Electronic Parts

Figure 1: Adapterboard, Connectorboard, Sensorboard, Pressurehose barbs.

Figure 2: Cubieboard.

Figure 3: LCD-Screen, Touch-Screen.
Housing

Figure 4

Front-Frame

Back-Frame

Distance Plates

Upper Backplate

Lower Backplate

Lower Housing Cover

Upper Housing Cover

Figure 5

Frontplate

Figure 6

Faceplate
Housing:

- **Countersink** (best before bending the parts)

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

- Screw

Mount the 4 threaded standoffs for the Cubieboard on the bottom, 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.
Electronic:

- Adapterboard and Cubieboard:
  
- Adjust DC/DC converter on the adapterboard to 5VDC

- Check 5VDC and 3.3VDC supplies **before connecting** to Cubieboard, LCD etc.
- Connect (solder) the power supply from the adapter board ..... 

... to the cubieboard

- Outside of Cubieboard and adapterboard need to line up (could be plugged in with an offset of 2mm)
- Use jumper cables to connect UART0 RX and TX from Cubieboard ....

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

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

- Don’t forget to include a stain relief for the cables. Here a simple knot is used.
- Check the jumpers on the adapterboard:
  
  Example: JP1 closed / JP2 and JP3 open

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

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

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](image)

- Mount the sensorboard to the upper backplate. The sensorboard will be mounted to the upper backplate by the 3 hose barbs.

![Figure 29](image)

- Mount the connectorboard to the upper backplate.

![Figure 30](image)

![Figure 31](image)
(A) connect the audio cable from the adapterboard to the sensorboard

(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
(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
o Connect the LCD and the touchscreen to the adapterboard

![Figure 36](image)

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

![Figure 37](image)

Take care of the touchscreen-connecting cable

o 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](image)
- 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.

- Install a grommet at the cable feed-through in the lower backplate

- Close the housing

lower and upper housing cover
Congrats - your OpenVario should look now like this:

Figure 42

Four serial ports with IGC pinout. Each socket has its own fuse. Use this to connect FLARM, IGC data loggers etc. with a standard RJ45 cable.

Front frame mounted to 2pcs of aluminum profile ~98x10x5 with M2x5 flat head screws.

Cinch socket for external 4-32Ohm speaker.

RJ12 socket with power supply and I2C bus for optional external sensors.

3.5mm socket for single wire sensors (temperature sensor).

Slot to access µSD socket on Cubieboard.

2 USB ports.