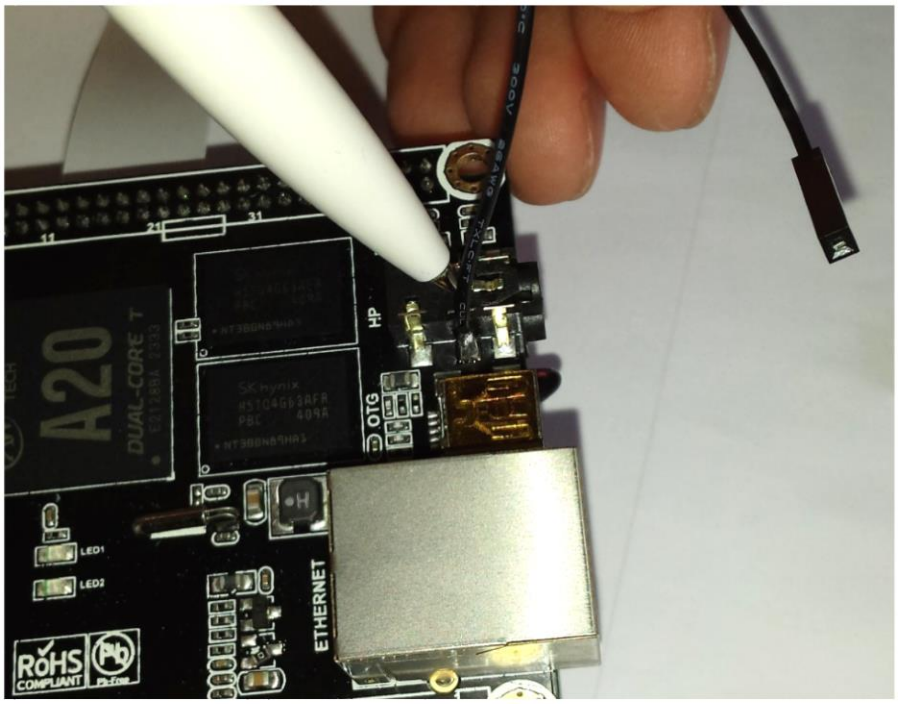
…. to the adapterboard (which has the same pin-layout as the cubieboard)

Figure 19



- Cut off the end of one jumper cable and solder it to the middle pin of the 3.5mm headphone plug …..

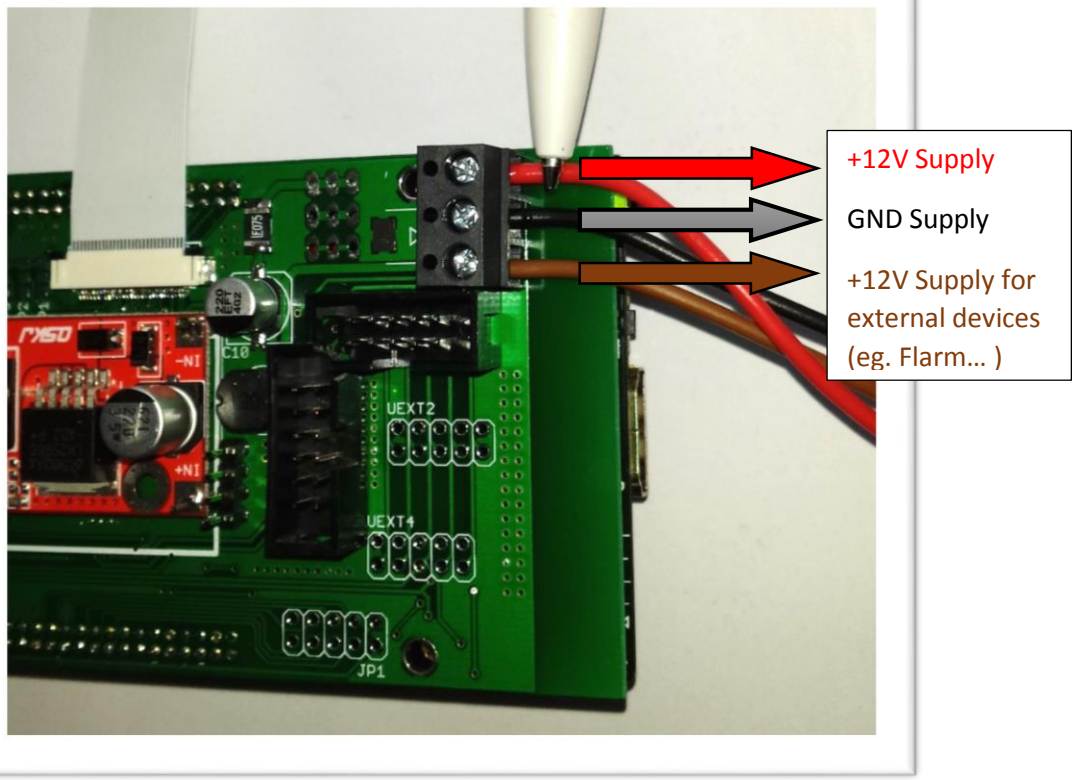
Figure 20



…. This will be used later to connect the Cubieboard headphone connector to the amplifier pin on the sensorboard.

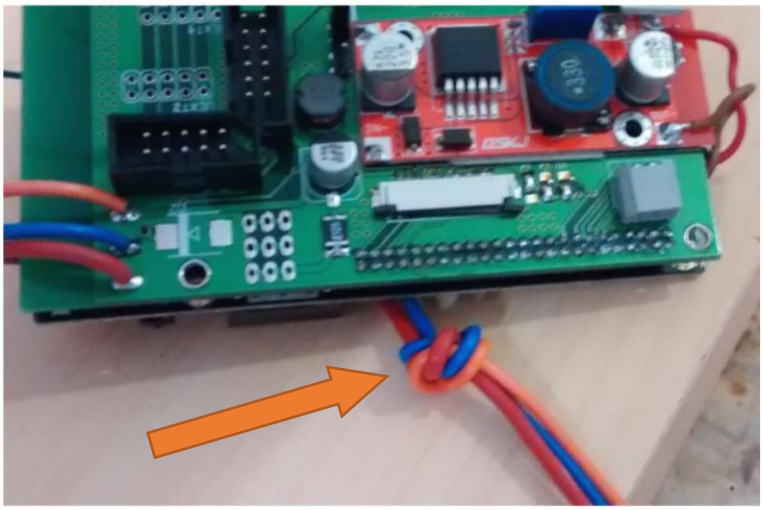
- Connect three cables to the power outlet on the adapterboard

Figure 21



- Don’t forget to include a stain relief for the cables. Here a simple knot is used.

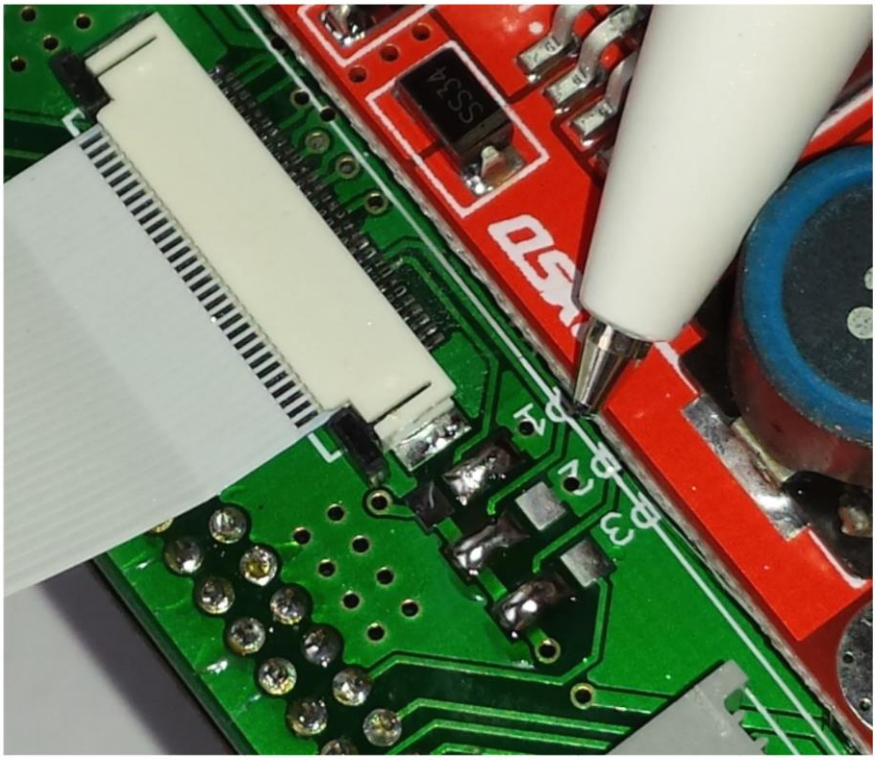
Figure 22



- Check the jumpers on the adapterboard :

  Example: JP1 closed / JP2 and JP3 open

Figure 23



JP1: controls the mirror Up / Down

JP2: controls the mirror Left / Right

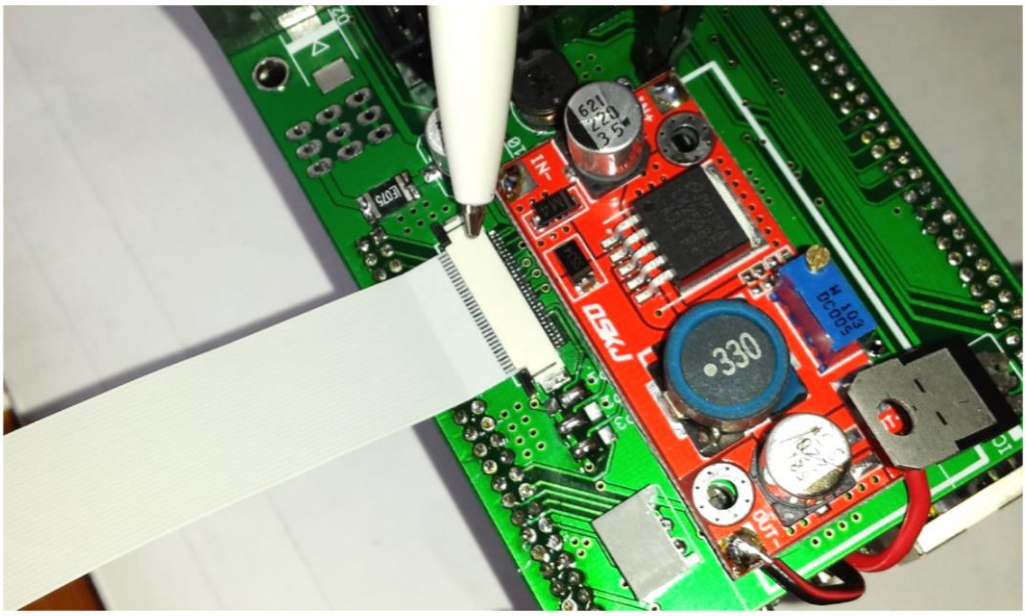
JP3: controls the backlight : PWM or 3,3V fixed

- Connect the display cable to the adapterboard – be aware:

  Display FPC cable connector is different between LCD side and adapterboard side

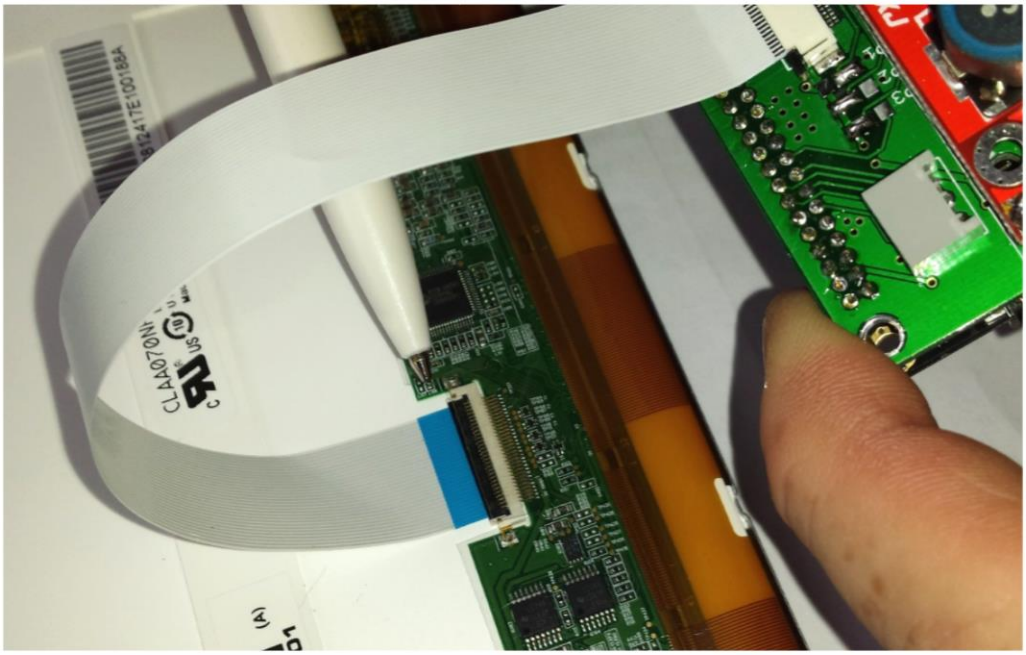
  - Board side latch slides out, contacts on FPC cable face away from PCB

Figure 24



  - LCD side connector latch flips up, contacts on FPC cable face towards the LCD.

Figure 25

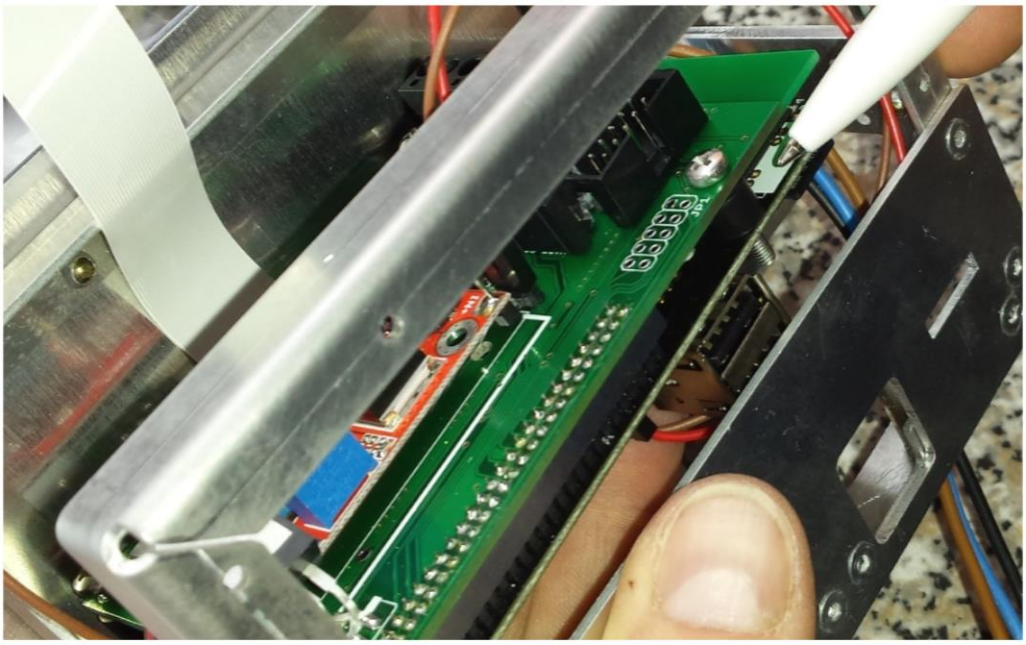


- **Perform a complete system test before joining the electronic with the housing !**

Joining the electronic with the housing:

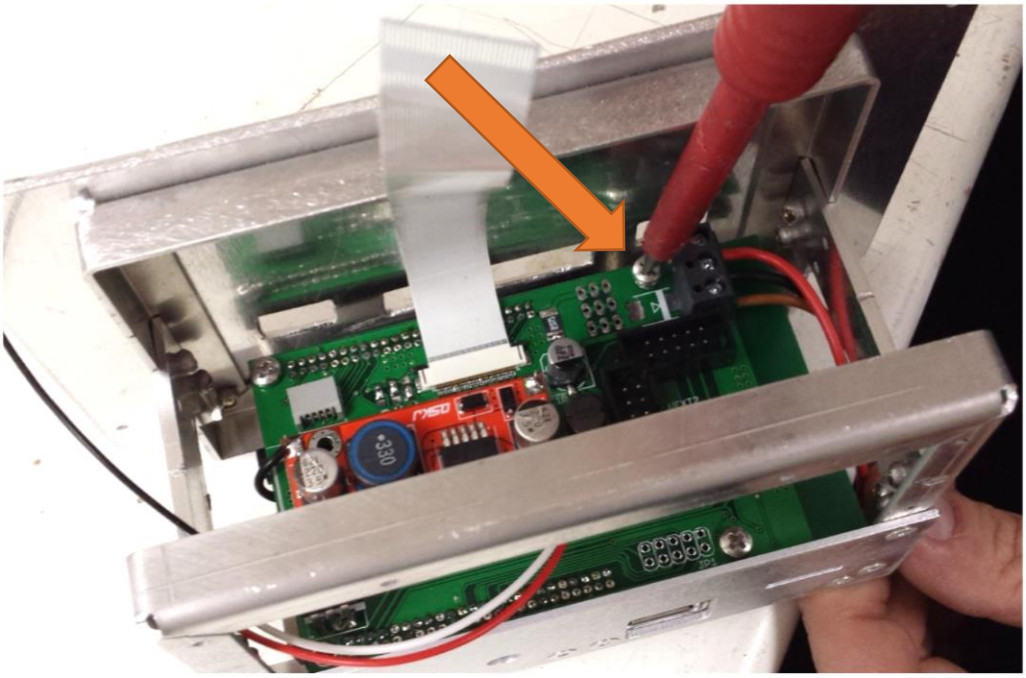
- Place spacer bushings between the cubieboard and the adapterboard

Figure 26



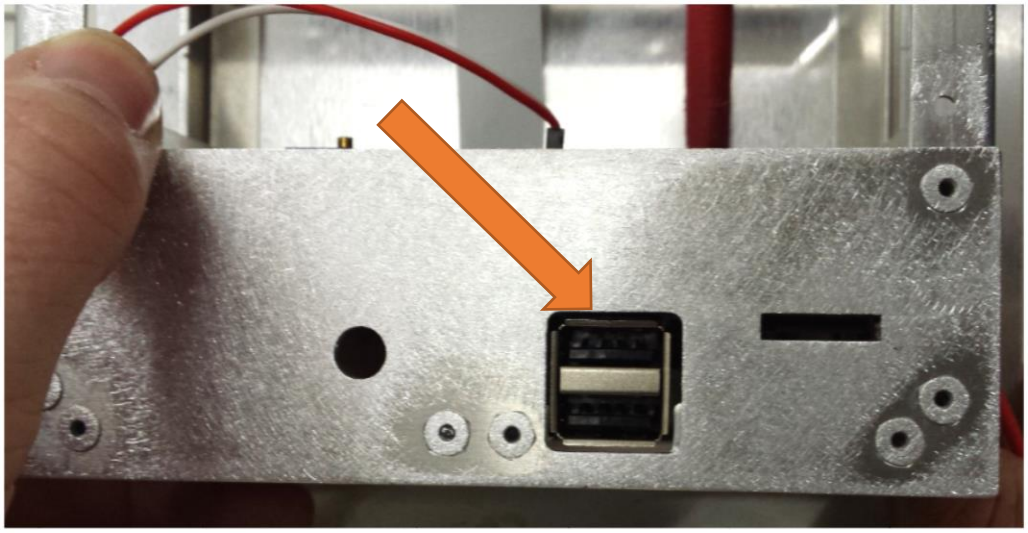
- Fix the Cubieboard/adapterboard to the housing (onto the threaded standoffs)

Figure 27



- Check proper alignment

Figure 28



- Mount the sensorboard to the upper backplate.

  The sensorboard will be mounted to the upper backplate

  by the 3 hose barbs.

Figure 29

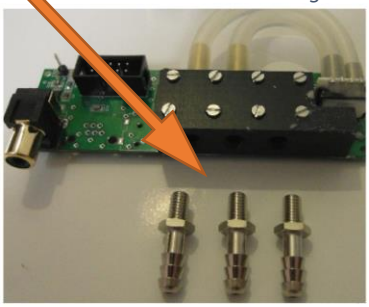
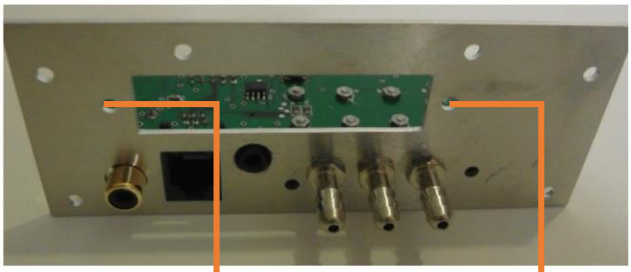
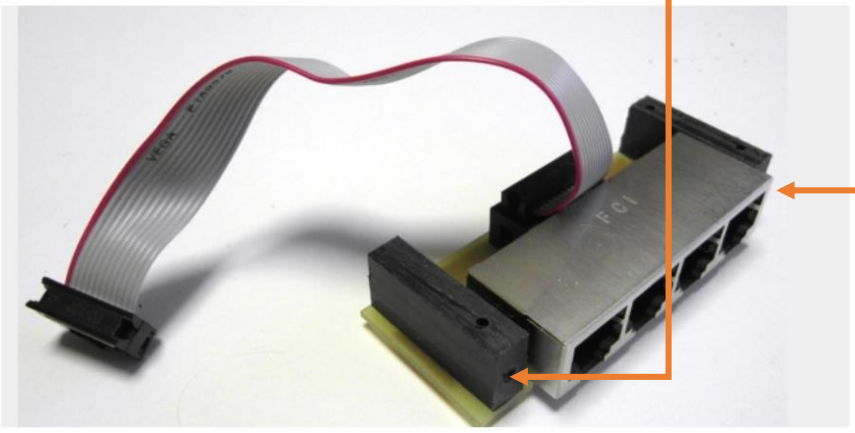


Figure 30



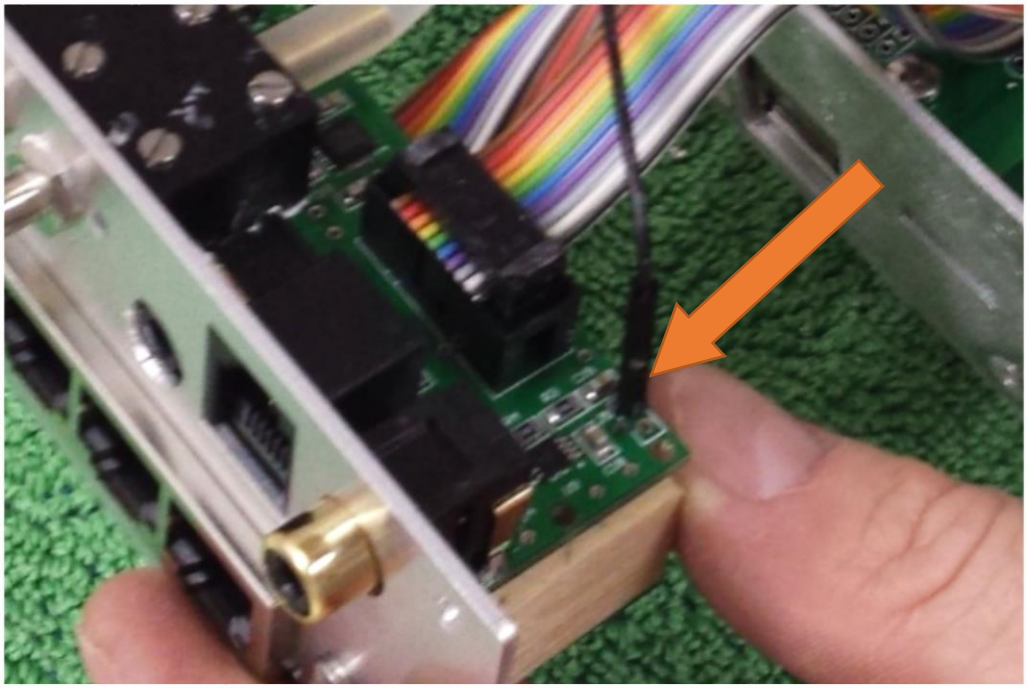
- Mount the connectorboard to the upper backplate.

Figure 31



(A) connect the audio cable from the adapterboard to the sensorboard

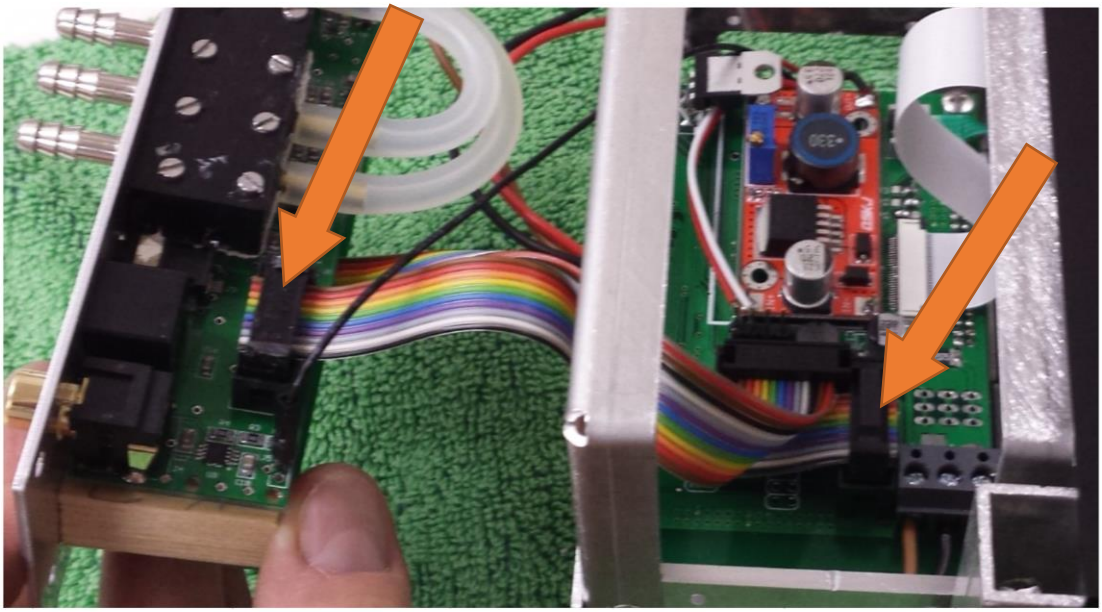
Figure 32



- (B) connect the sensorboard with a flat ribbon cable (10 pins) to the adapterboard

  Take care of the pin layout: Pin 1 to Pin 1 ….. Pin 10 to Pin 10

Figure 33



- (C) connect the connectorboard with a flat ribbon cable (12 pins) to the adapterboard

  Take care of the pin layout: Pin 1 to Pin 1 ….. Pin 12 to Pin 12

Figure 34

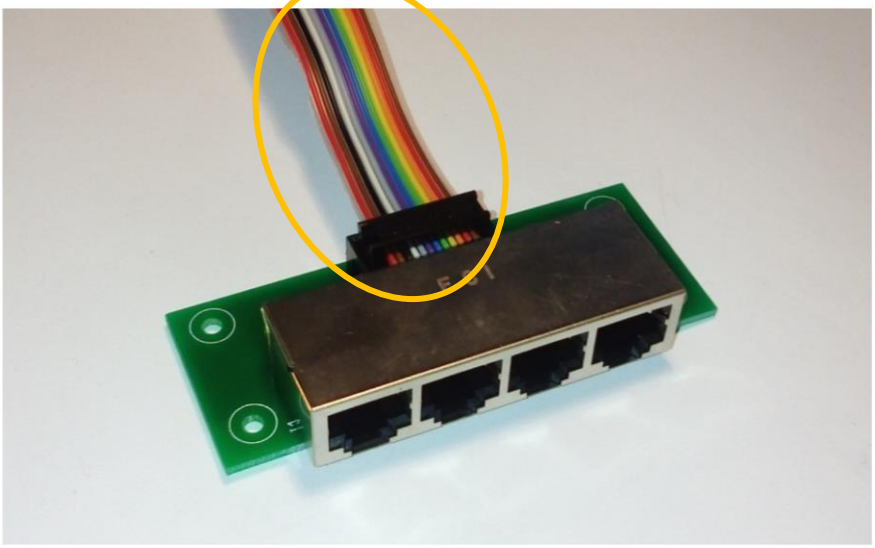
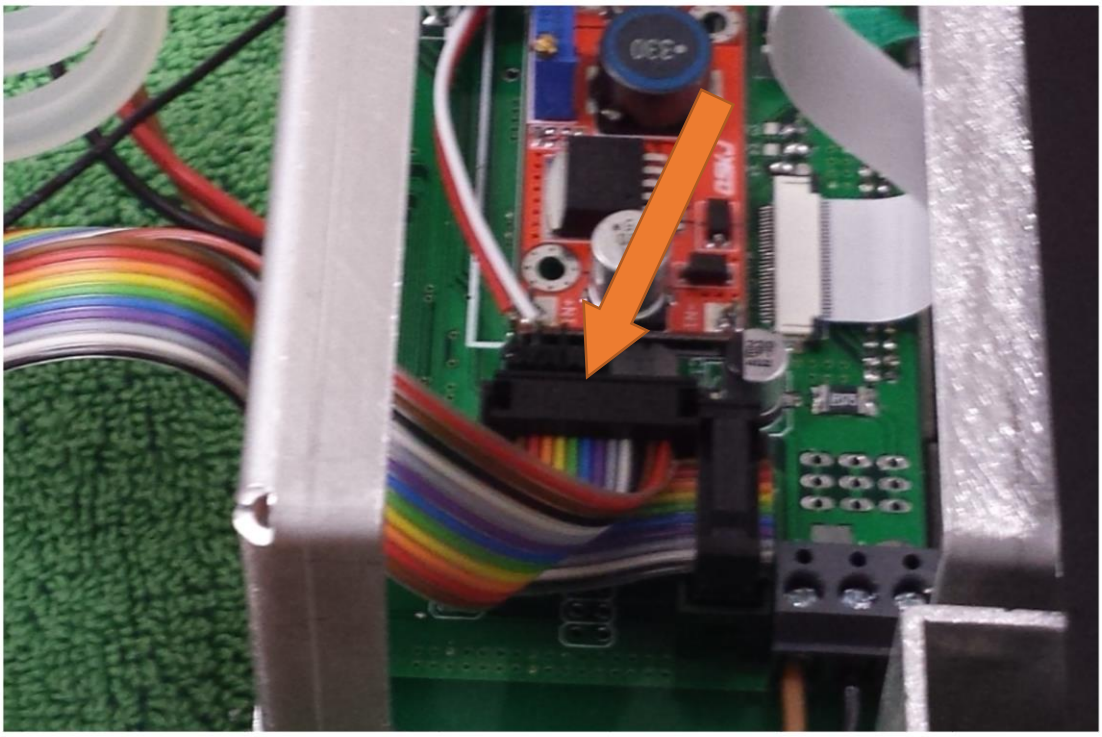
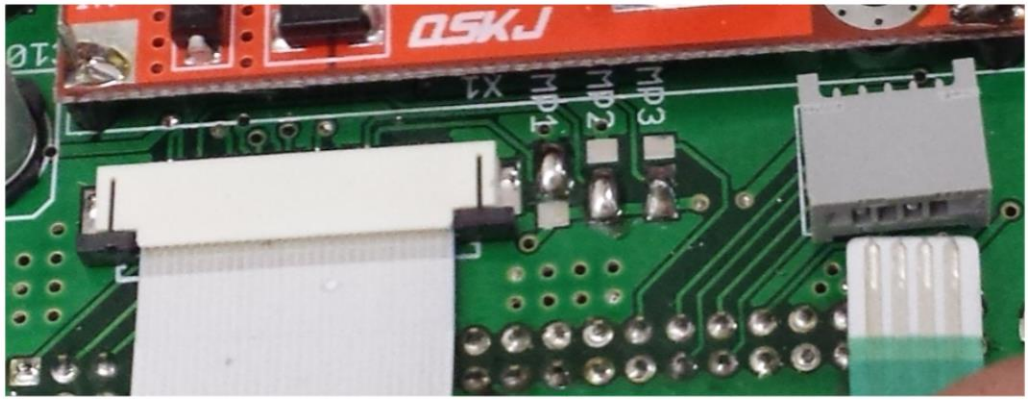


Figure 35



- Connect the LCD and the touchscreen to the adapterboard

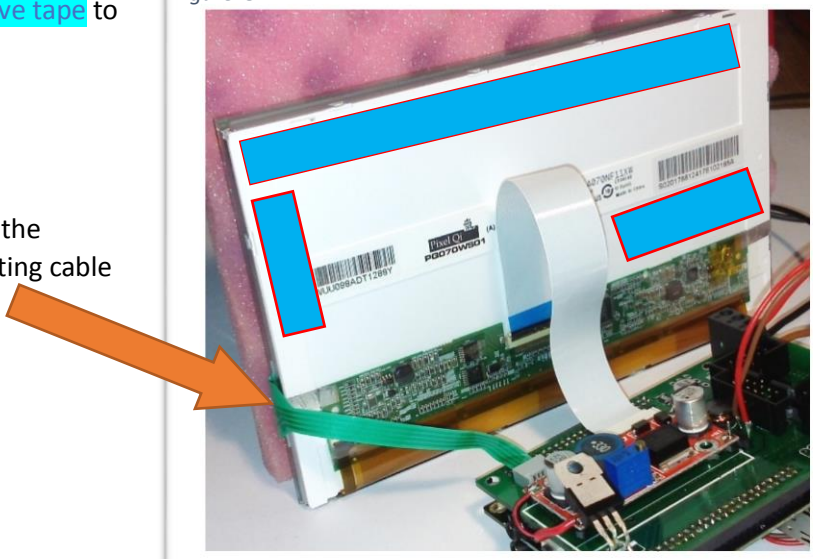
Figure 36



- Fix the LCD screen with a double-sided adhesive tape to the frontplate.

Take care of the touchscreen-connecting cable

Figure 37



- Bond the LCD aligned with the frontplate at the edges marked in red.

  The touchscreen is fixed by the front frame mounted in the next step.

Figure 38

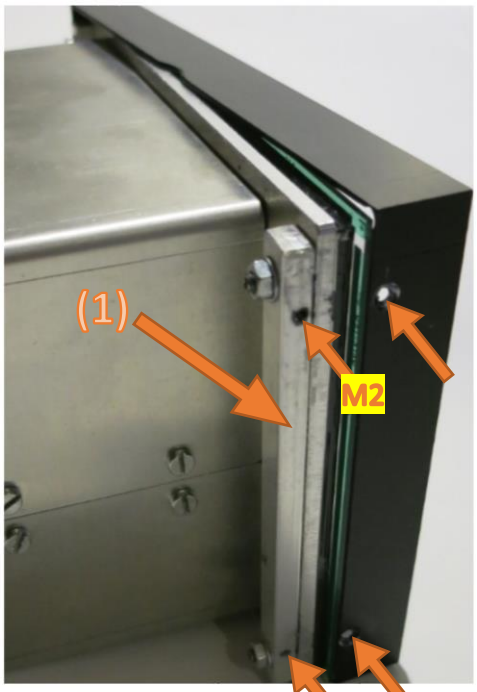
- Mount two small aluminum profiles to the aft side of the frontplate as shown. (1)

- Adjust the front frame as required (this covers slight tolerances in LCD, touchscreen and adhesive tape thickness)

- …and drill four 1.6 mm holes through front frame and aluminum profiles.

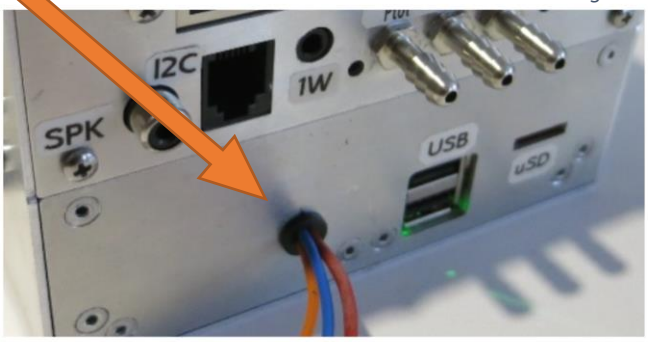
- Cut M2 threads in the profiles, drill and countersink the front frame and mount the front frame.

Figure 39



- Install a grommet at the cable feed-throughin the lower backplate

Figure 40



- Close the housing

lower and upper housing cover

Figure 41

Congrats - your OpenVario should look now like this:

Figure 43

Figure 42