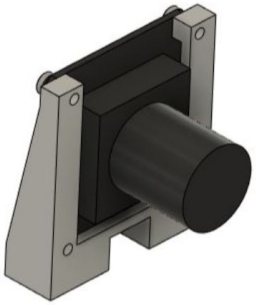
Satellite Set-up - EPS

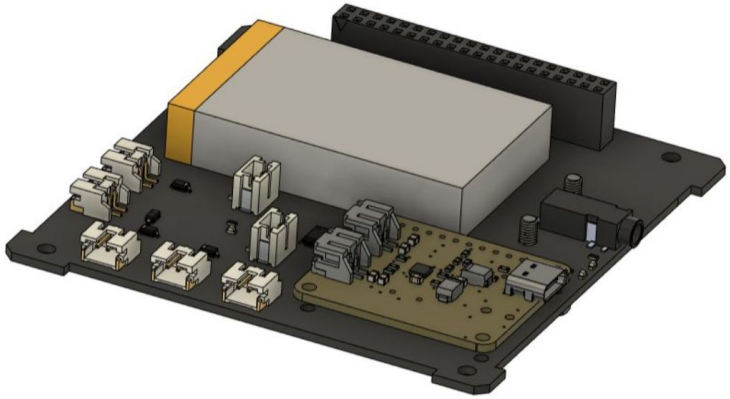
Let’s attach the battery to the EPS using one or two pieces of double-sided tape and then plug the battery into its connector.

Satellite Set-up - EPS

2xM2 x 4

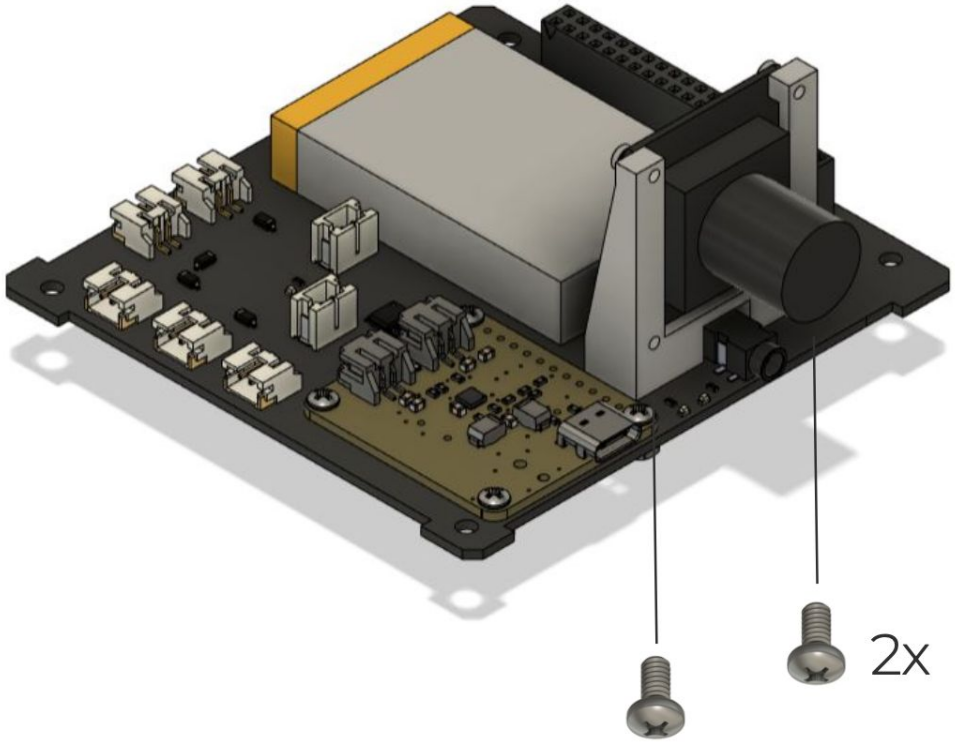


1x Camera



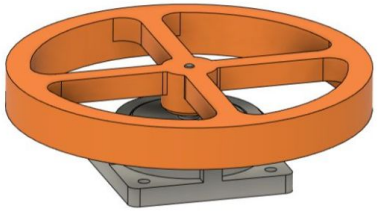
1x EPS Board

Satellite Set-up - EPS

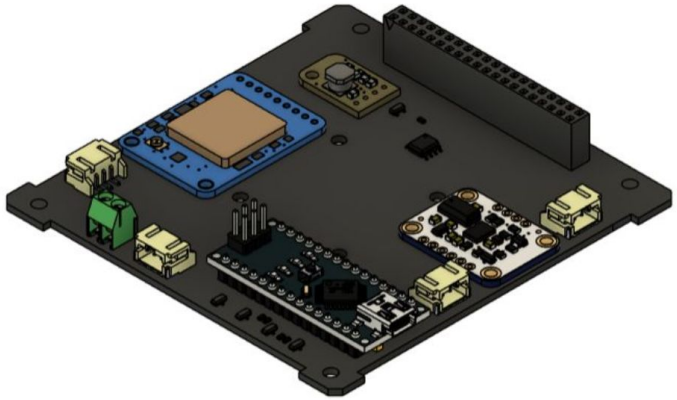


Satellite Set-up - ADCS

4xM2x4



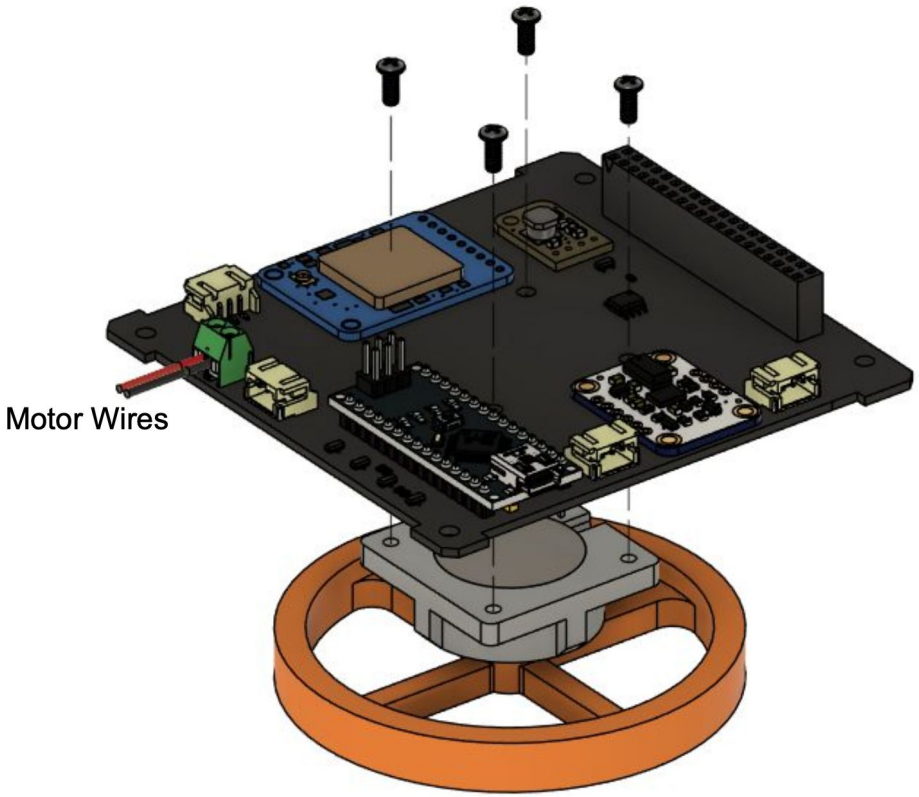
1x Reaction Wheel



1x ADCS Board

Satellite Set-up

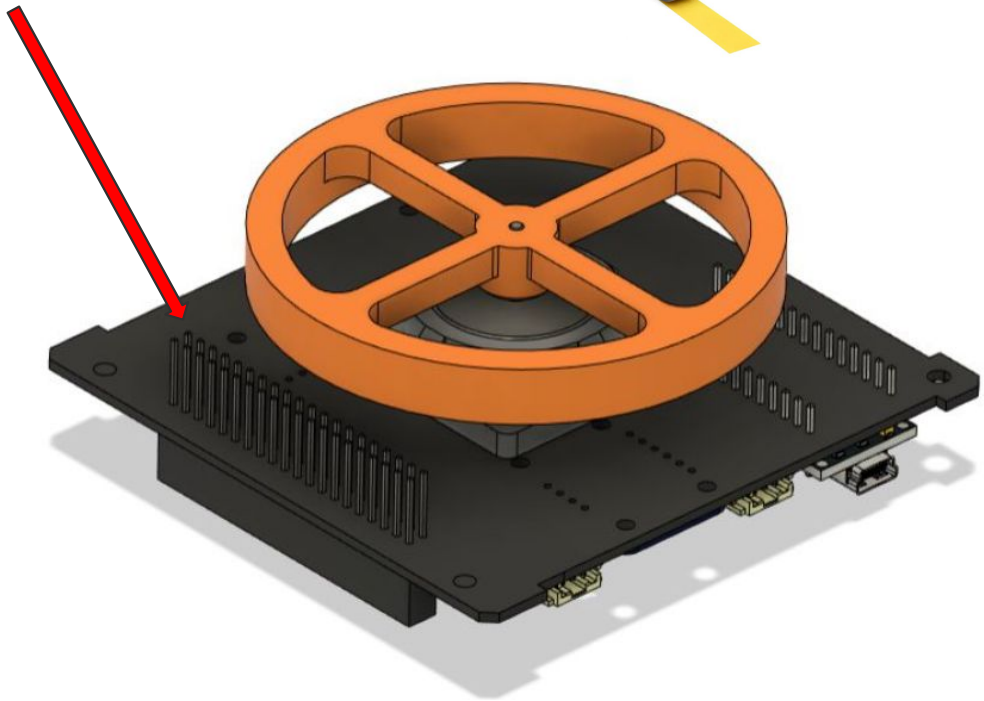
Be careful with the motor wires, unroll them from the motor case and plug them into the connector.



Satellite Set-up - ADCS

Let’s insulate the PC-104 connector pins with kapton tape

Use the same tape to secure motor wires to the board so that they don’t hit the wheel or get close to exposed pins.

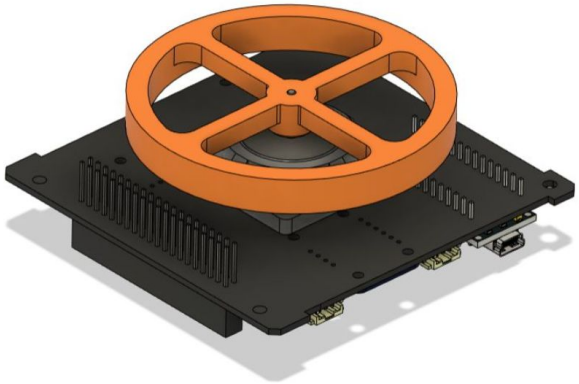


Satellite Set-up - Bottom side

4xCBSTSR M3x10

4x20mm Spacers

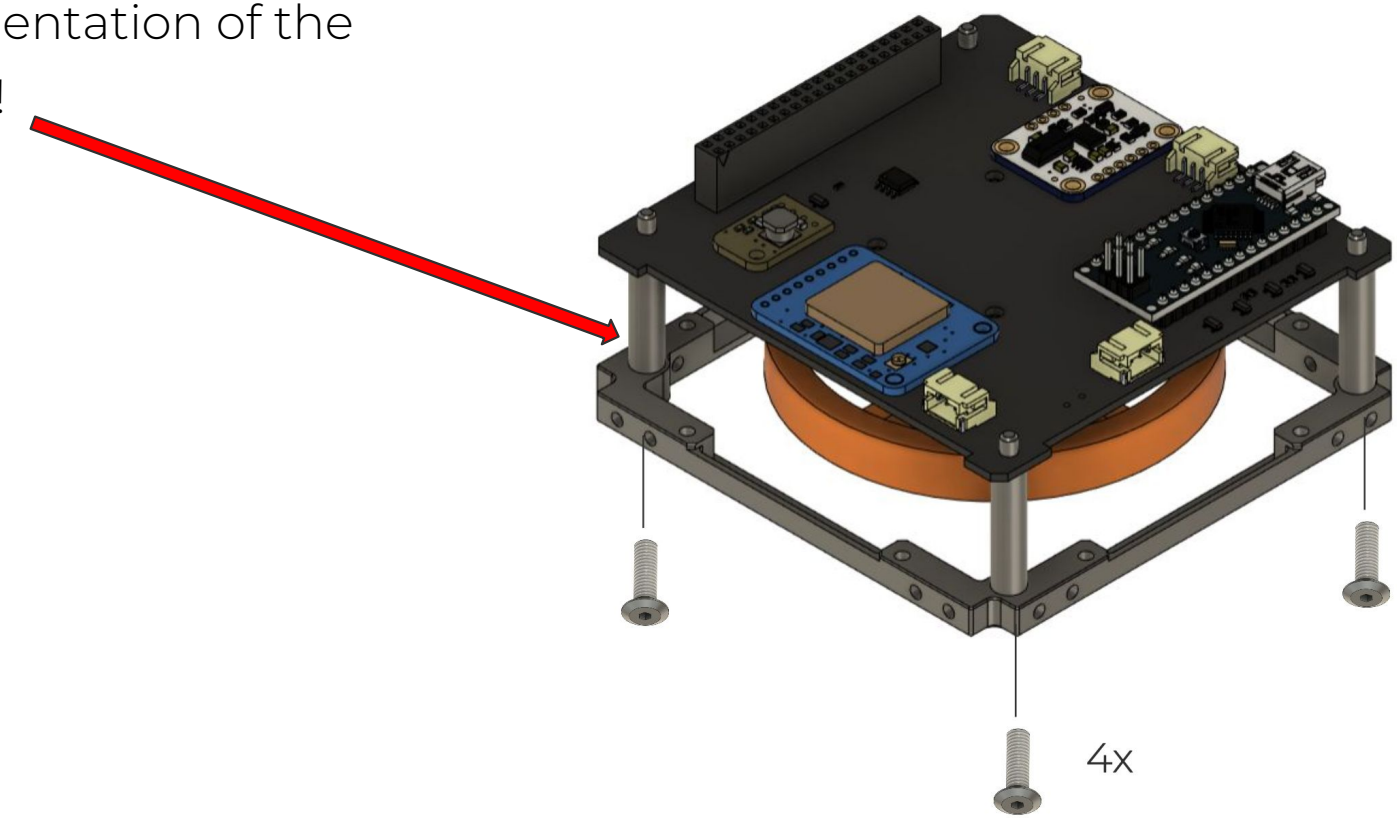
1xVRS006M



1x ADCS Board

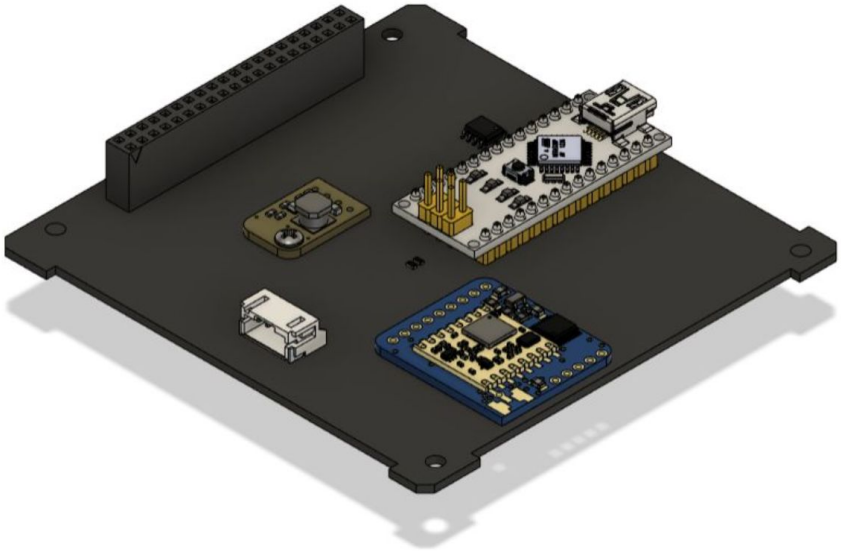
Satellite Set-up - Bottom side

Look at the orientation of the bottom frame!



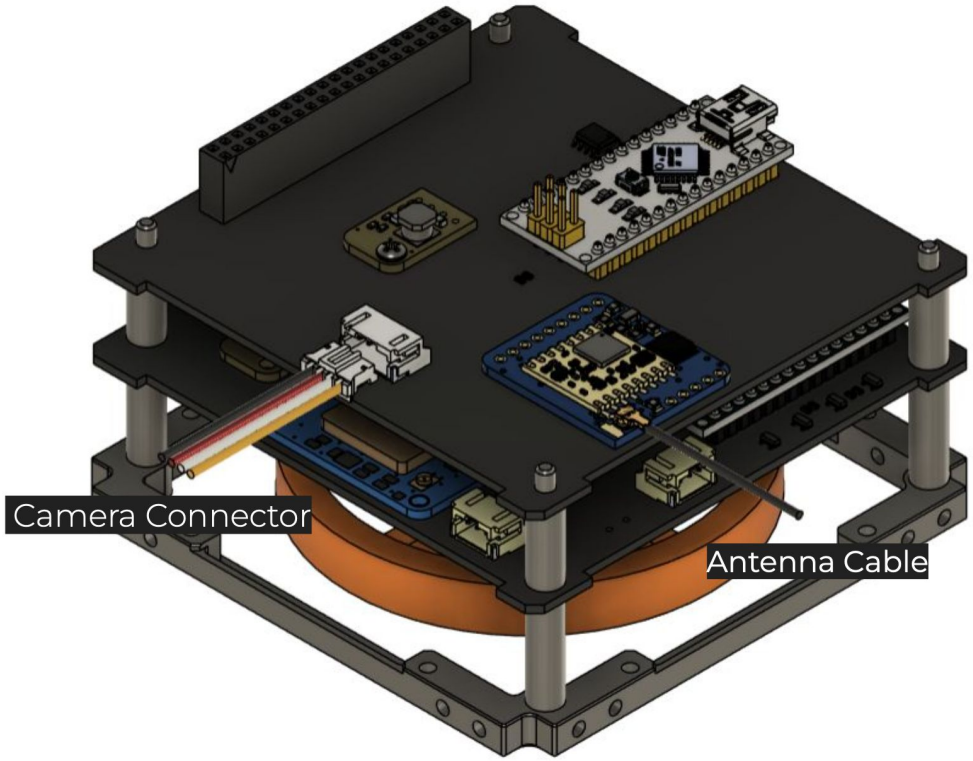
Satellite Set-up - OBC and ADCS Stack

4x15.3mm Spacers



1x OBC Board

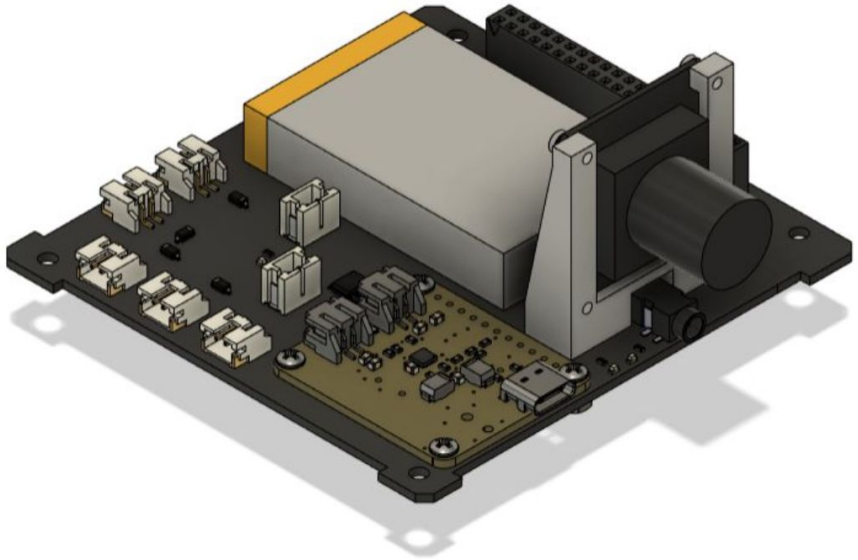
Satellite Set-up - OBC and ADCS Stack



2NDSpace

Satellite Set-up - Preparing the Full Stack

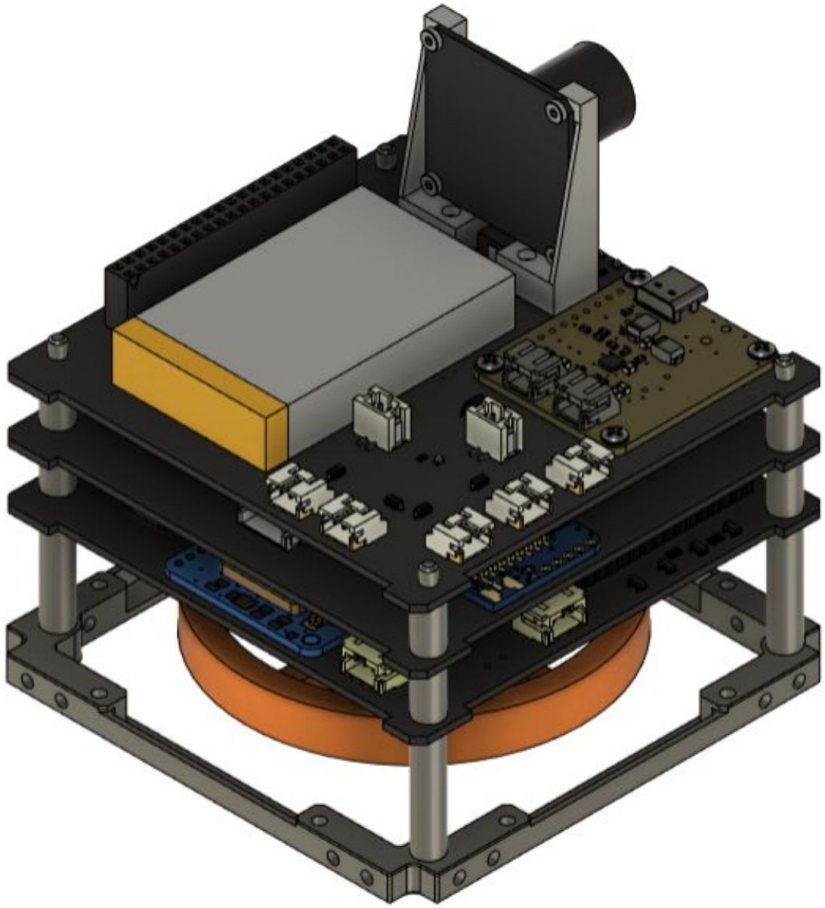
4x15.3mm Spacers



1x EPS Board + Camera

Satellite Set-up - Full Stack

Plug the camera connector to the OBC BEFORE placing the EPS on top of it!

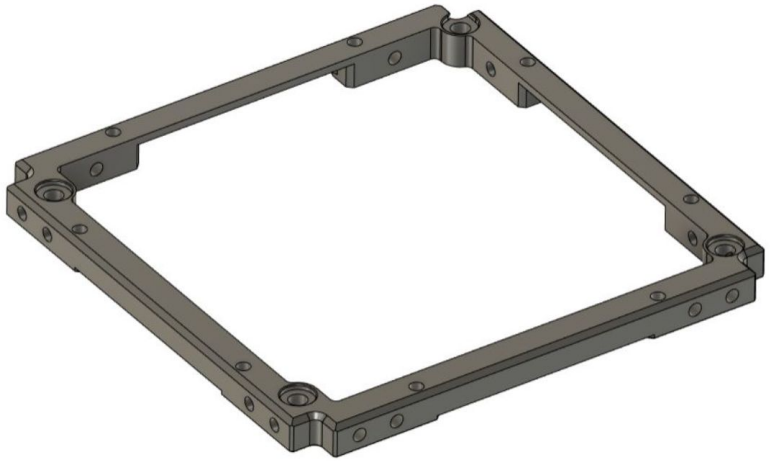


Satellite Set-up - Top Frame

Build the top frame of the 1U in a similar way as for the bottom frame

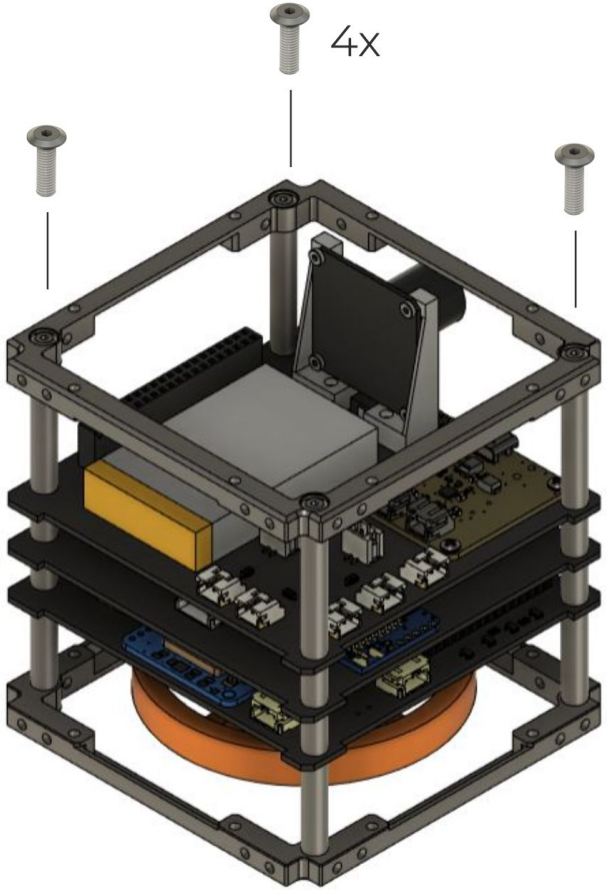
4x30.25 Spacers

4xCBSTSR M3x10



1xVRS006

Satellite Set-up - Top Frame



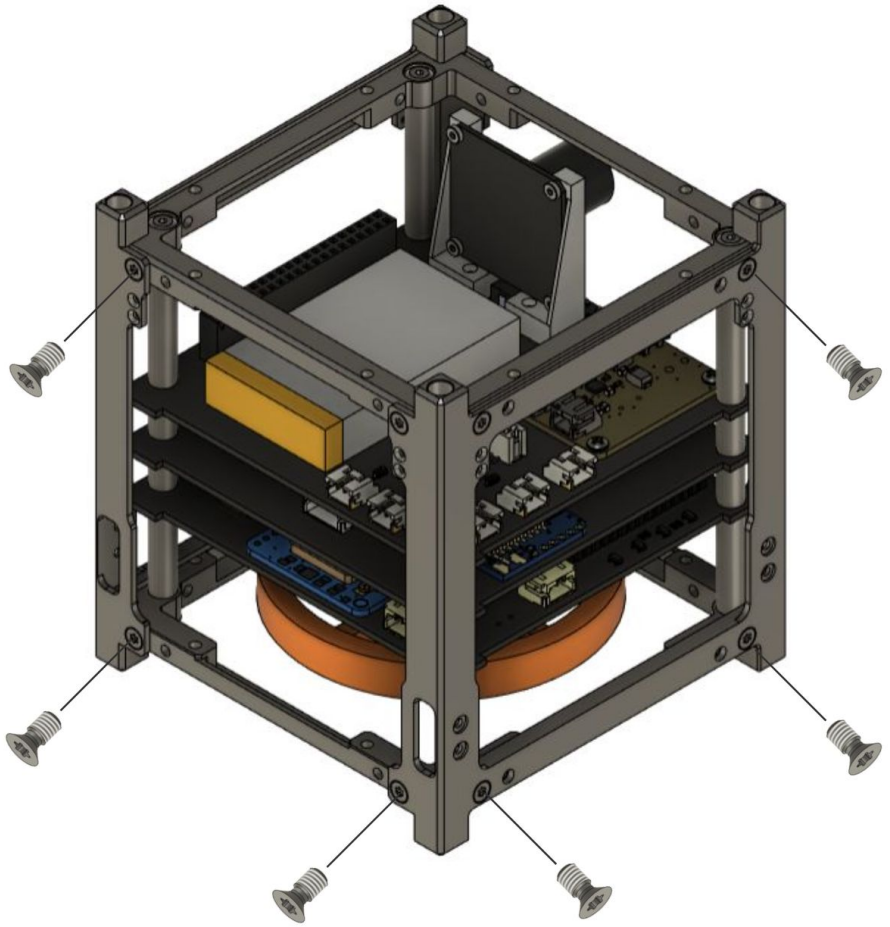
Satellite Set-up - Side Structures

16x TORX M2.5x5

2xVRS001

Satellite Set-up - Side Structures

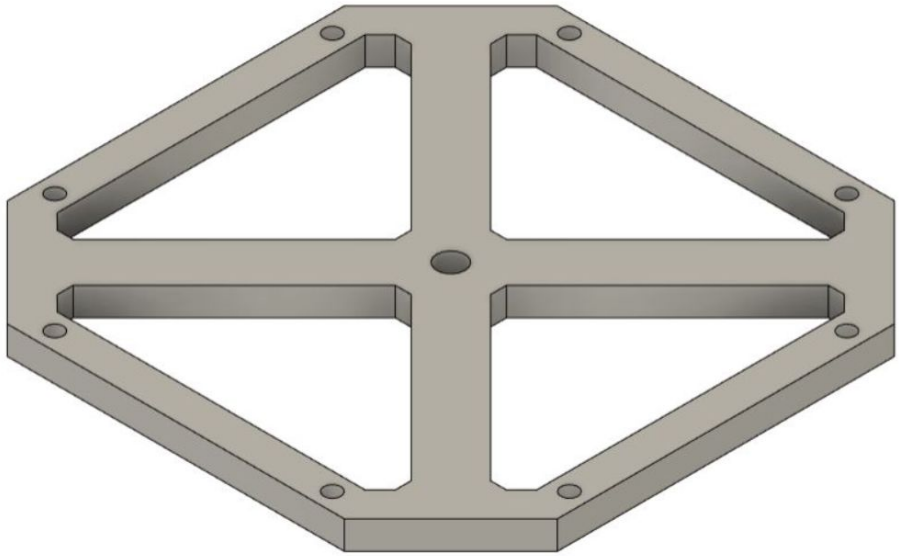
Pay attention to the mounting direction of the side structures



16x

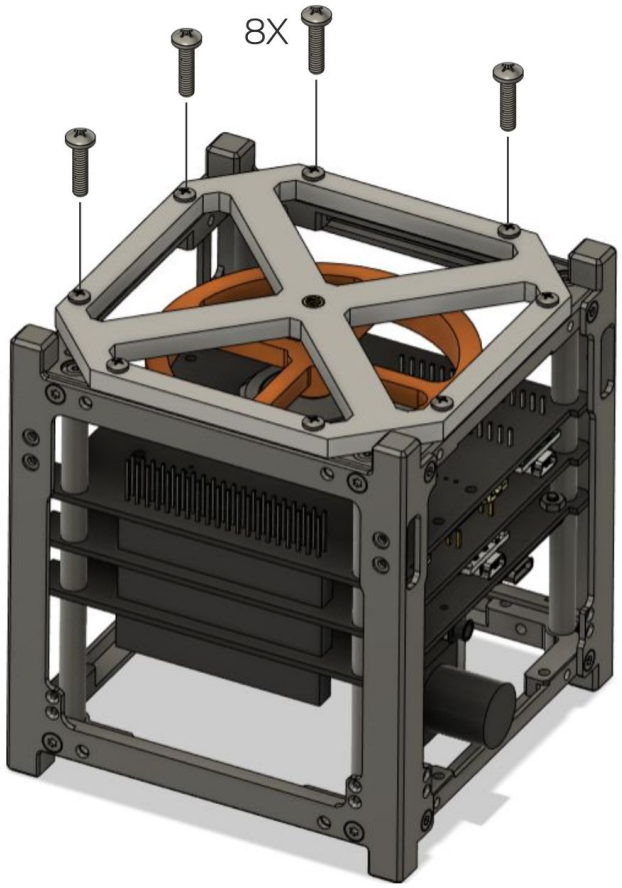
Satellite Set-up - Bottom Guard

8xM2.5x10



1x Support

Satellite Set-up - Bottom Guard



Satellite Set-up - Boards Check

Before continuing with the satellite mechanical set-up, let's make sure our boards can be programmed!

Remember:

- **Arduino Nano** - OBC & Ground Station
- **Arduino Nano Every** - ADCS

Satellite Set-up - Boards Check

Hardware side:

- Connect the USB C to the EPS and plug it in your PC.
- Now remove the RBF.

Software side:

- Open a new sketch in Arduino IDE - do not write any code in it

```
1  void setup() {
2    // put your setup code here, to run once:
3
4  }
5
6  void loop() {
7    // put your main code here, to run repeatedly:
8
9  }
10
```

Satellite Set-up - Boards Check

Software side:

- Open a new sketch in Arduino IDE - do not write any code in it
- Connect and upload the empty code on the OBC first.
- Then, disconnect the OBC cable.
- Connect and upload the empty code on the ADCS.

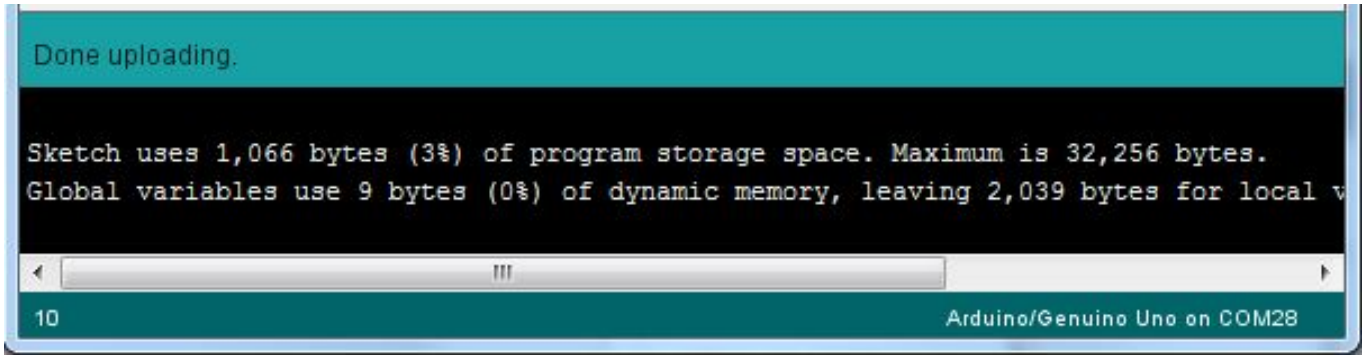
```
1  void setup() {
2    // put your setup code here, to run once:
3
4  }
5
6  void loop() {
7    // put your main code here, to run repeatedly:
8
9  }
10
```

Satellite Set-up - Boards Check

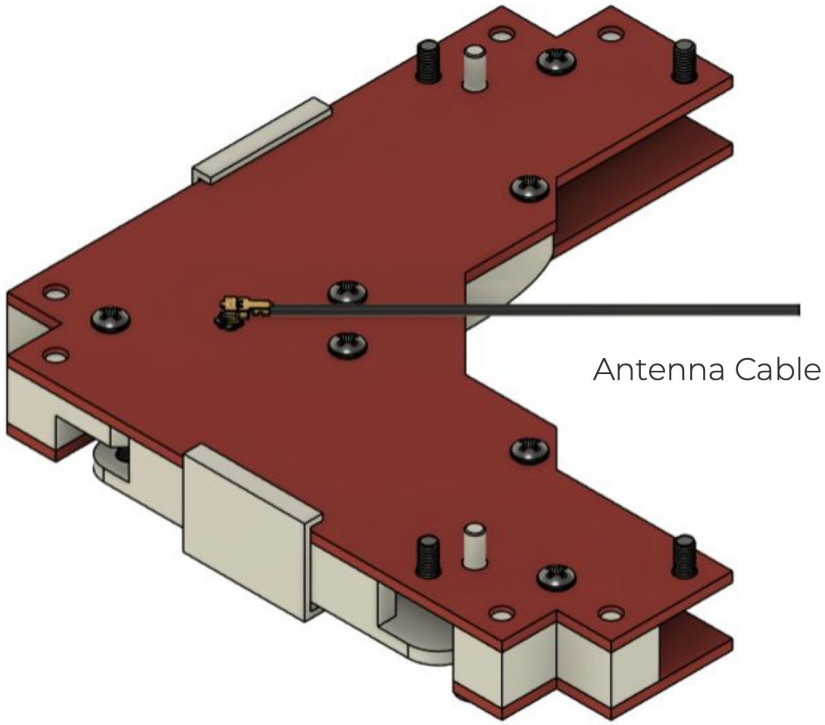
Hardware side:

- Plug the RBF back in.
- Remove the remaining Arduino cable.
- Remove the USB C cable from the EPS.

Now we know that both OBC and the ADCS can be programmed!

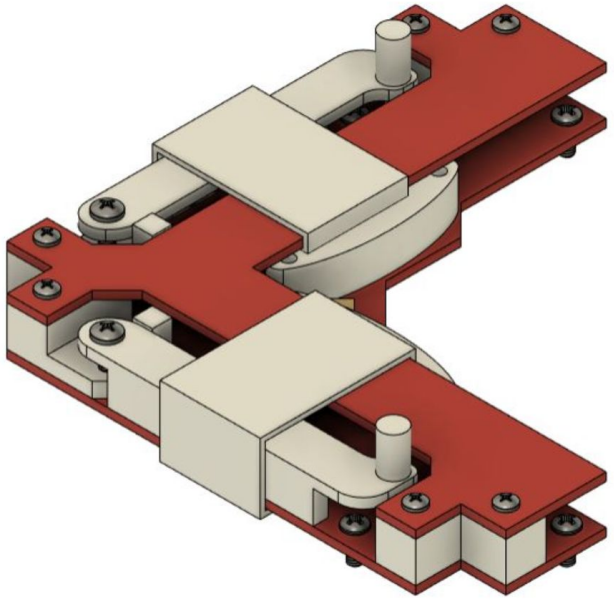


Satellite Set-up - Antenna OBC Connection



Satellite Set-up - Antenna

2xM2.5x6

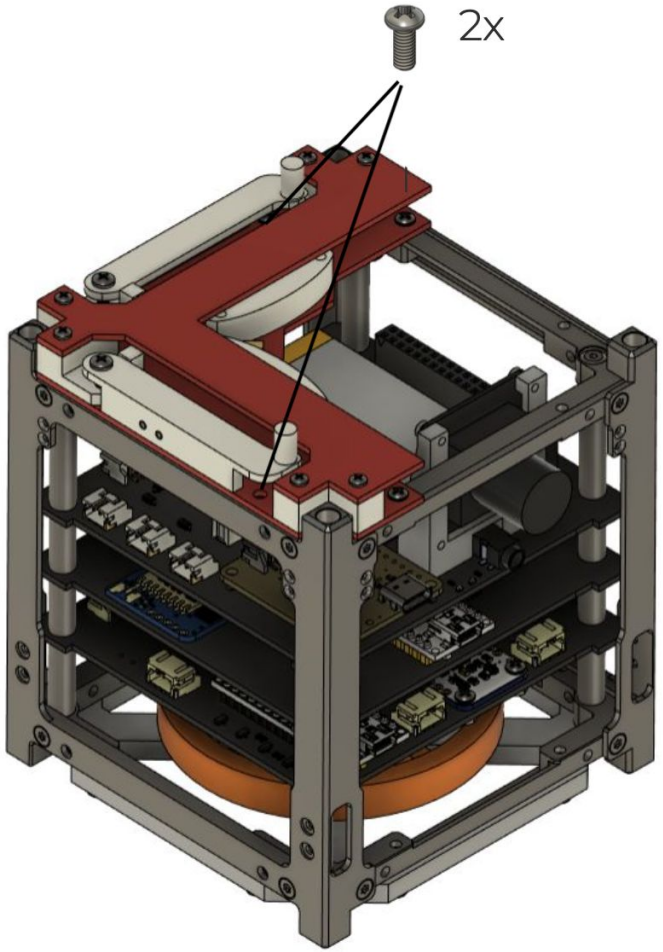


1xDeployable Antenna

Satellite Set-up - Antenna

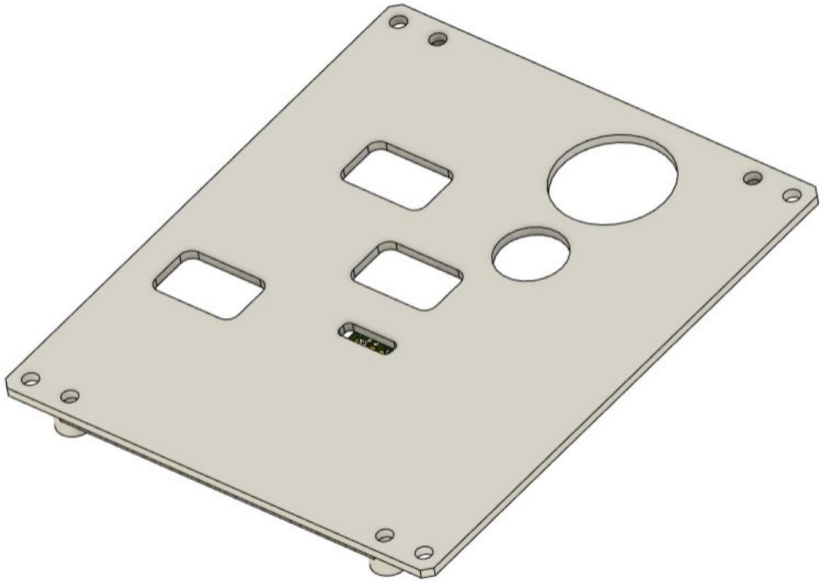
To insert the M2.5x6, open manually deploy the antennas!

Once done, close them back with the pins.



Satellite Set-up - Side Panel

4xM2.5x10

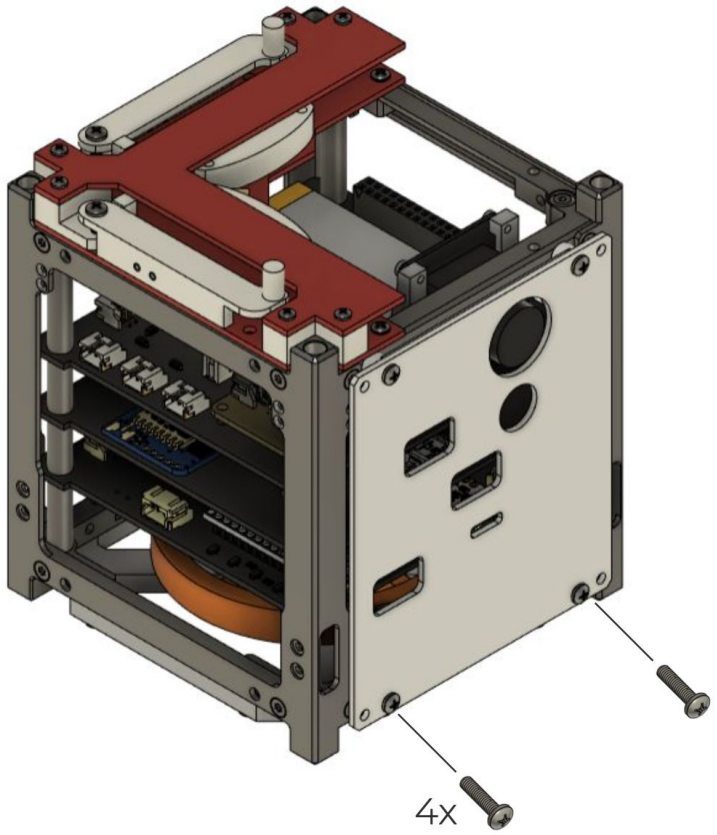


1x Side Panel

Satellite Set-up - Side Panel

To correctly place the panel, we are going to need back spacers!

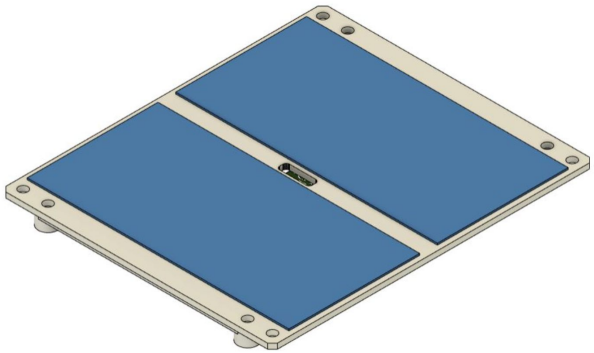
After placing the side panel, take some kapton and label EPS, ADCS, RBF and OBC with a marker.



Satellite Set-up - Solar Panels

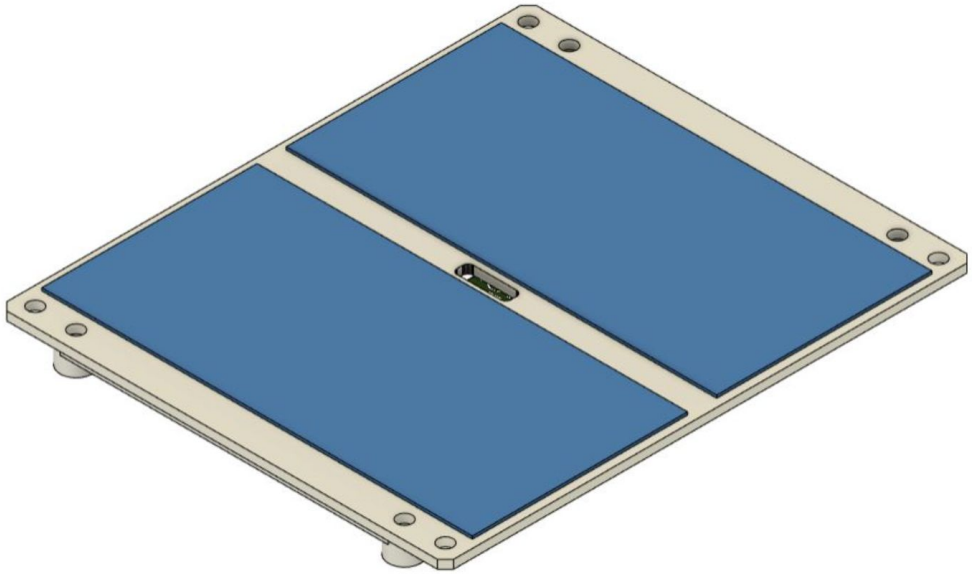
Solar panel cells are extremely fragile and tend to be broken easily if touched.

- Avoid touching them directly with your fingers.
- Be careful not to hit them with tools.
- Most importantly, do not place the faces with solar panels directly on the table or onto other components.



Satellite Set-up - Solar Panels

12xM2.5x10



3x Solar Panels

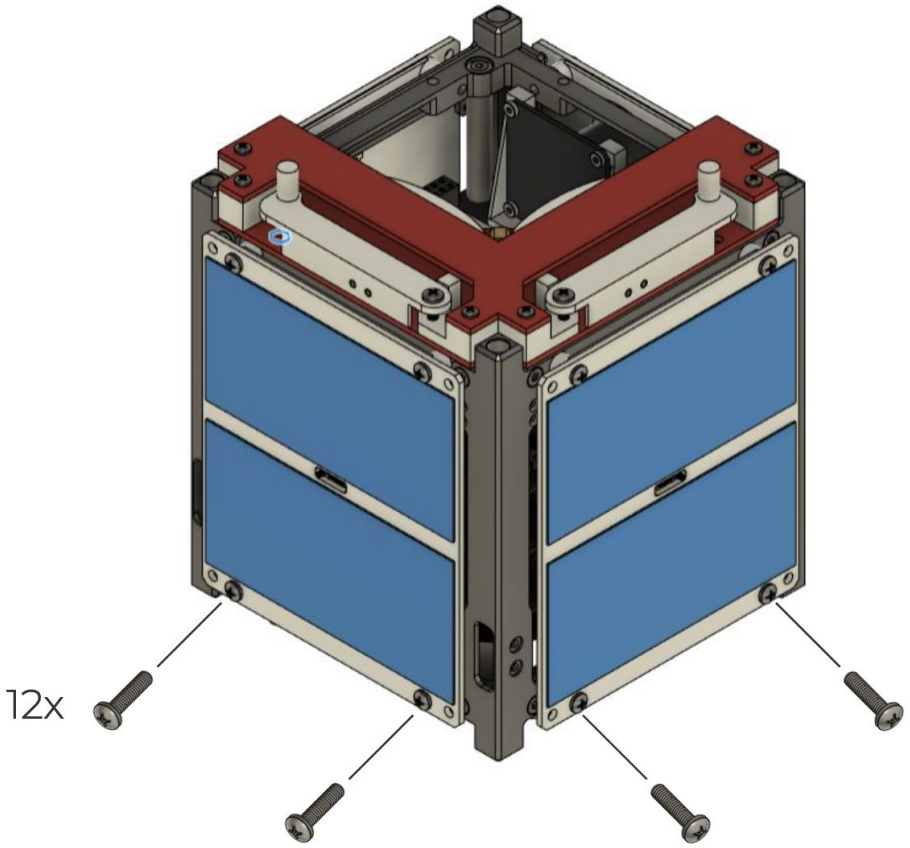
Satellite Set-up - Solar Panels

Before placing the solar panels we need to:

- Connect the solar cells outputs to the EPS.
- Connect the sun sensors to the ADCS.

Refer to the EPS and ADCS schematics to understand where to connect each cable.

Use the spacers behind the panels to place them on the satellite.



Satellite Set-up - Full Satellite

Congratulations, you built the entire 1U Cubesat!