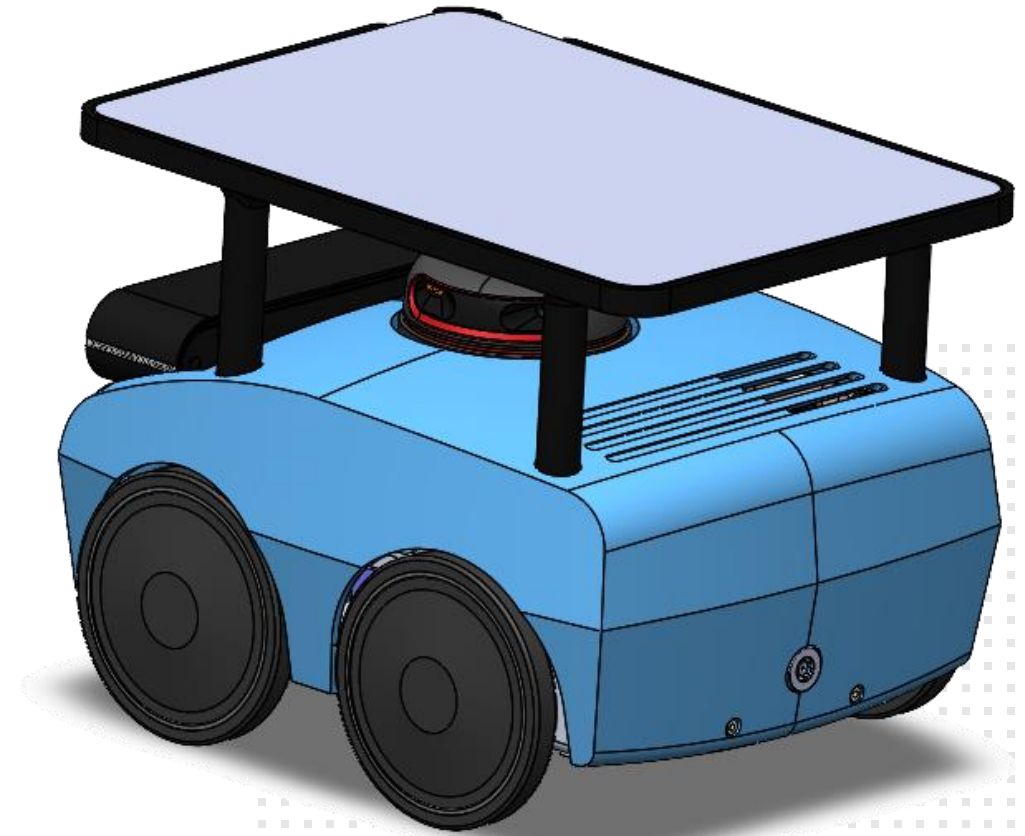


# HelMoRo

## Assembly Instructions

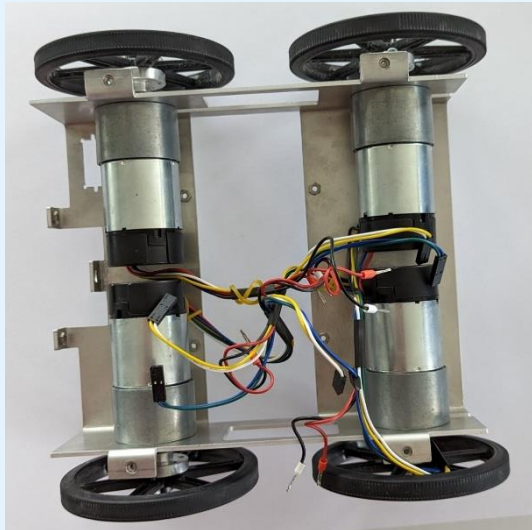
23.06.2023



# Assembly Sequence

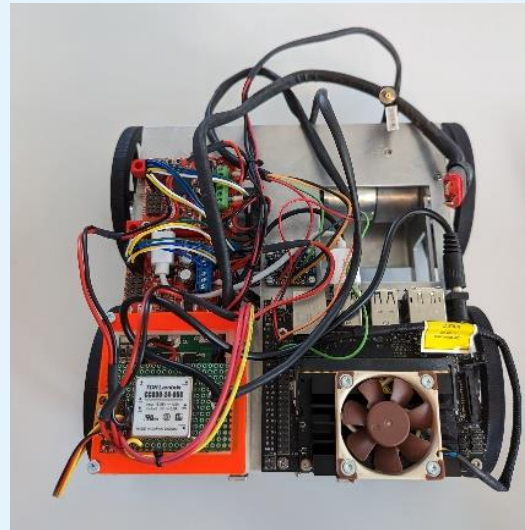
## 1. Wheels + Motors

- 4x Wheels and Motors



## 2. Chassis

- Jetson with Fan
- 2x Motor Controller
- Battery Protection
- DC/DC Converter
- Voltmeter
- Power Switch



## 3. Bodywork

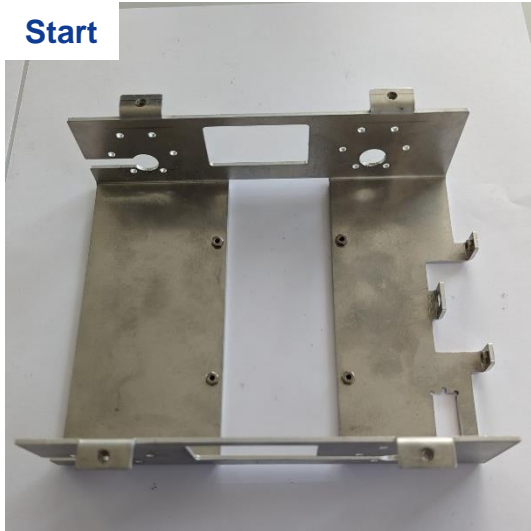
- Hull
- Camera
- Lidar
- Battery Holder
- Optional: Wheel Caps, iPad Holder and Fork



# 1. Wheels and Motors

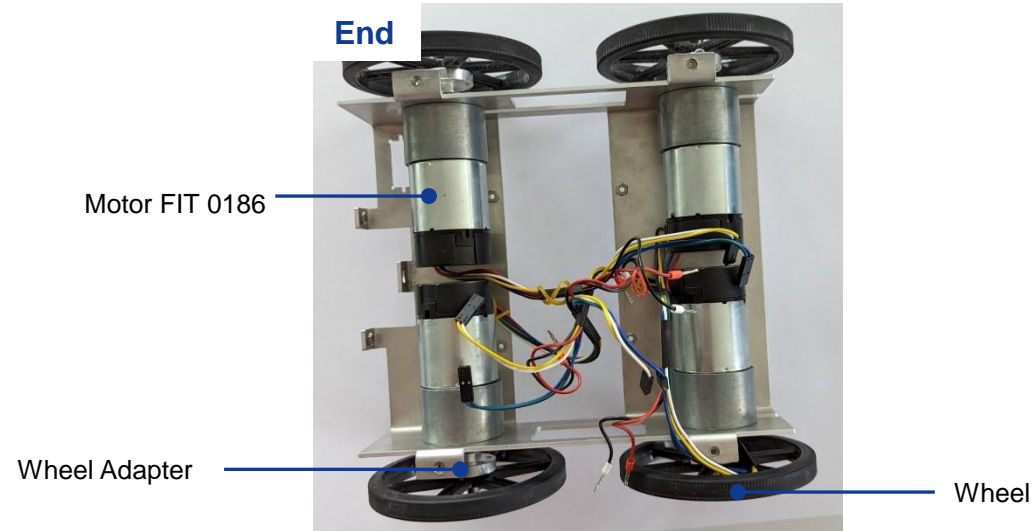
## Overview

Start



Frame Mount

End



Wheels and Motors mounted on  
Frame Mount

### List of machined or supplied parts

- 1x HEL-04-01000-02 / Frame Mount
- 4x HEL-04-01001-00 / Motor FIT 0186
- 4x HEL-06-01002-00 / Wheel Adapter
- 4x HEL-06-01000-00 / Wheel

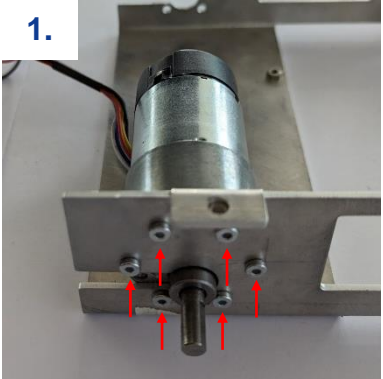
### List of normed parts (screw, pins, etc.)

- 40x DIN 7984 - M3 x 8 --- 6.5N / Screw M3x8
- 4x DIN 7984 - M3 x 12 --- 10.5N / Screw M3x12

# 1. Wheels and Motors

## Details

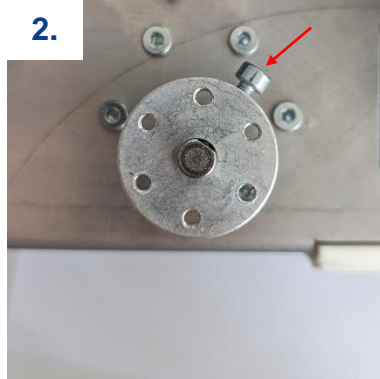
1.



**Motor into Frame Mount**

- (1x Frame Mount)
- 1x Motor FIT 0186
- 6x Screw M3x8

2.



**Add Wheel Adapter**

- 1x Wheel Adapter
- 1x Screw M3x12

3.



**Add Wheel**

- 1x Wheel
- 4x Screw M3x8

4x

### List of machined or supplied parts

- 1x HEL-04-01000-02 / Frame Mount
- 4x HEL-04-01001-00 / Motor FIT 0186
- 4x HEL-06-01002-00 / Wheel Adapter
- 4x HEL-06-01000-00 / Wheel

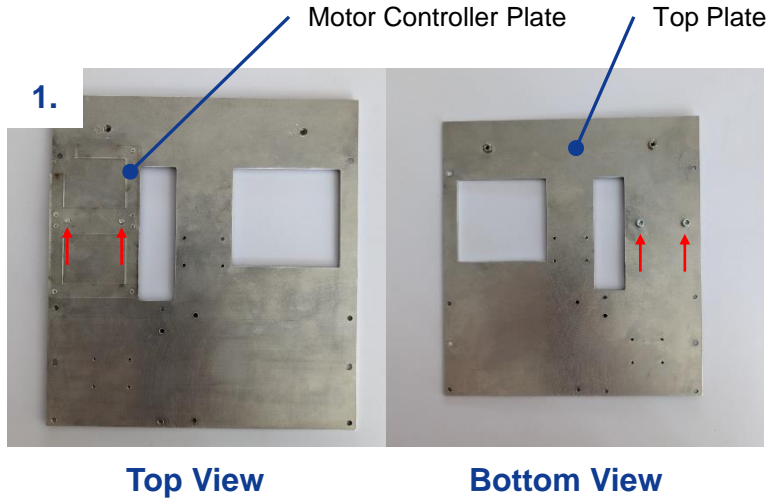
### List of normed parts (screw, pins, etc.)

- 40x DIN 7984 - M3 x 8 --- 6.5N / Screw M3x8
- 4x DIN 7984 - M3 x 12 --- 10.5N / Screw M3x12

Note: Wheel that can't be inserted from the side has to be inserted first.

## 2. Chassis

### 2.1 Motor Controller Plate and IMU



#### 1. Mount Motor Controller Plate on Top Plate

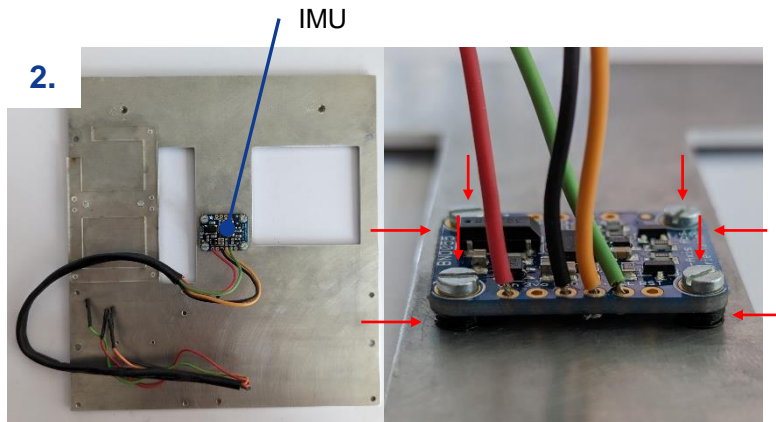
- 1x Top Plate
- 1x Motor Controller Plate
- 2x Screw M3x4

#### List of machined or supplied parts

- 1x HEL-04-01009-01 / Motor Controller Plate
- 1x HEL-04-01010-01 / Top Plate
- 1x HEL-06-03003-00 / IMU

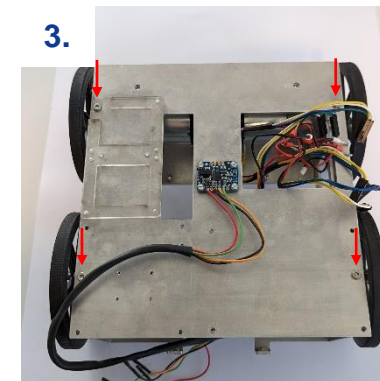
#### List of normed parts (screw, pins, etc.)

- 2x HEL-05-03000-00 / Screw M3x4
- 4x ISO 4762 M2 x 6 - 6N / Screw M2x6
- 4x Washer ISO 7092 – 2 / Washer M2
- 4x DIN 7984 - M3 x 8 --- 6.5N / Screw M3x8



#### 2. Add IMU

- 1x IMU
- 4x Screw M2x6
- 4x Washer M2



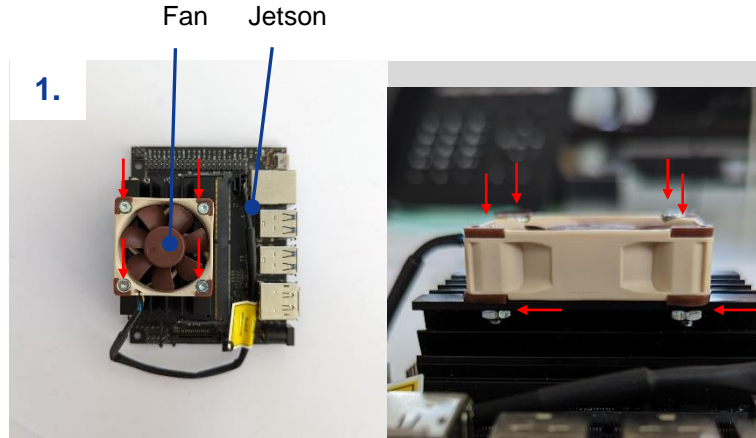
#### 3. Mount Top Plate on Frame Mount

- 4x Screw M3x8



## 2. Chassis

### 2.2 Jetson



#### 1. Mount Fan on Jetson

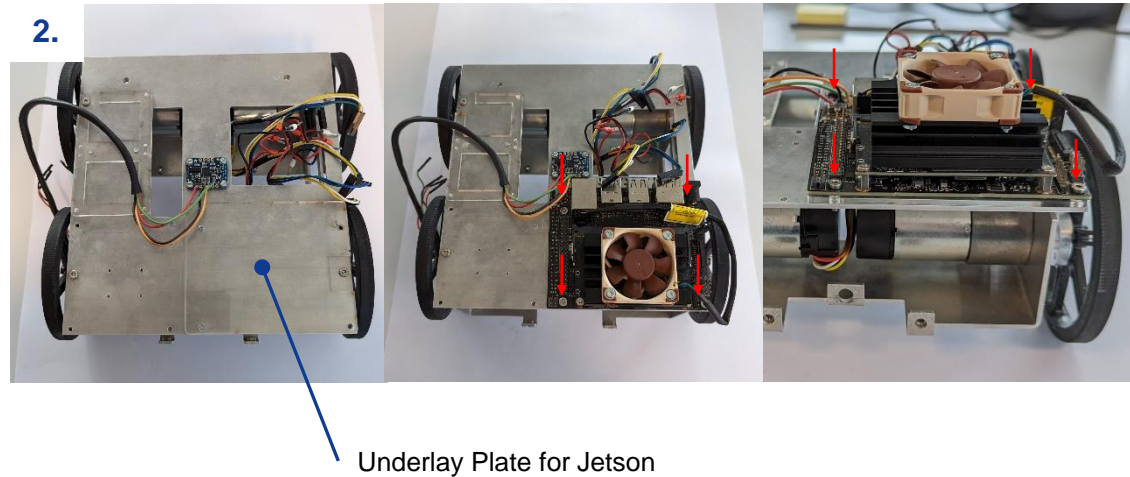
- 1x Fan
- 1x Jetson
- 4x Screw M2.5x16
- 4x Nut M2.5

#### List of machined or supplied parts

- HEL-06-01005-00 / Fan
- HEL-06-01003-00 / Jetson
- HEL-04-03004-00 / Underlay Plate for Jetson

#### List of normed parts (screw, pins, etc.)

- 4x ISO 14581 M2.5x16x16- / Screw M2.5x16
- 4x ISO - 4032 - M2.5 - D – N / Nut M2.5
- 4x DIN 7984 - M3 x 8 --- 6.5N / Screw M3x8

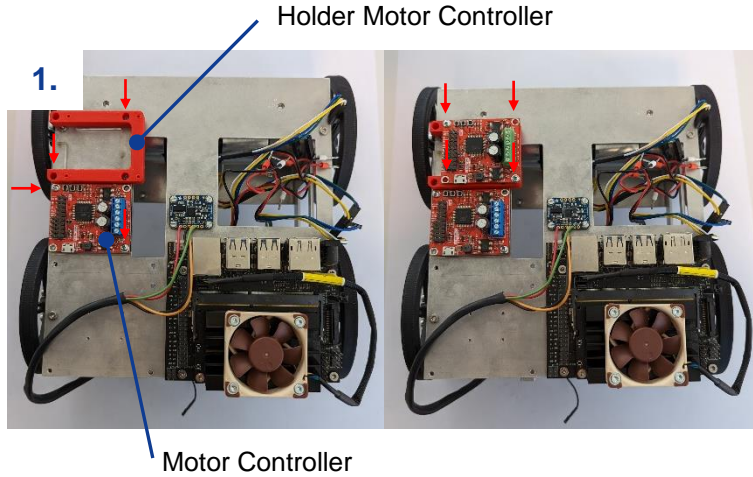


#### 2. Mount Jetson on Top Plate

- Underlay Plate for Jetson
- 4x Screw M3x8

## 2. Chassis

### 2.3 Motor Control



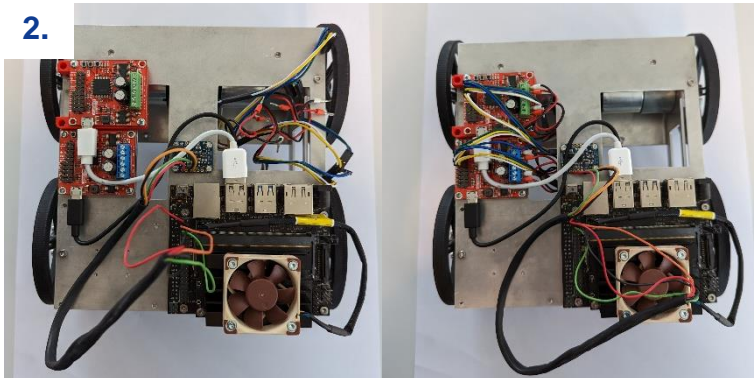
#### 1. Mount Motor Controller

- 2x Motor Controller Kit
- 8x Screw from Motor Controller Kit
- 1x Holder Motor Controller

#### List of machined or supplied parts

- 2x HEL-06-01004-00 / Motor Controller Kit
- 8x Screw from Motor Controller Kit
- 1x HEL-04-01017-01 / Holder Motorcontroller
- 2x HEL-06-03005-00 / USB Cable

#### List of normed parts (screw, pins, etc.)



#### 2. Connect Cables

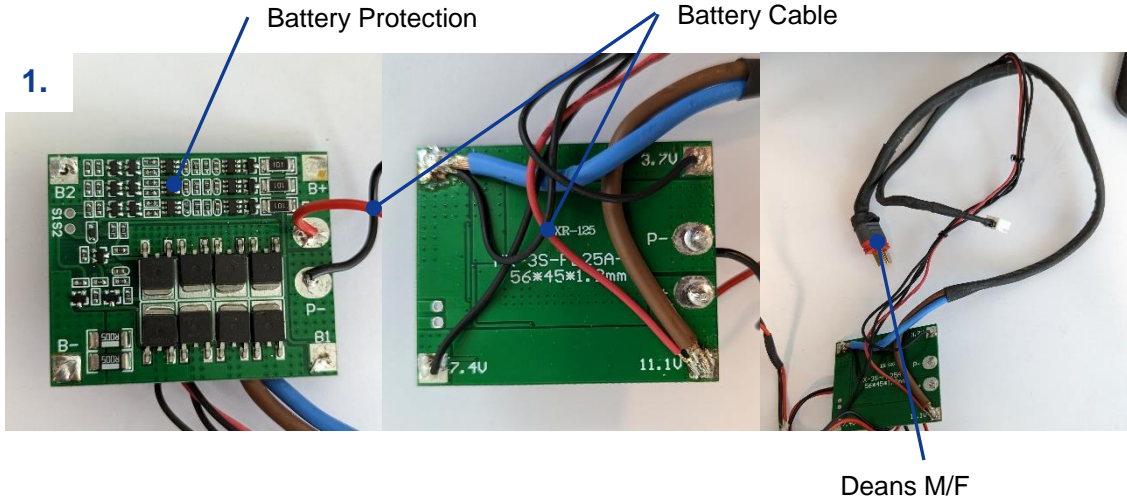
- 2x USB Cable

Note: Connect cables according to electrical circuit diagram.

## 2. Chassis

### 2.3 DC / DC Wandler

1.



#### 1. Battery Protection

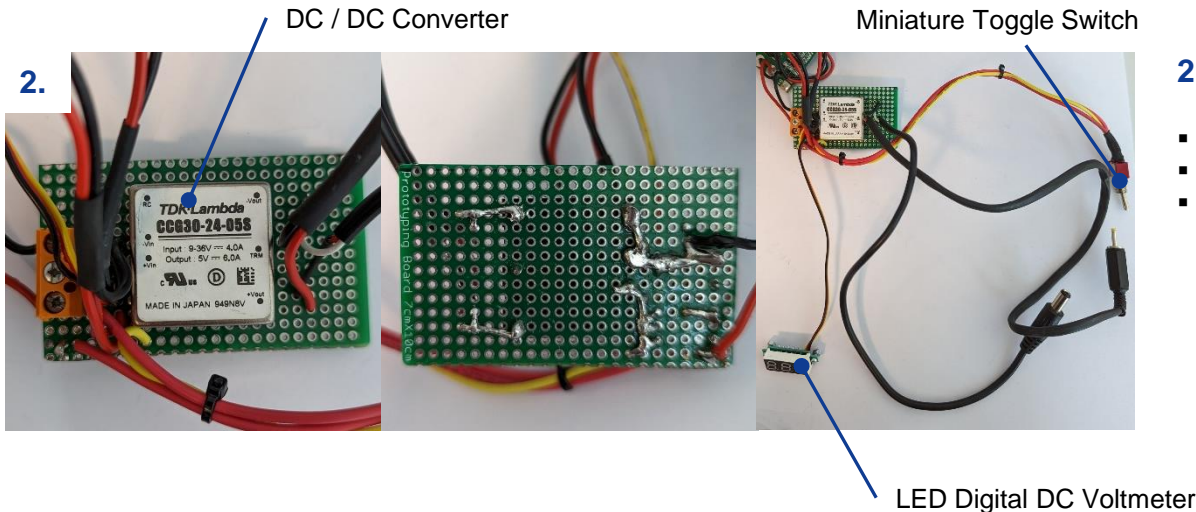
- 1x Battery Protection
- 1x Battery Connector (Deans M/F)
- 1x Battery Cable

#### List of machined or supplied parts

- 1x HEL-06-03004-00 / DC/DC Converter
- 1x HEL-06-03001-01 / LED Voltmeter
- 1x HEL-06-03002-00 / Power Switch
- 1x HEL-03-03000-00 / Battery Protection
- 1x Battery Connector (Deans M/F)
- 1x Battery Cable (EP Silicone Cable 0.5mm<sup>2</sup> /)

#### List of normed parts (screw, pins, etc.)

2.



#### 2. DC / DC Converter

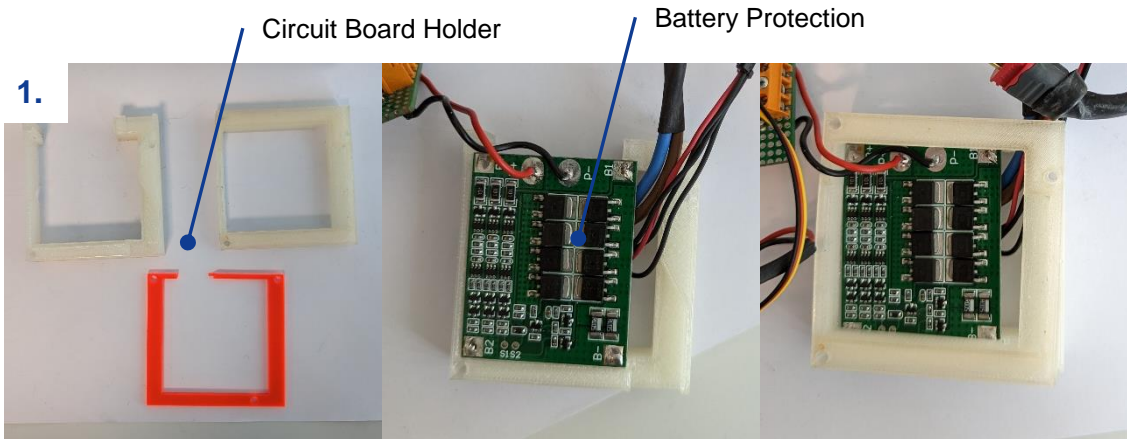
- 1x DC / DC Converter
- 1x Power Switch
- 1x LED Voltmeter

Note: Solder the connections according to the electrical circuit diagram.



## 2. Chassis

### 2.4 Circuit Board Box



#### 1. Battery Protection

- 1x Circuit Board Holder

#### List of machined or supplied parts

- HEL-04-01005-01 / Circuit Board Holder

#### List of normed parts (screw, pins, etc.)

- 3x M3x30 Screw

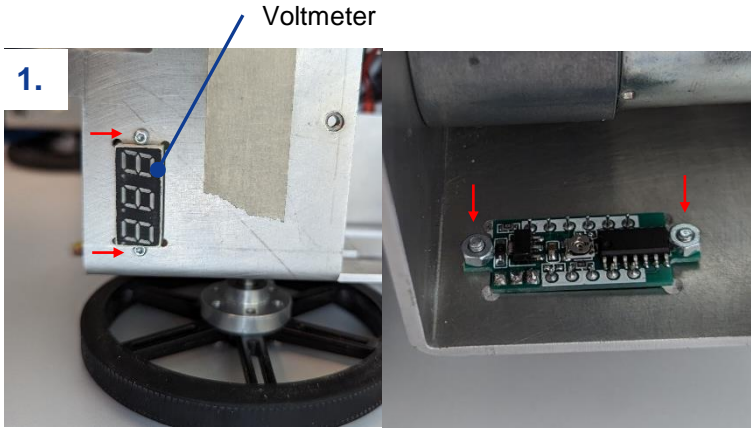


#### 2. DC / DC Converter

- 3x M3x30 Screw

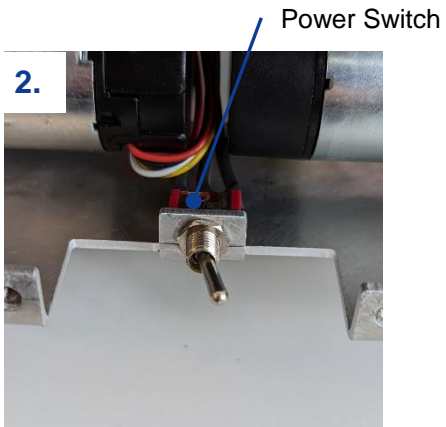
## 2. Chassis

### 2.5 Voltmeter & Power Switch

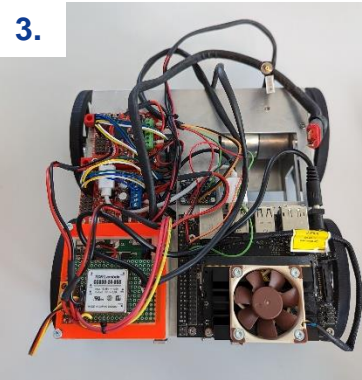


#### 1. Voltmeter

- 2x Screw M2x5
- 2x Nut M2



#### 2. Power Switch



#### 3. Connect Cables

#### List of machined or supplied parts

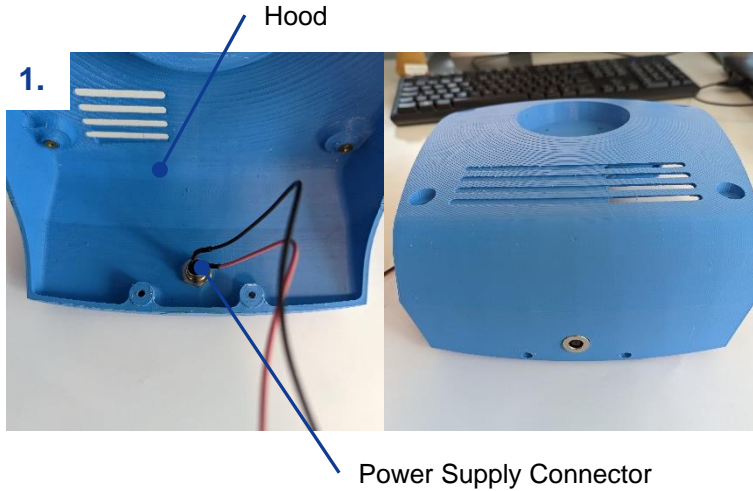
#### List of normed parts (screw, pins, etc.)

- 2x DIN 7985A - M2x5 / Screw M2x5
- 2x ISO - 4032 - M2 - D – N / Nut M2

Note: Connect the cables according to the electrical circuit diagram.

## 3. Hood

### 3.1 Power Supply Connector & Lidar



#### 1. Power Supply Connector

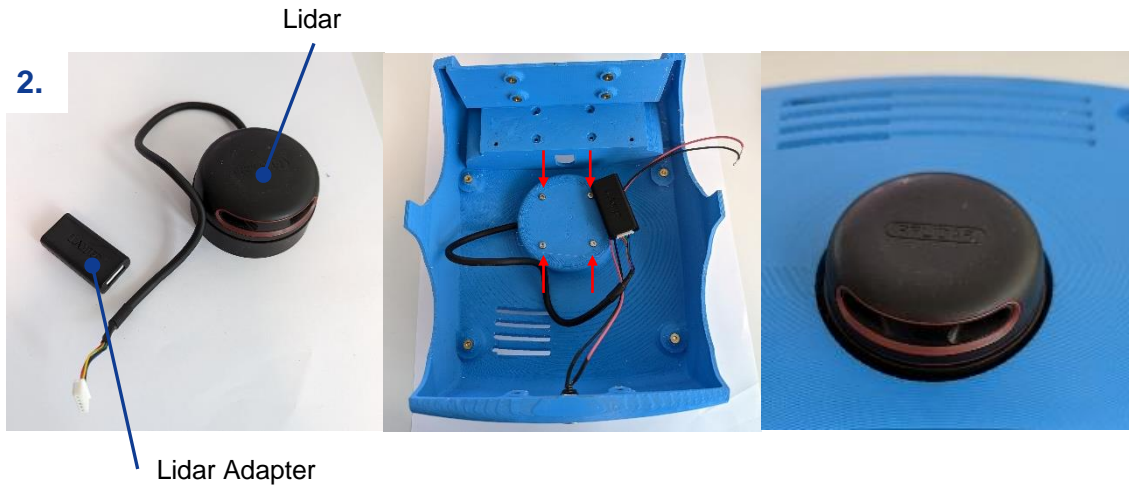
- 1x Hood
- 1x Power Supply Connector

#### List of machined or supplied parts

- HEL-04-03002-00 / Hood
- HEL-06-03000-00 / Power Supply Connector
- HEL-06-01008-00 / Lidar
- HEL-06-01007-00 / Lidar Adapter

#### List of normed parts (screw, pins, etc.)

- 4x M3x8

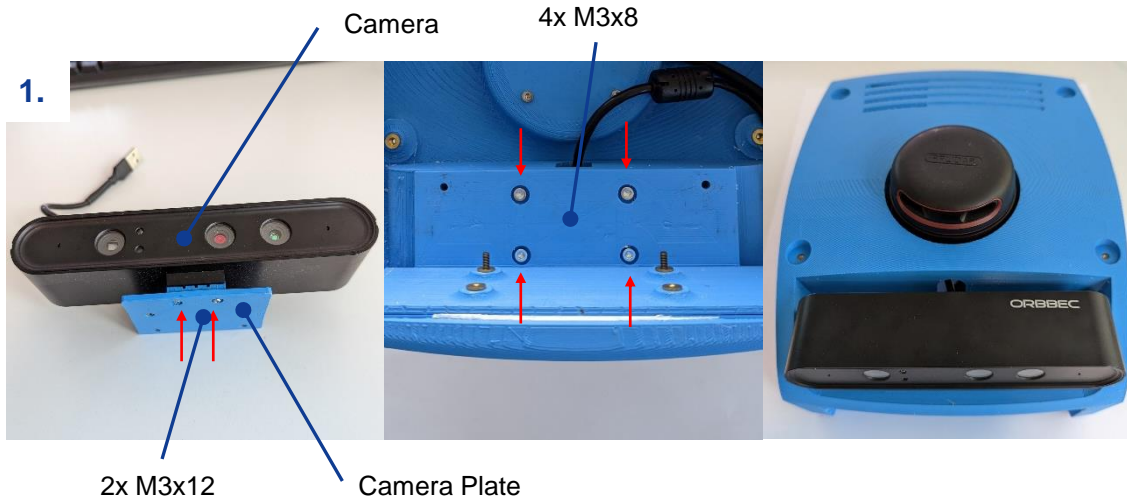


#### 2. Lidar

- 1x Lidar
- 1x Lidar Adapter
- 4x Screw M3x8

### 3. Hood

#### 3.2 Camera and Hood on Chassis



##### 1. Camera

- 1x Camera
- 1x Camera Plate
- 2x Screw M3x12
- 4x Screw M3x8

##### List of machined or supplied parts

- HEL-06-01006-00 / Camera
- HEL-04-01013-02 / Camera Plate

##### List of normed parts (screw, pins, etc.)

- 4x DIN 7984 - M3 x 8 --- 6.5N / M3x8
- 2x DIN 7984 - M3 x 12 --- 10.5N / M3x12
- 4x DIN 7984 - M3 x 18 / Screw M3x18



##### 2. Mount Hood on Chassis

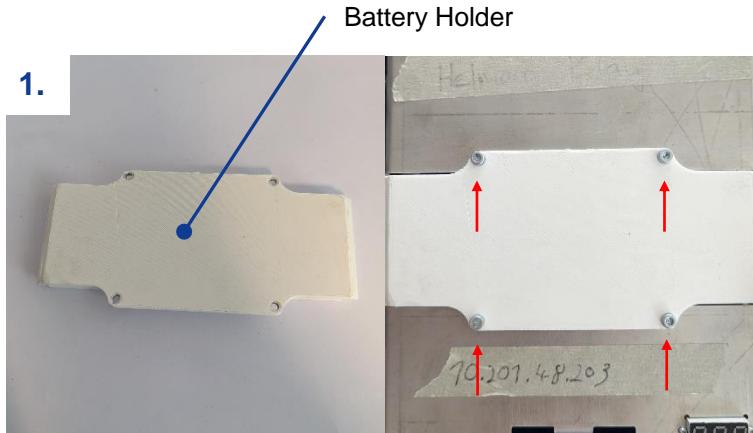
- 4x Screw M3x18

Note : Connect the cables of the Hood and the Chassis according to the Electrical Circuit Diagram and then mount the Hood on the Chassis.



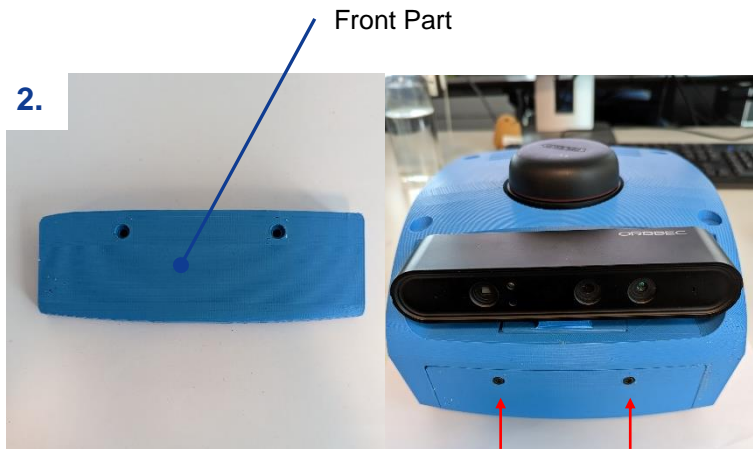
### 3. Hood

#### 3.3 Battery Holder and Fork Hull



##### 1. Battery Holder

- 1x Battery Holder
- 4x Screw M3x8



##### 2. Mount Front Part

- Front Part
- 2x Screw M3x30

##### List of machined or supplied parts

- HEL-04-01004-00 / Battery Holder
- HEL-04-03003-00 / Front Part

##### List of normed parts (screw, pins, etc.)

- 4x M3x8
- 2x M3x30

### 3. Hood

#### 3.4 Optional



#### 1. iPad Holder

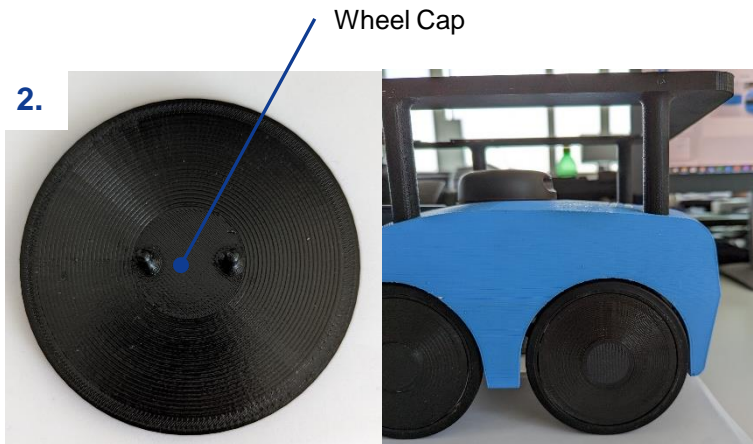
- 1x iPad Holder
- 4x Screw M3x36

#### List of machined or supplied parts

- 1x HEL-04-02001-00 / iPad Holder
- 4x HEL-04-03000-01 / Wheel Cap
- 1x HEL-04-03003-00 / Front Part with Fork

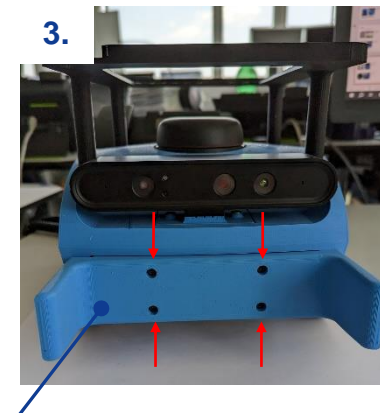
#### List of normed parts (screw, pins, etc.)

- 4x M3x36
- 4x M3x30



#### 2. Wheel Cap

- 4x Wheel Cap



#### 3. Fork

- 1x Front Part with Fork
- 4x Screw M3x30

Front Part with Fork

END

