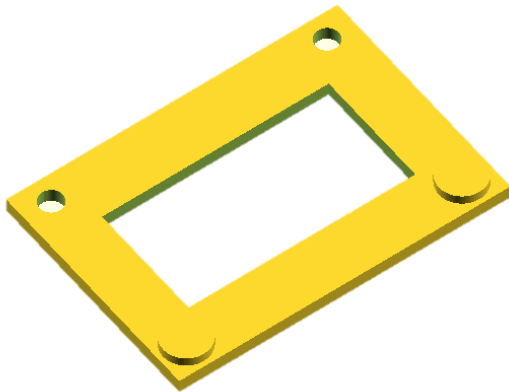


Assembling the Air Monitoring Device

Connected Humber CIC

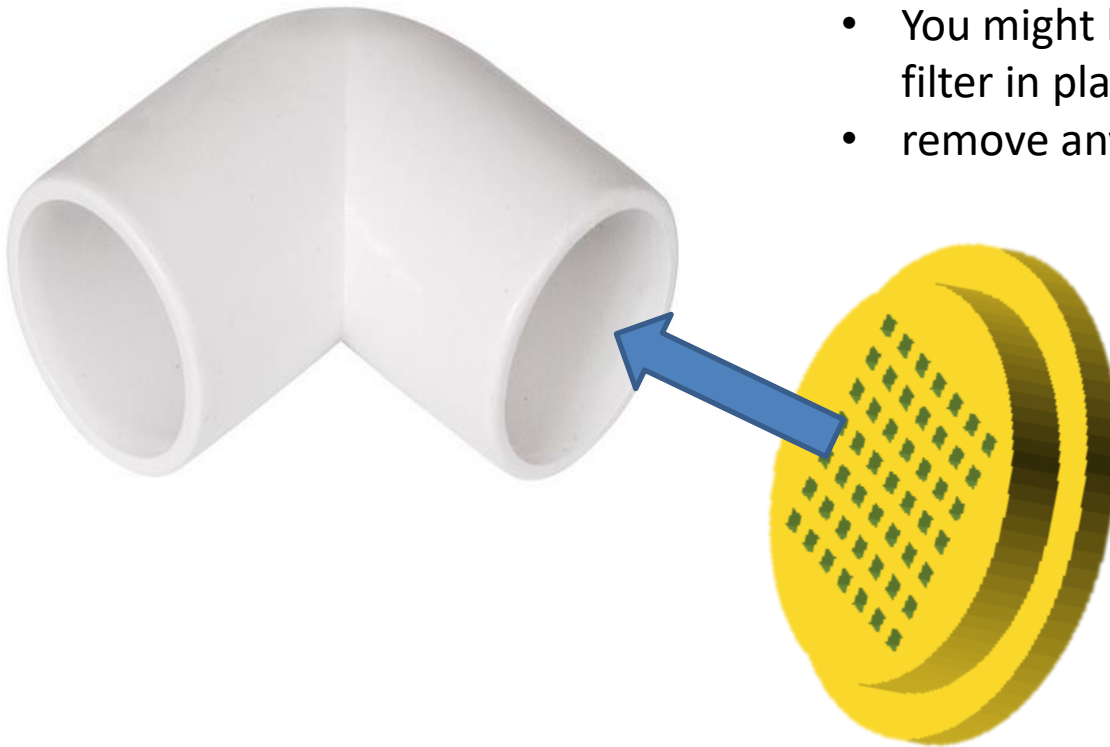
Before assembling the device



- Decide how you will attach it to a wall or other support.
- Any holes drilled into the case may allow the ingress of rain water so it is important to use suitable non-perishable washers.
 - There are positions, in the enclosure base, which may need to be drilled out before assembling the internal components if you choose this method
- OR you can use the optional mounting brackets shown here. These need to be glued to the top and bottom of the enclosure rear using PVC Weld. They have a 5mm hole to allow the use of a sturdy bolt/screw.
 - the studs fit into recesses on top/bottom of the back of the enclosure.
 - apply PVC Weld glue on the studs.

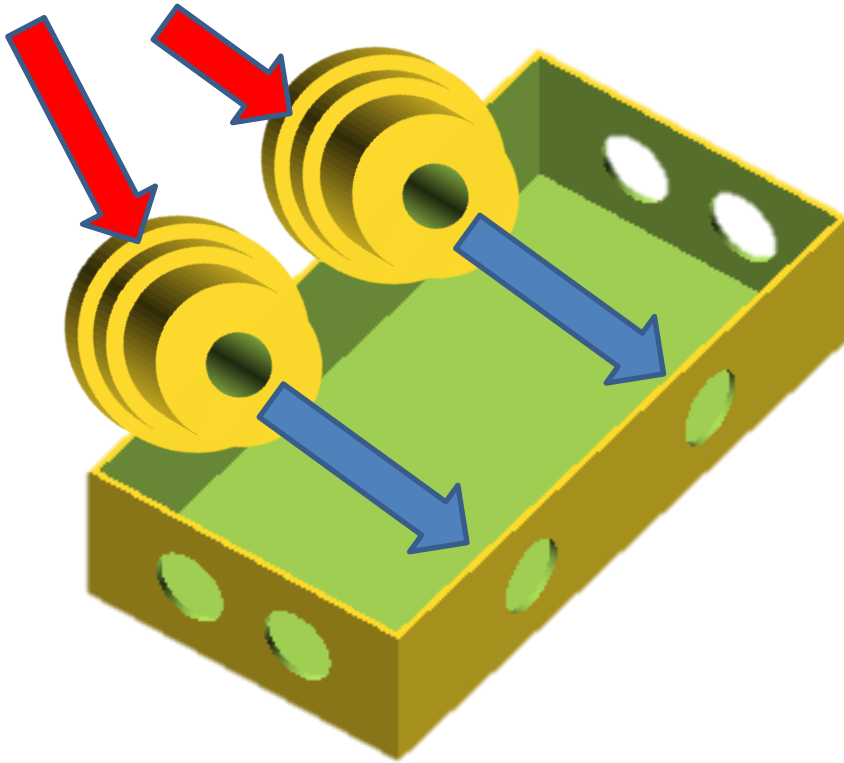
Air Filters

- Smear some PVC weld glue around the inside of the vent pipe then insert the Side Vent Filter into it.
- Leave 20 minutes to set.
 - You might benefit by taping the filter in place whilst the glue sets
 - remove any excess glue quickly.



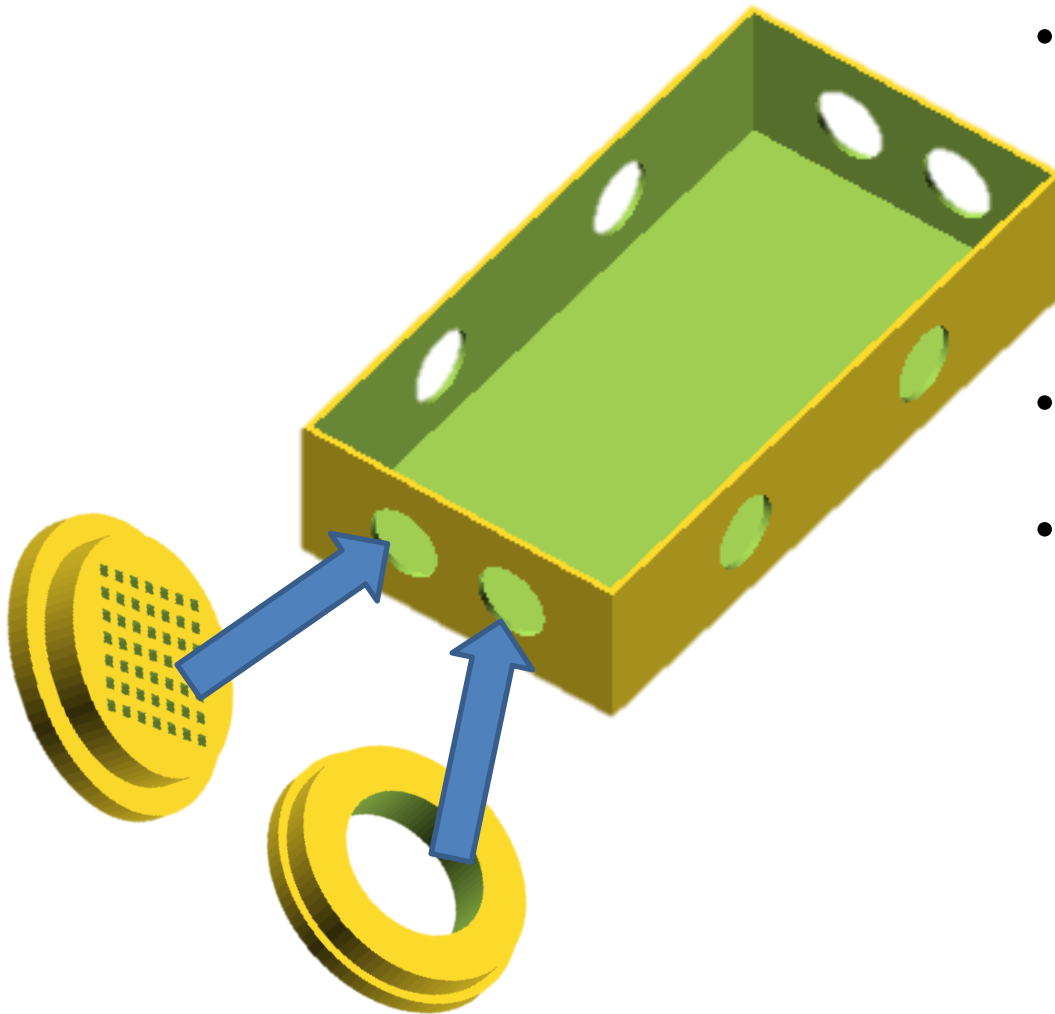
Fix Inner Vent Plugs

apply cement
to this area



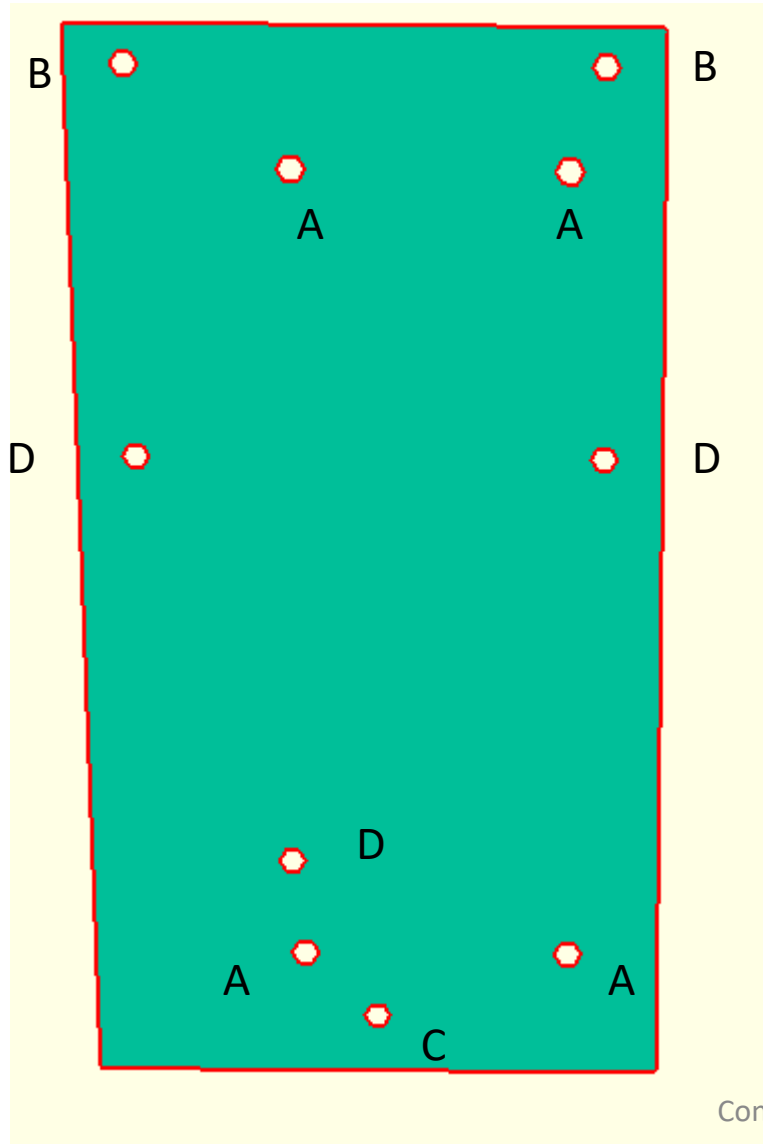
- Cement the inner vent plugs in place as shown.
- Take care to ensure the PVC weld glue is on the rim as shown by the red arrow.
- Push the plugs into place as shown by the blue arrow.
- Leave 20 minutes for the glue to set.

Fix Drain and Cable Entry Plugs



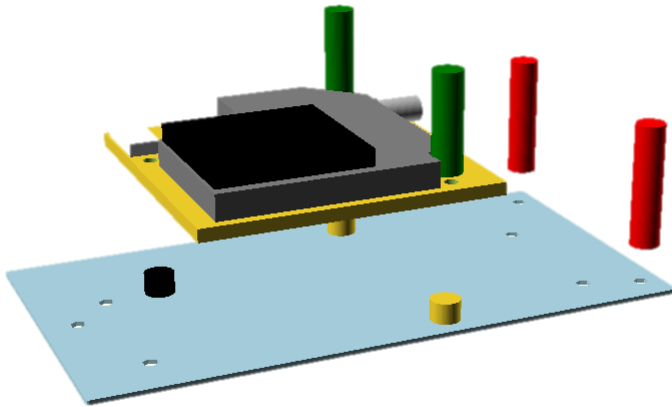
- Cement the drain and cable inlet plugs in place as shown.
Take care to ensure the PVC weld glue is on the rim.
- Leave 20 minutes for the glue to set.
- Screw the inlet cable gland into the right-hand plug – it is a tight fit. Make sure the washer is on the outside. The nut just fits onto the thread on the interior of the box.

Perspex Carrier Mounting Holes

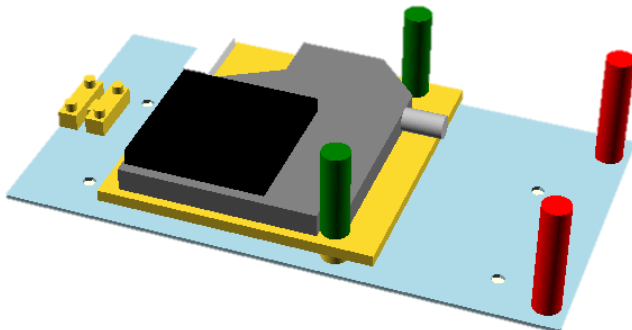


- A – use these to attach the Perspex carrier to the enclosure using 3x7mm Poppstar screws. (They don't pierce the case)
- B & D (upper) are used to support the MCU PCB.
- D are used to mount the SDS011 sensor.
- C is used to retain the DC terminal strip.

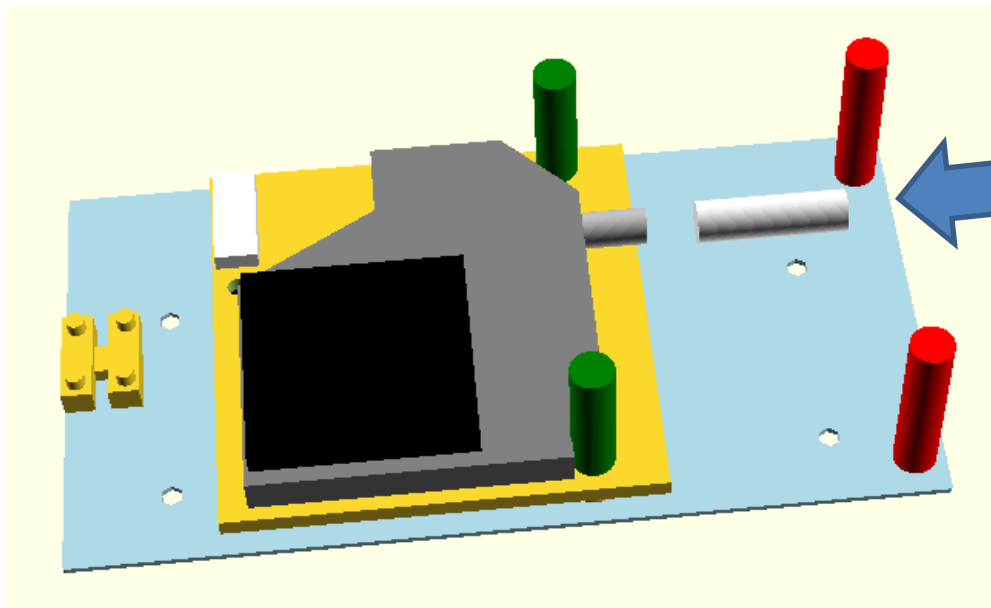
Mounting the SDS011



- The SDS011 sensor sits on top of three 5mm pillars shown in yellow and black. It uses holes D for mounting and only fits one way with the inlet pipe facing towards the red spacers (as shown).
- The black spacer is female-female whereas the yellow spacers are female-male (male part up). The male section screws into the green (18mm f-f) spacers.
- The red spacers are 25mm female to female.
- Nylon 3mm x 5mm screws are used to secure the spacers to the carrier. Don't over tighten these.
- A small 3A terminal block should be fastened to the carrier using a Poppstar m3x7 hard drive screw driven in from below the Perspex carrier.



Attaching the air feed pipe

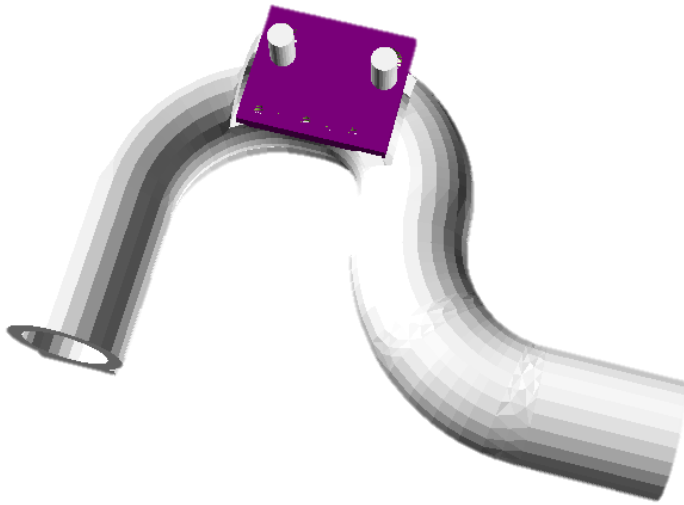


- Slide one of the clear plastic pipes (shown white) over the SDS011 inlet.

Carrier Fixing

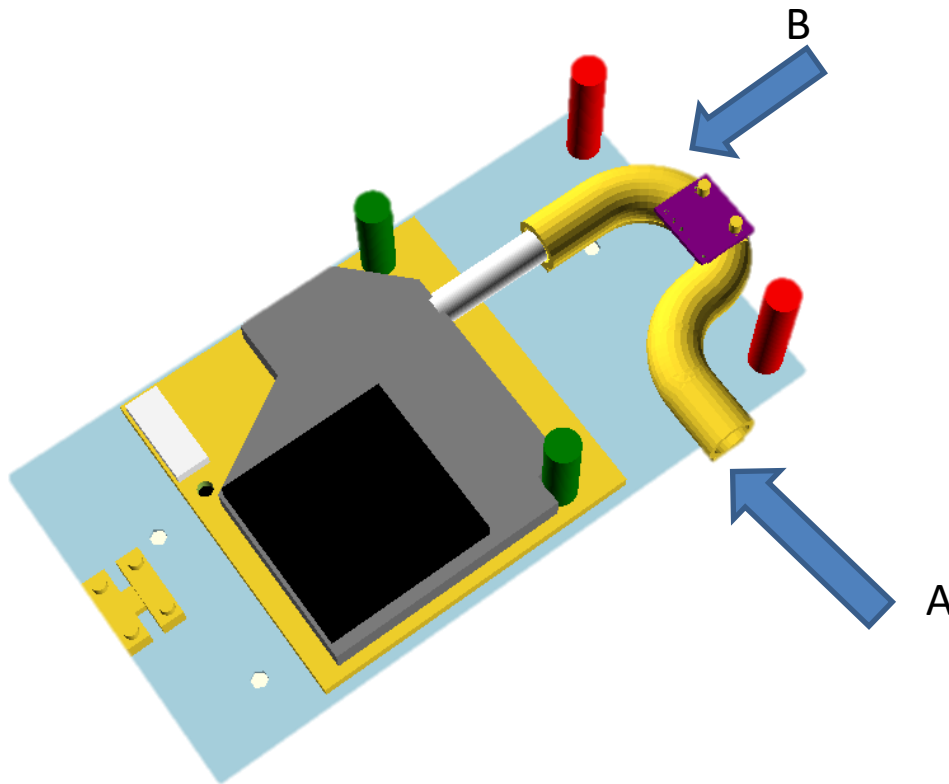
- Mount the Perspex carrier into the enclosure using 4 Poppstar screws – these will self thread but don't over tighten
- Access to two of the mounting screws will be lost when the Sensor Linking Pipe is fitted in the next step.
- Use the holes identified as A on slide 6 (carrier mounting Holes).

BME280



- Attach the BME280 sensor to the Sensor Linking Pipe, as shown, using the pins.
- This is a loose fit and requires a small cable tie wrapped around the sensor and pipe to hold the sensor in place.
 - do not use elastic bands as these perish
- Note : BME280 cables are not shown and the sensor faces into the linking pipe so that it reads the incoming air.

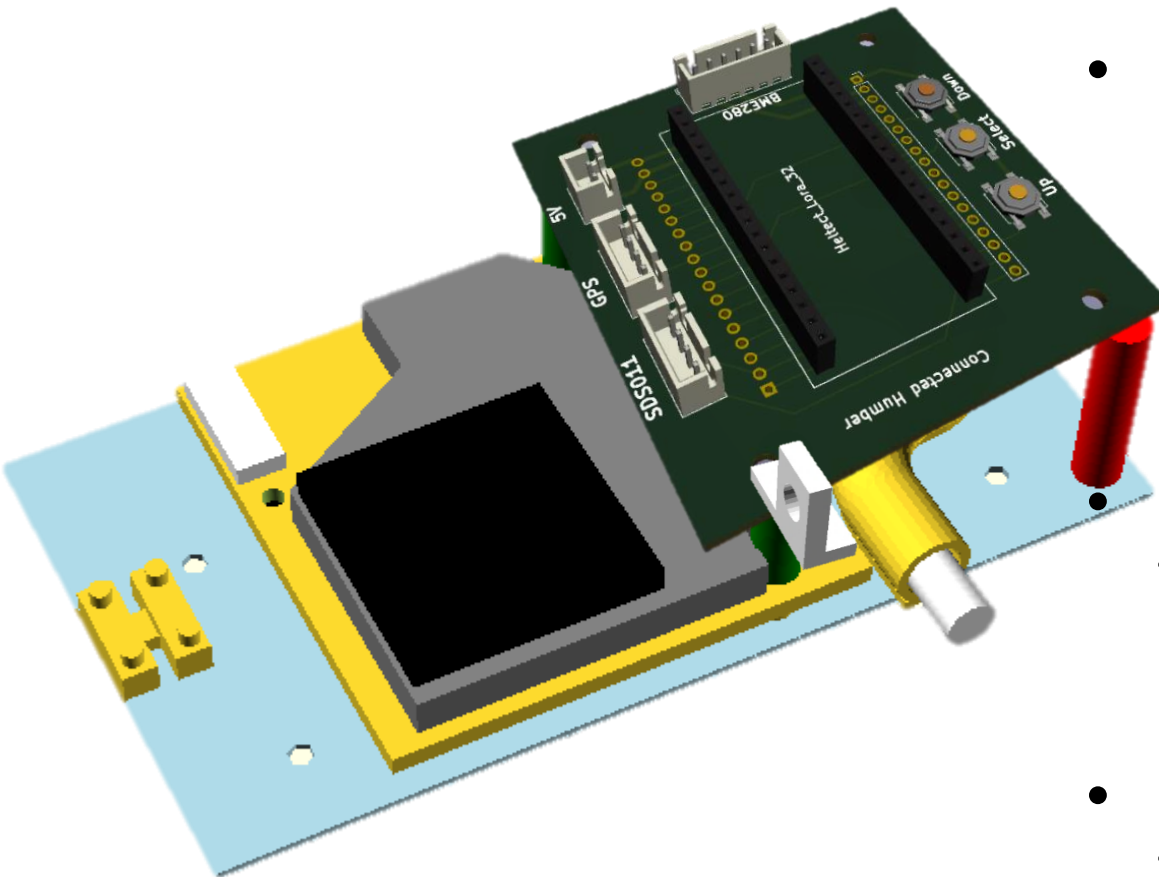
Fitting the sensor linking pipe



NOTE: The diagram does not show the enclosure for clarity.

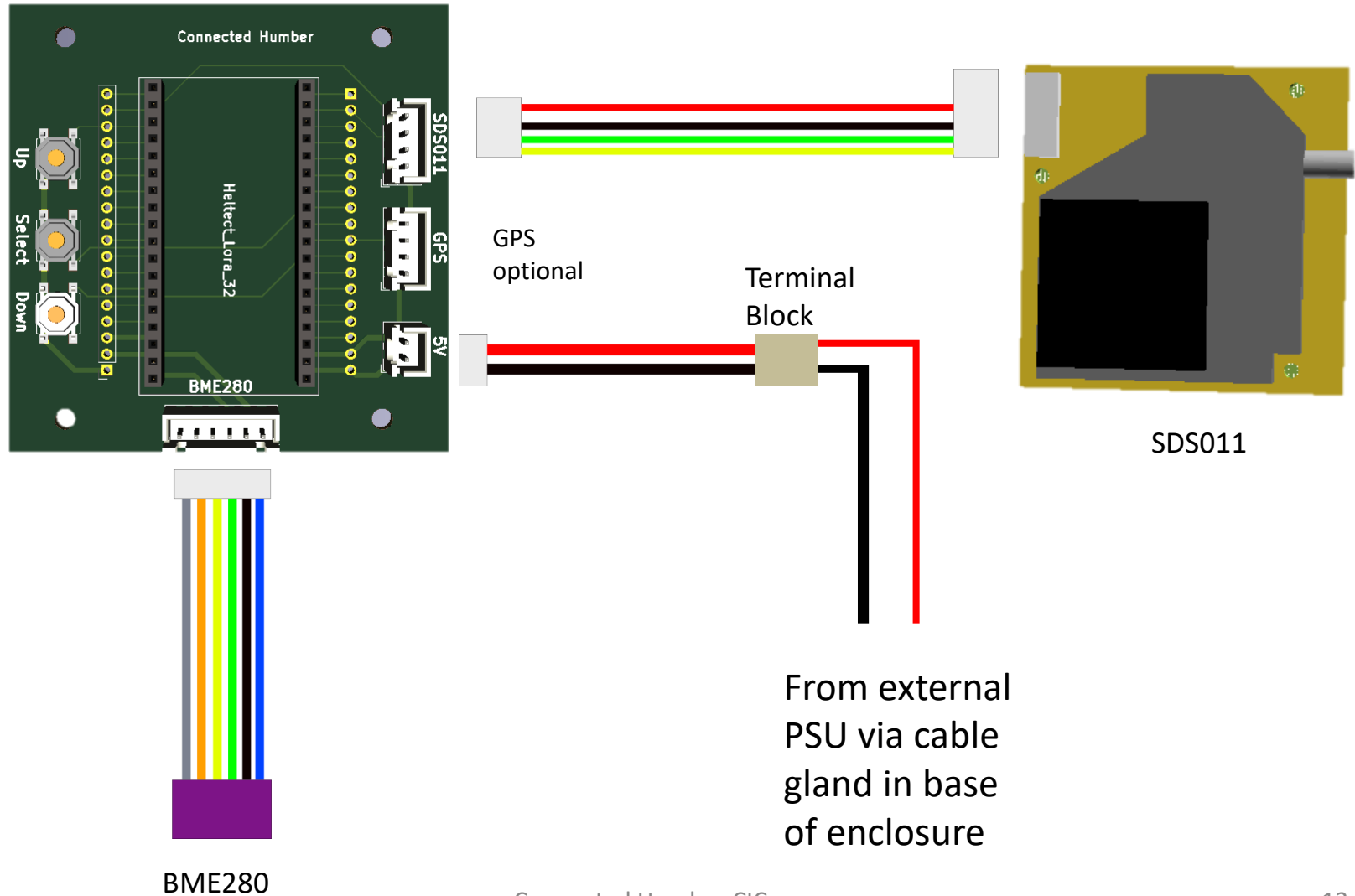
- A. Insert the second clear tube into the open end of the Sensor Linking Pipe – this tube will go into the upper Vent Pipe.
- B. Fit the Sensor Linking Pipe over the clear tube as far as it will go ensuring the tube fitted at [A] also fits into the upper Vent Pipe .

Mounting The PCB

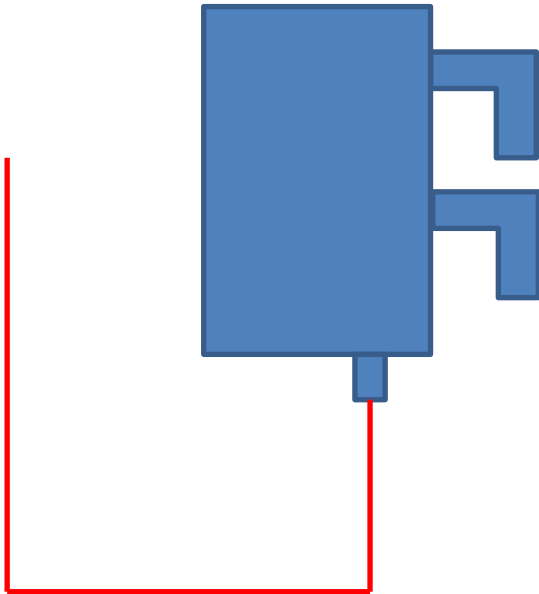


- NOTE: The sensor carrier will, by now, be attached to the enclosure base – the latter has been left off for clarity.
- Offer the PCB up to the 4 pcb standoffs (red & green) and use 3x5mm nylon screws.
- Do not over tighten the screws.

Internal Wiring Diagram



Mounting the Enclosure



- The enclosure must be mounted vertically, as shown, with the vent pipes facing downwards
- The power cable (shown coloured red) should include a drip loop to prevent water ingress at the cable gland.
- The minimum cable size that the gland can accommodate is 4mm use a cable with a 4mm outside diameter OR add extra shielding to smaller cables.
- The device operates using 5v DC and a periodic load of 100mA when transmitting. Make sure that the power supply is capable of handling that (e.g. 5v 1A would be more than sufficient.) Also, with long cable runs make sure that the voltage at the terminal block is no lower than 5v.