

Open Farmer Kit Assembly instructions

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Matteo Mojoli, Davide Formenti

Powered by:
Polifactory, Politecnico di Milano's
FabLab and Makerspace

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POLIFACTORY
POLITECNICO MILANO 1863



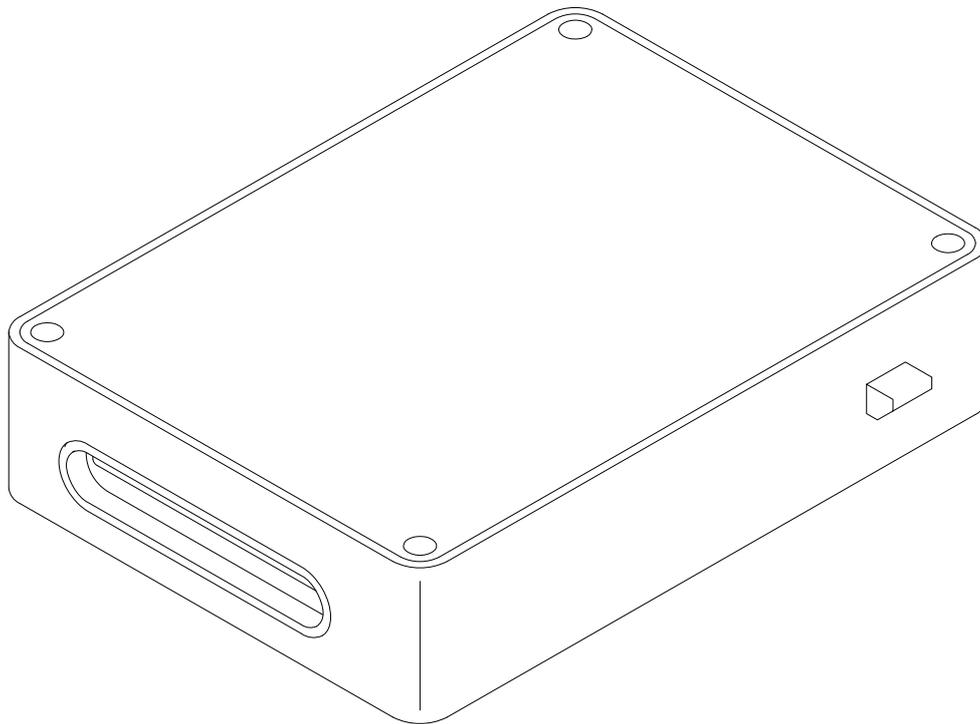
**Distributed
Design**



Co-funded by the
Creative Europe Programme
of the European Union

Open Farmer Kit

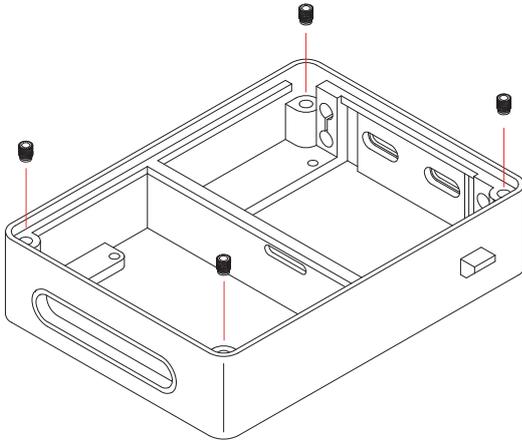
Air module



Bill of materials

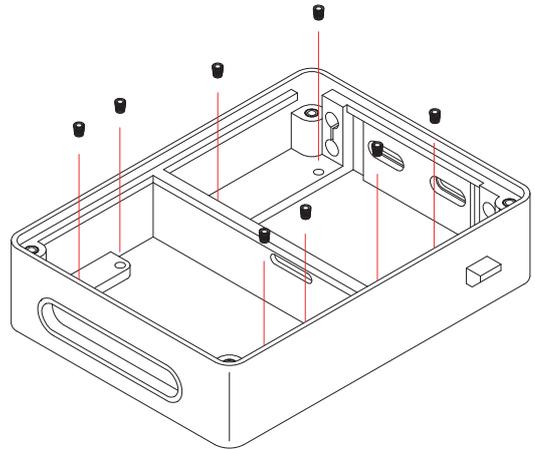
- 1X CA-A
- 4X Threaded inserts M3 1/2
- 8X Threaded inserts M3 1/2
- 2X Pogo pin
- 2X Pogo pin
- 8X Magnets
- 8X Magnets
- 8X Screws M2x6
- 2X Screws M2x10
- 1X Arduino Uno Rev 3
- 2X Nuts M2
- 1X PMS5003
- 1X DHT 22
- 1X P-A-1
- 1X P-A-2
- 1X Led-1
- 1X Led-2
- 1X Led 3 pin
- 1X Led 2 pin
- 3X Screws M3x6
- 1X Screws M3x16
- 1X G-A
- 1X Top-A

1



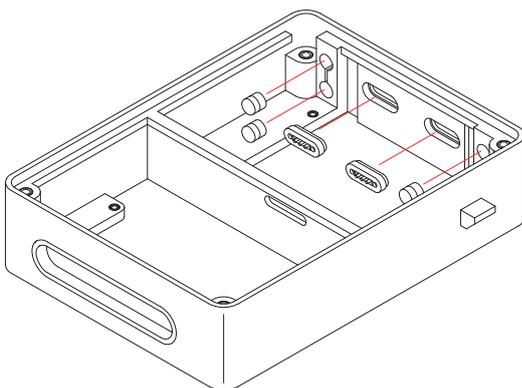
1X CA-A
4X Threaded inserts M3 1/2

2



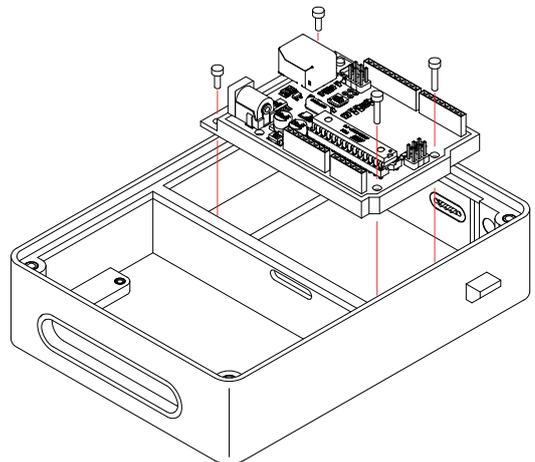
8X Threaded inserts M3 1/2

3



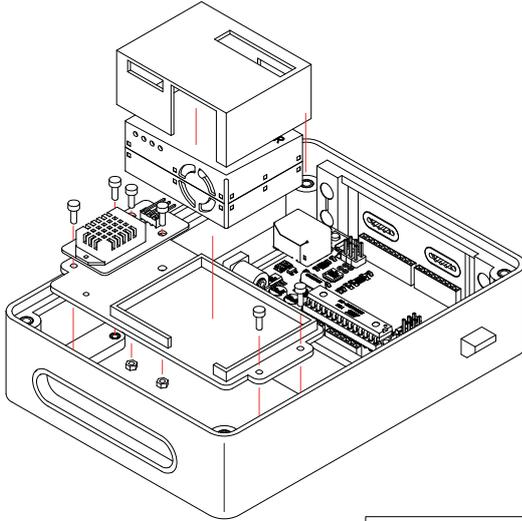
2X Pogo pin
8X Magnets

4



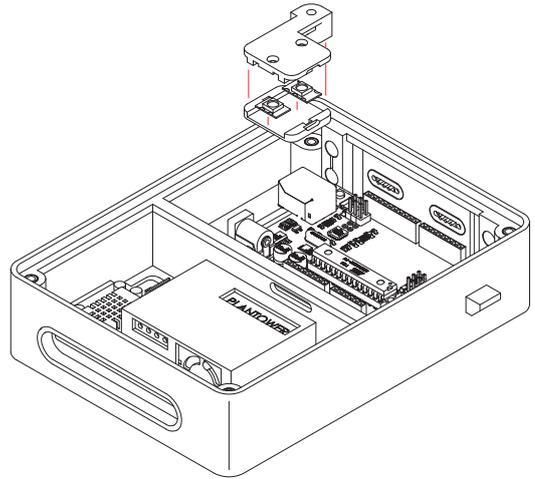
2X Screws M2x6
2X Screws M2x10
1X Arduino Uno Rev 3

5



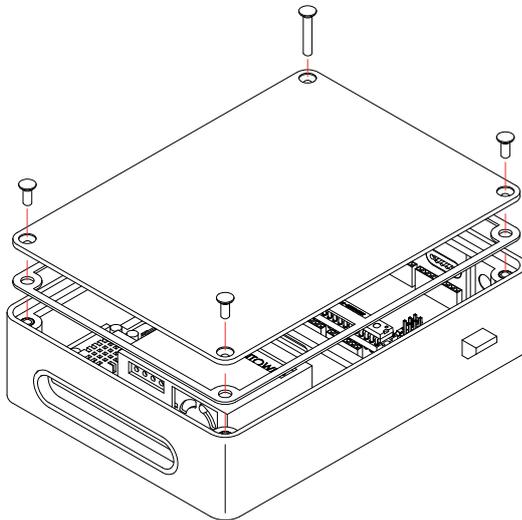
- 6X Screws M2x6
- 2X Nuts M2
- 1X PMS5003
- 1X DHT 22
- 1X P-A-1
- 1X P-A-2

6



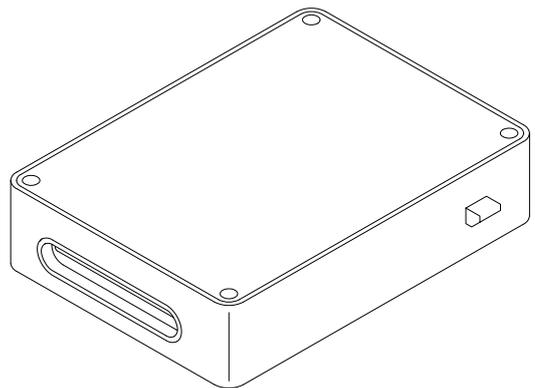
- 1X Led-1
- 1X Led-2
- 1X Led 3 pin
- 1X Led 2 pin

7



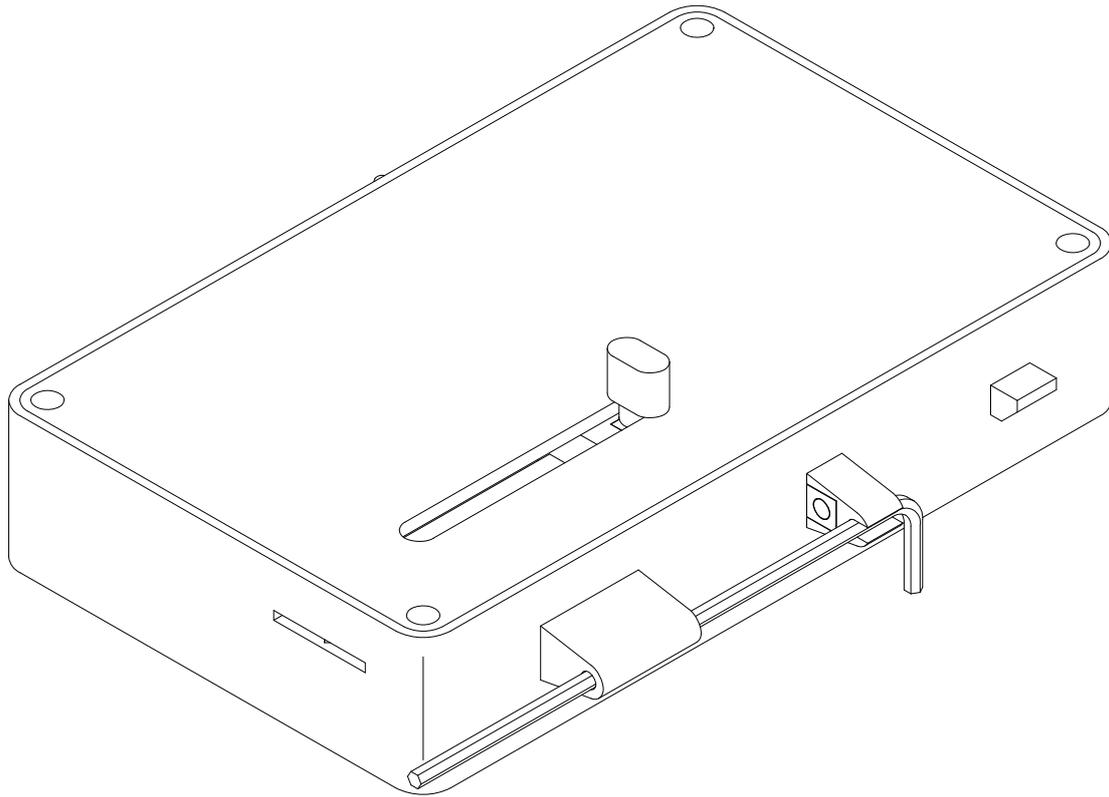
- 3X Screws M3x6
- 1X Screws M3x16
- 1X G-A
- 1X Top-A

8



Open Farmer Kit

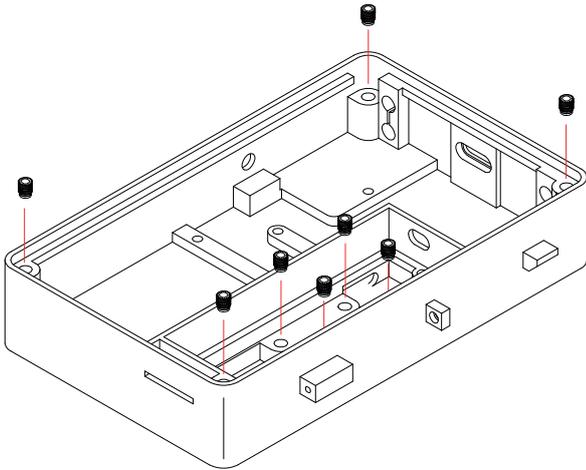
Moisture module



Bill of materials

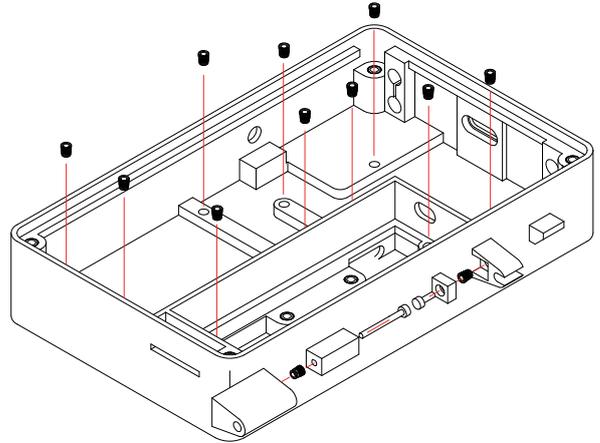
1X CA-M	1X P-M-1
8X Threaded inserts M3 1/2	1X P-M-2
12X Threaded inserts M2	1X P-M-3
7X Screws M2x6	1xToggle switch
3X Screws M2x20	1X Nut M6
1X F-M-2	1XO-ring
1X F-M-3	1X Top-A
1X Pogo pin	1X Washer
8X Magnets	2X P-M-5
2X Screws M2x10	1X LoRa Adafruit RFM95W
1X Arduino Uno Rev 3	1X Solverable PCB
1X F-M-5	1X Led-1
1X Battery Case	1X Led-2
2X Battery 18650 Lion	1X Led 3 pin
7X Screws M3x6	1X Led 2 pin
1X GPS GY-NEO6MV2	1X Screws M3x16
1X F-M-4	1X G-M
1X P-M-4	1X Top-M
1X Capacitative Hygrometer Module V1.2	1X F-M-1
1X G-M-2	

1



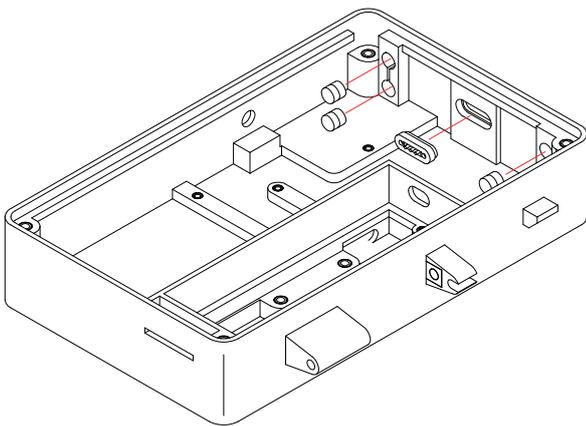
1X CA-M
8X Threaded inserts M3 1/2

2



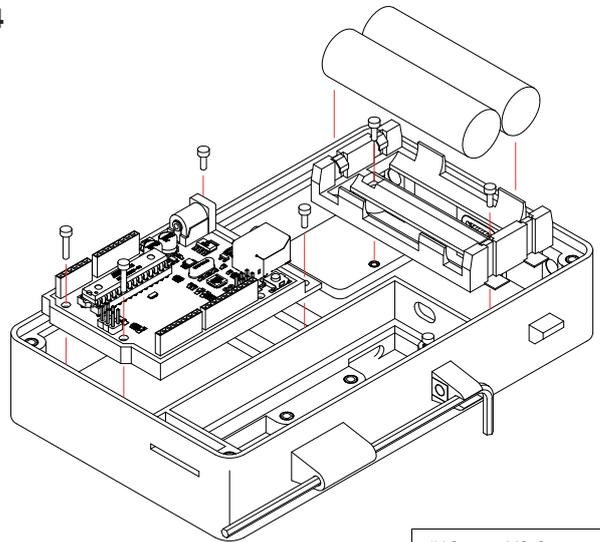
12X Threaded inserts M2
1X Screws M2x6
1X Screws M2x20
1X F-M-2
1X F-M-3

3



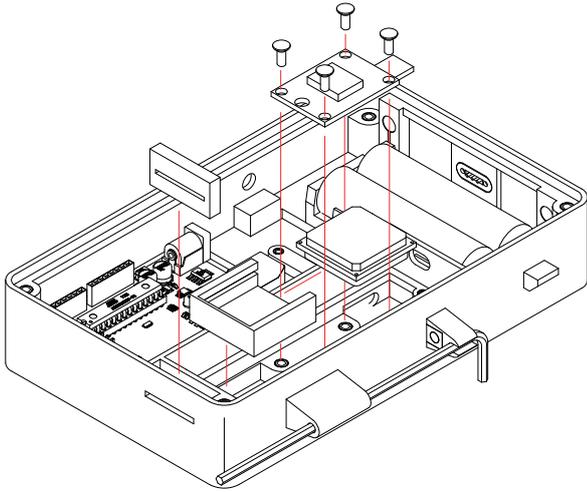
1X Pogo pin
8X Magnets

4



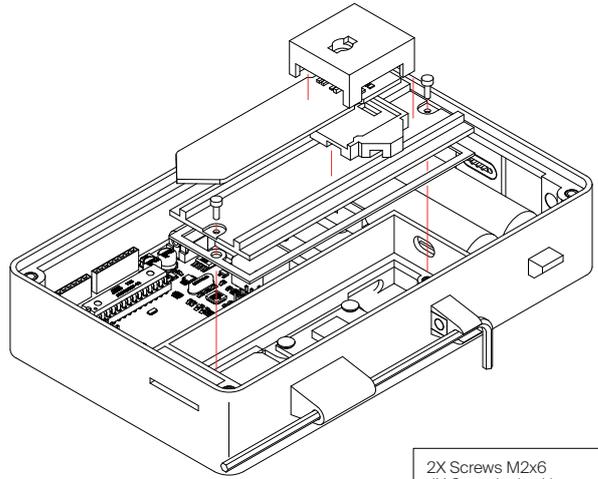
4X Screws M2x6
2X Screws M2x10
1X Arduino Uno Rev 3
1X F-M-5
1X Battery Case
2X Battery 18650 Li-Ion

5



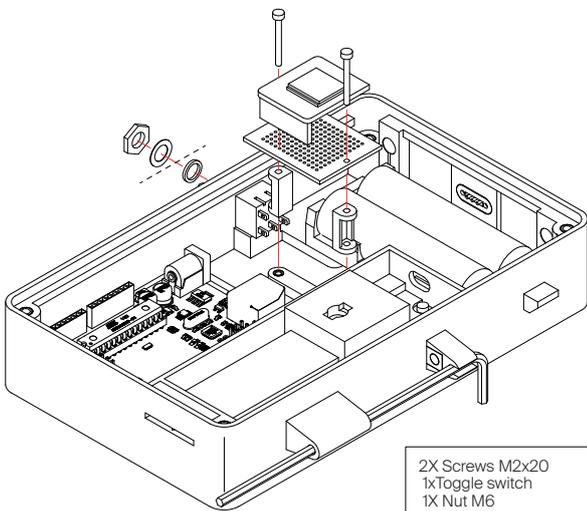
- 4X Screws M3x6
- 1X GPS GY-NEO6MV2
- 1X F-M-4
- 1X P-M-4

6



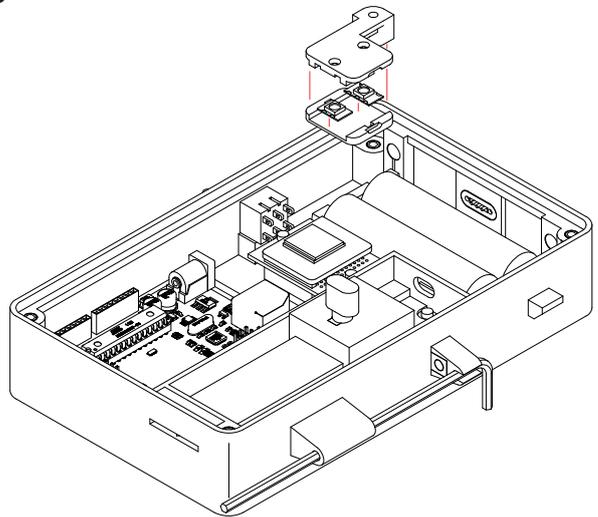
- 2X Screws M2x6
- 1X Capacitive Hygrometer Module V1.2
- 1X G-M-2
- 1X P-M-1
- 1X P-M-2
- 1X P-M-3

7



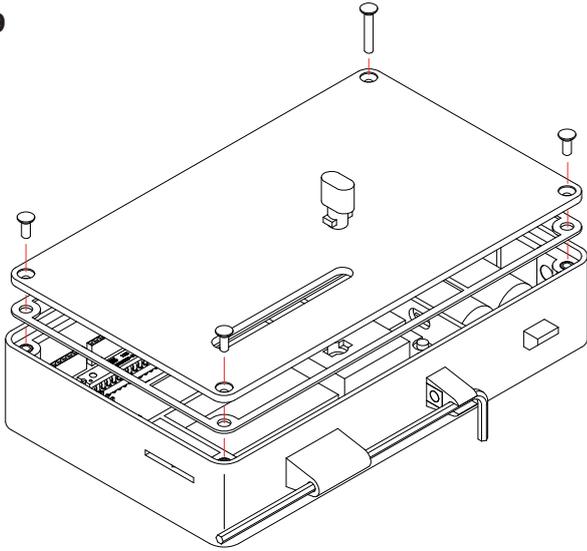
- 2X Screws M2x20
- 1X Toggle switch
- 1X Nut M6
- 1X O-ring
- 1X Top-A
- 1X Washer
- 2X P-M-5
- 1X LoRa Adafruit RFM95W
- 1X Solvable PCB

8



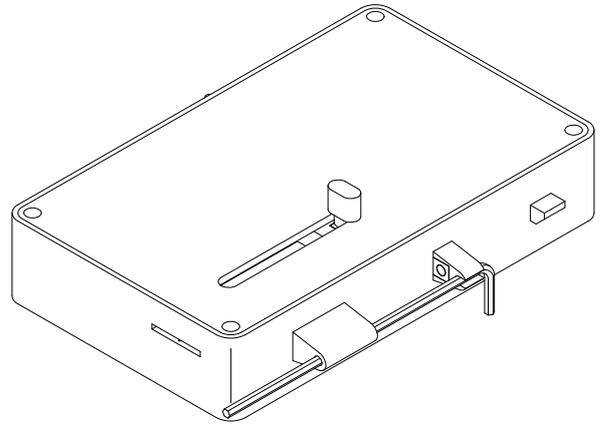
- 1X Led-1
- 1X Led-2
- 1X Led 3 pin
- 1X Led 2 pin

9

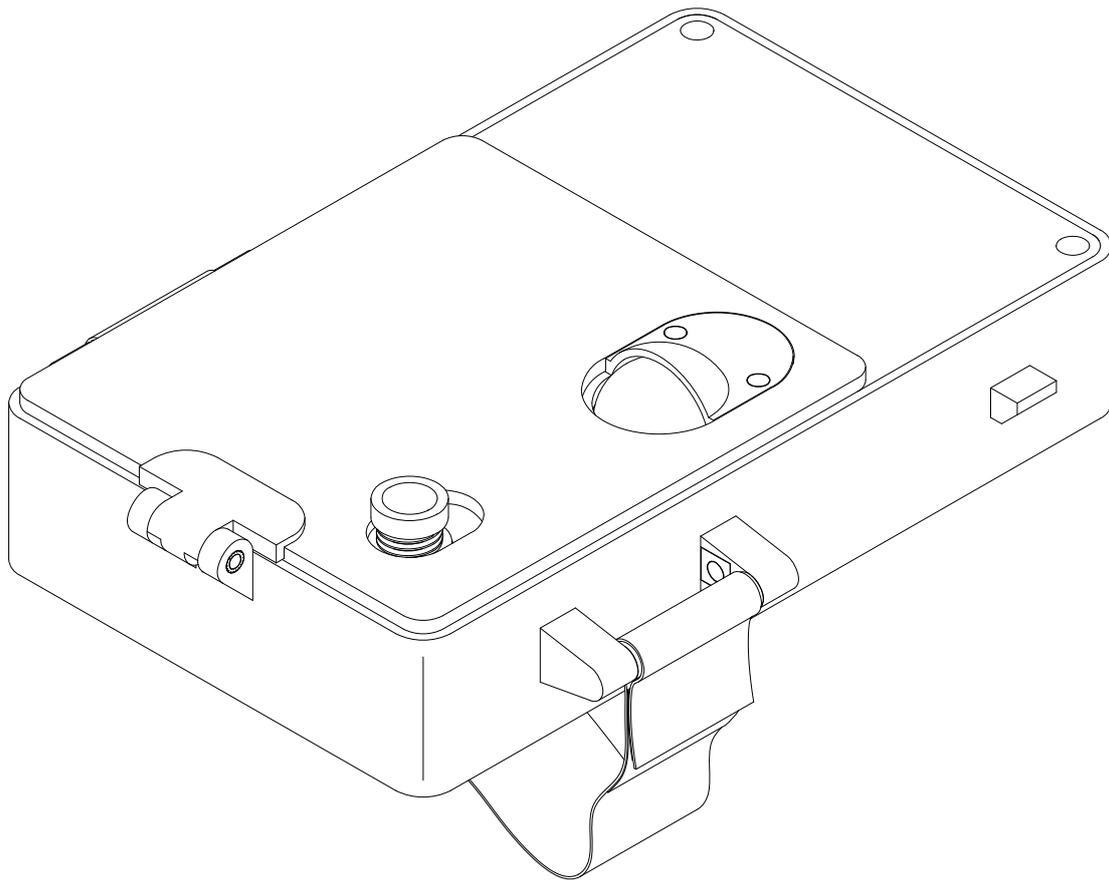


- 3X Screws M3x6
- 1X Screws M3x16
- 1X G-M
- 1X Top-M
- 1X F-M-1

10



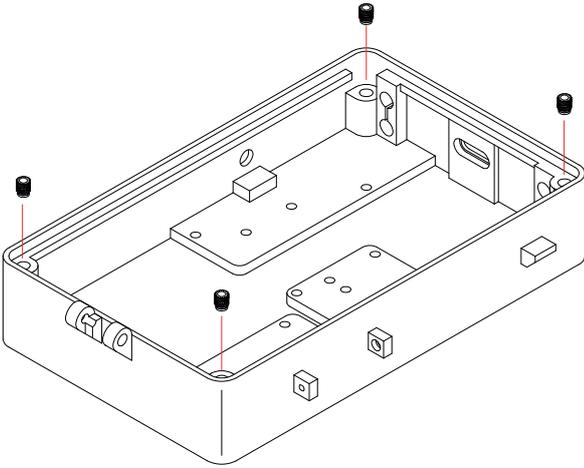
Open Farmer Kit Bio module



Bill of materials

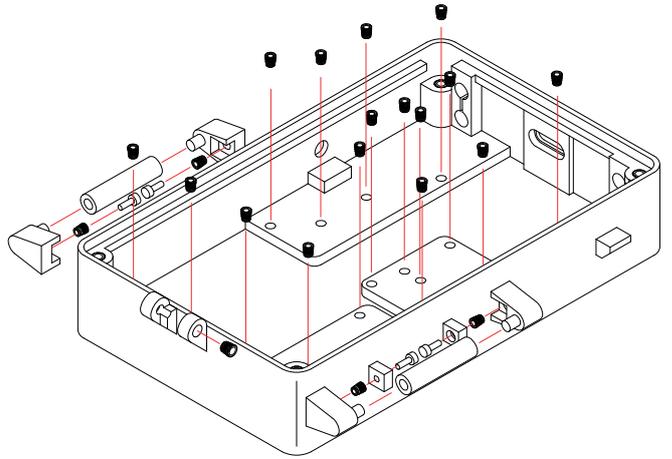
1X CA-B	1X G-B-3
4X Threaded inserts M3 1/2	1X HC-SR501 PIR
20X Threaded inserts M2	2X P-B-1
1X Threaded insert M3	1X G-B-2
28X Screws M2x6	1X P-M-3
4X F-B-1	1X Toggle switch
2X F-B-2	1X Nut M6
1X Pogo pin	1X Led-1
8X Magnets	1X Led-2
2X Screws M2x10	1X Led 3 pin
1X Arduino Uno Rev 3	1X Led 2 pin
1X Battery Case	3X Screws M3x6
2X Battery 18650 Lion	1X Screws M3x16
9X O-ring	1X G-B-1
1X P-B-2	1X Top-B-1
1X P-B-3	1X F-B-3
1X P-B-4	1X Screws M3x20
10X Nuts M2	1X Top-B-2
1X Arducam 5MP plus	1X F-B-4
OV5642 mini cam	1X F-B-5
1X Micro SD breakout board	

1



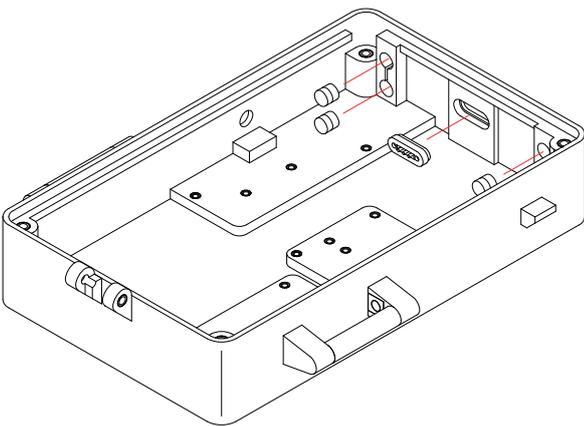
1X CA-B
4X Threaded inserts M3 1/2

2



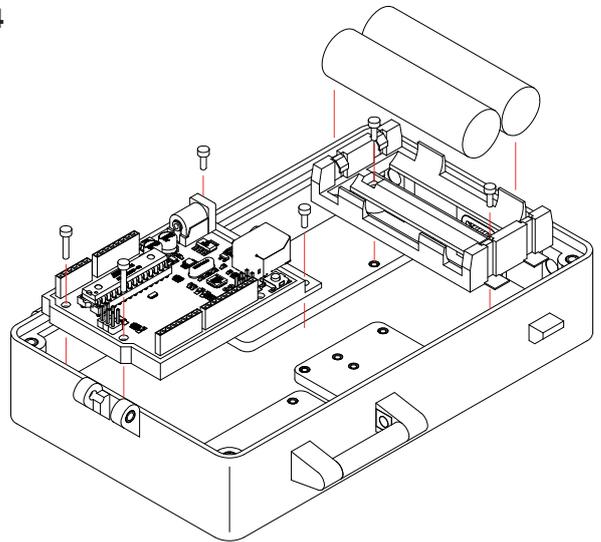
20X Threaded inserts M2
1X Threaded insert M3 1/2
4X Screws M2x6
4X F-B-1
2X F-B-2

3



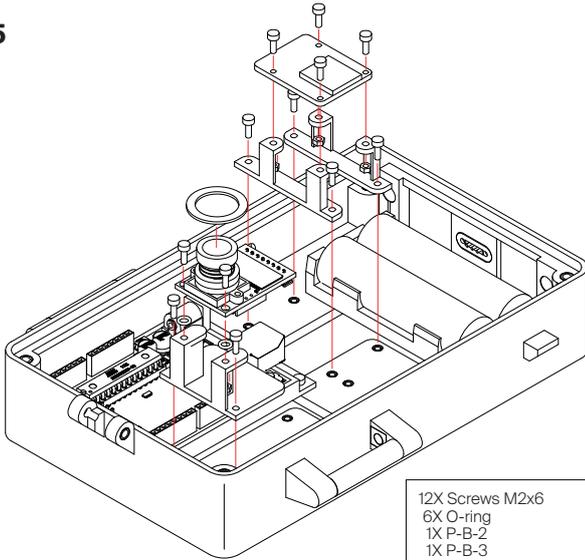
1X Pogo pin
8X Magnets

4



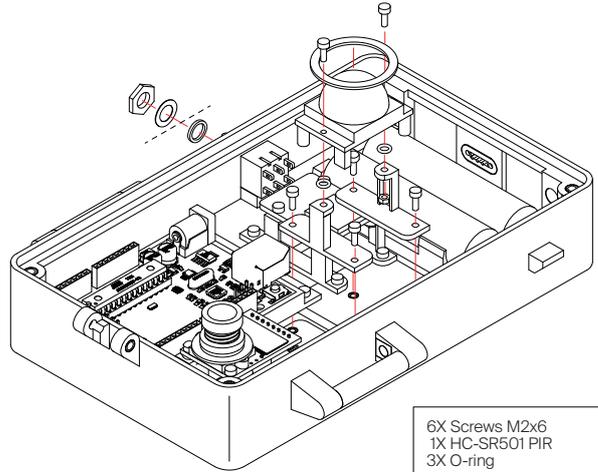
4X Screws M2x6
2X Screws M2x10
1X Arduino Uno Rev 3
1X Battery Case
2X Battery 18650 Li-Ion

5



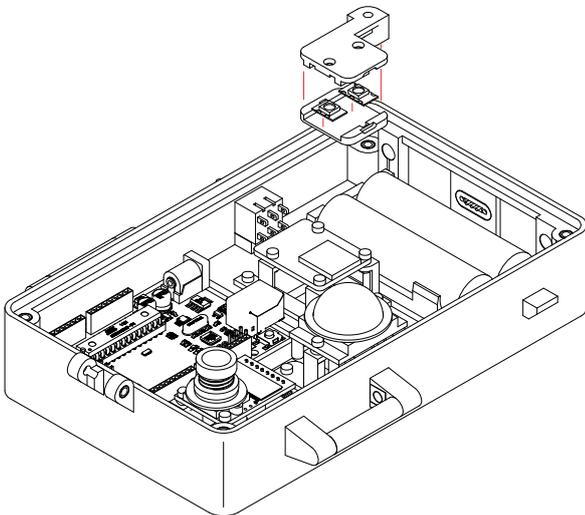
- 12X Screws M2x6
- 6X O-ring
- 1X P-B-2
- 1X P-B-3
- 1X P-B-4
- 6X Nuts M2
- 1X Arducam 5MP plus
OV5642 mini cam
- 1X Micro SD breakout board
- 1X G-B-3

6



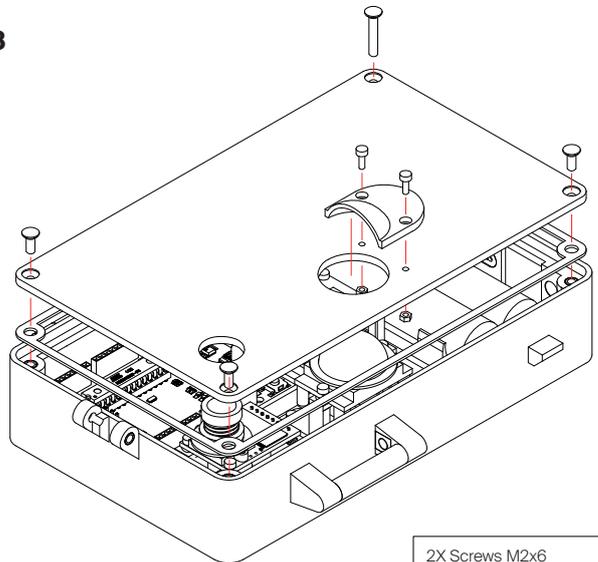
- 6X Screws M2x6
- 1X HC-SR501 PIR
- 3X O-ring
- 2X P-B-1
- 1X G-B-2
- 1X P-M-3
- 1X Toggle switch
- 1X Nut M6
- 2X Nut M2

7



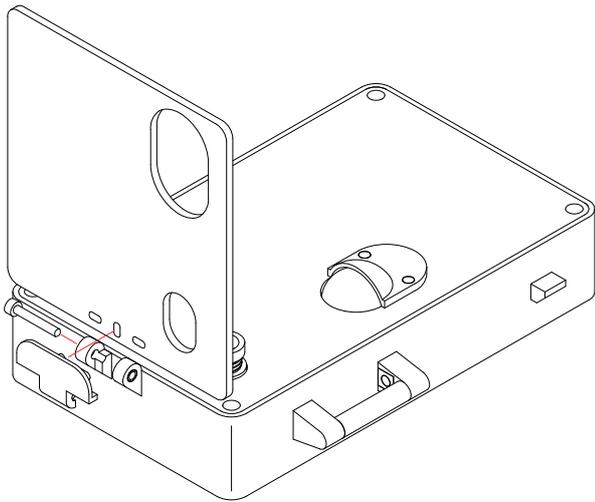
- 1X Led-1
- 1X Led-2
- 1X Led 3 pin
- 1X Led 2 pin

8



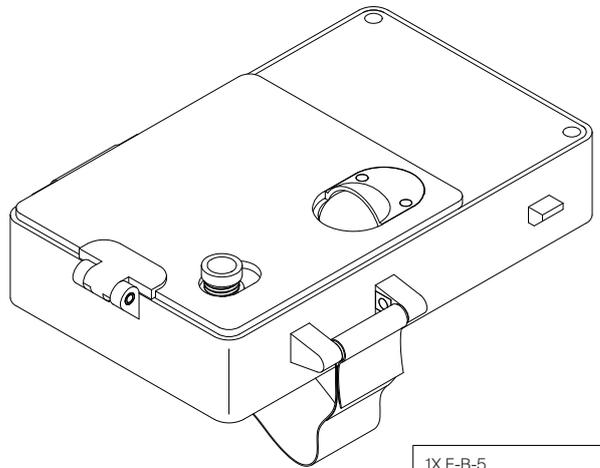
- 2X Screws M2x6
- 2X Nut M2
- 3X Screws M3x6
- 1X Screws M3x16
- 1X G-B-1
- 1X Top-B-1
- 1X F-B-3

9



1X Screws M3x20
1X Top-B-2
1X F-B-4

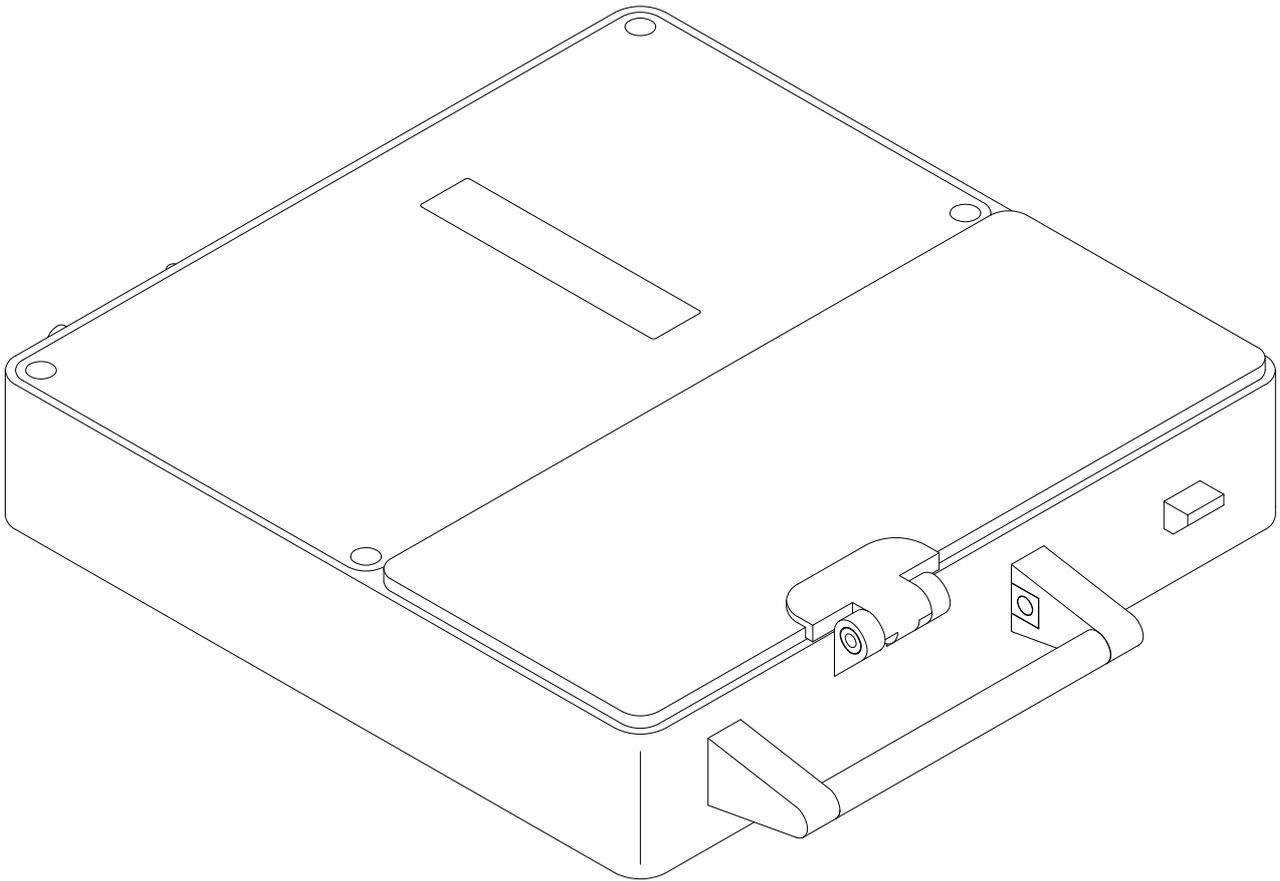
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1X F-B-5

Open Farmer Kit

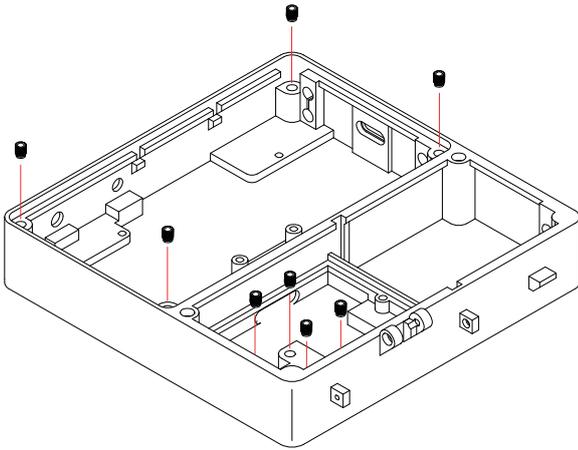
Soil module



Bill of materials

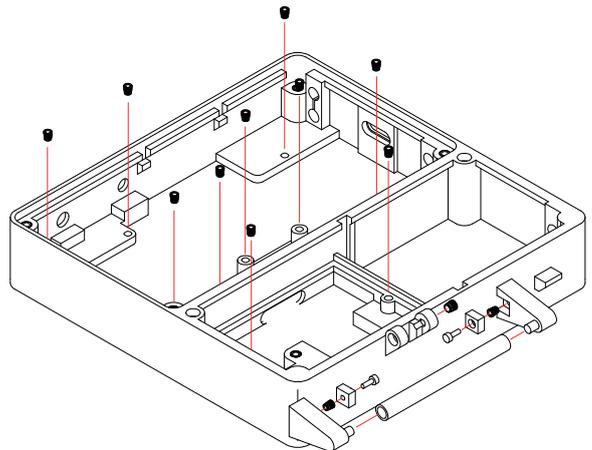
1X CA-S	1X P-S-2
9X Threaded inserts M3 1/2	1X G-S-2
12X Threaded inserts M2	1X P-S-4
14X Screws M2x6	1X P-S-5
2X F-S-1	4X Nuts M2
1X F-S-3	1X P-S-1
1X Pogo pin	1X Lcd 1602 display
16X Magnets	1X Led-1
2X Screws M2x10	1X Led-2
1X Arduino Uno Rev 3	1X Led 3 pin
1X Battery Case	1X Led 2 pin
2X Battery 18650 Li-Ion	1X Screws M3x16
2X O-ring	1X TOP-S-1
1X Toggle switch	1X TOP-S-3
1X Nut M6	1X TOP-S-4
1X Rotary encoder	1X G-S-1
1X Nut M7	1X F-S-2
1X LoRa Adafruit RFM95W	1X Screws M3x20
1X Solverable PCB	1X TOP-S-2
7X Screws M3x6	
1X GPS GY-NEO6MV2	

1



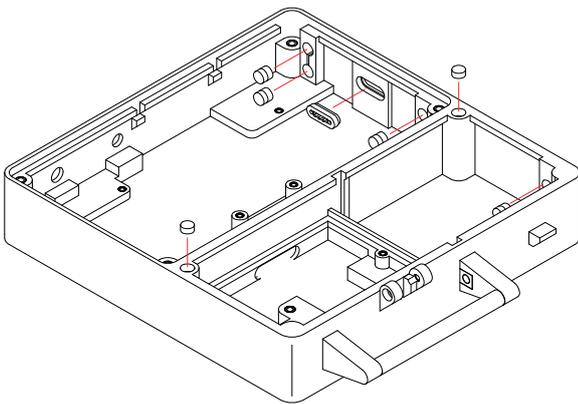
1X CA-S
8X Threaded inserts M3 1/2

2



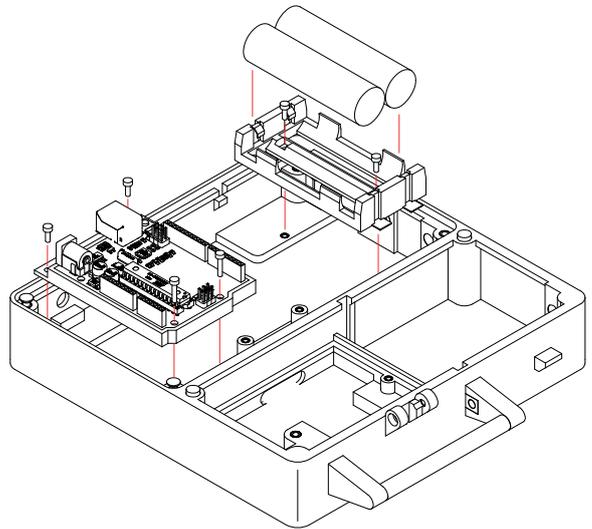
12X Threaded inserts M2
1X Threaded insert M3 1/2
2X Screws M2x6
2X F-S-1
1X F-S-3

3



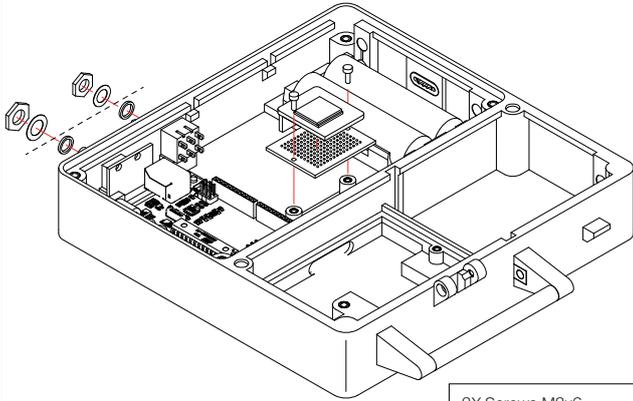
1X Pogo pin
14X Magnets

4



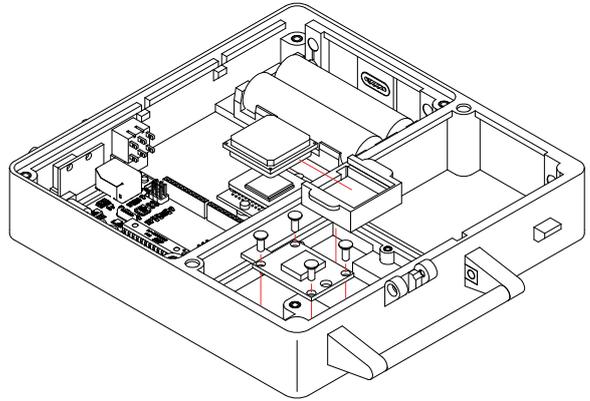
4X Screws M2x6
2X Screws M2x10
1X Arduino Uno Rev 3
1X Battery Case
2X Battery 18650 Li-Ion

5



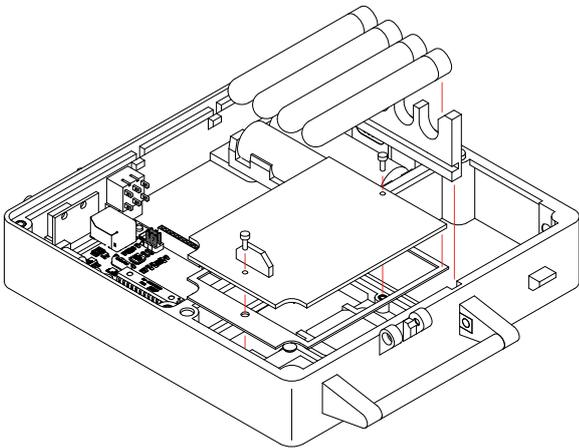
- 2X Screws M2x6
- 2X O-ring
- 1X Toggle switch
- 1X Nut M6
- 1X Rotary encoder
- 1X Nut M7
- 1X LoRa Adafruit RFM95W
- 1X Solverable PCB

6



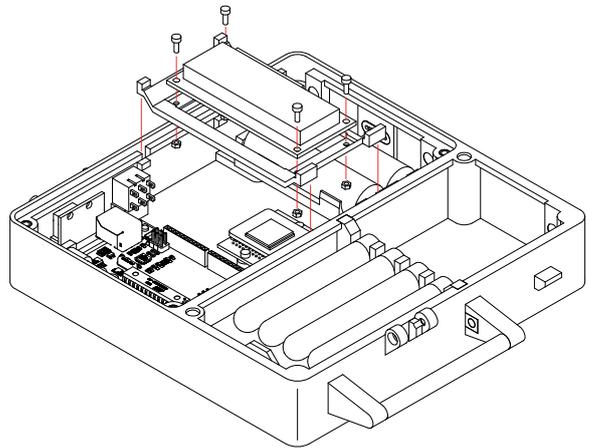
- 4X Screws M3x6
- 1X GPS GY-NEO6MV2
- 1X P-S-2

7



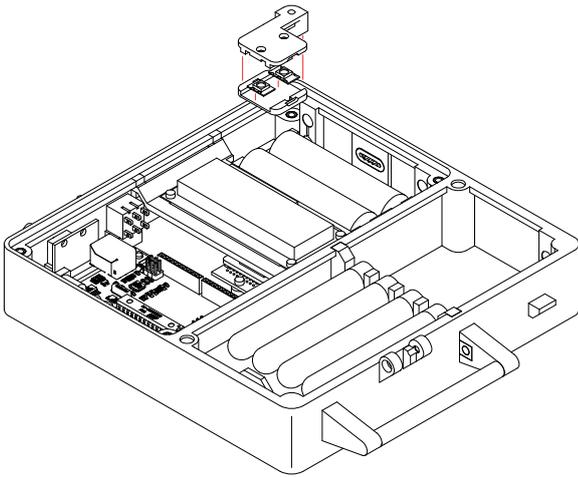
- 2X Screws M2x6
- 1X G-S-2
- 1X P-S-4
- 1X P-S-5

8



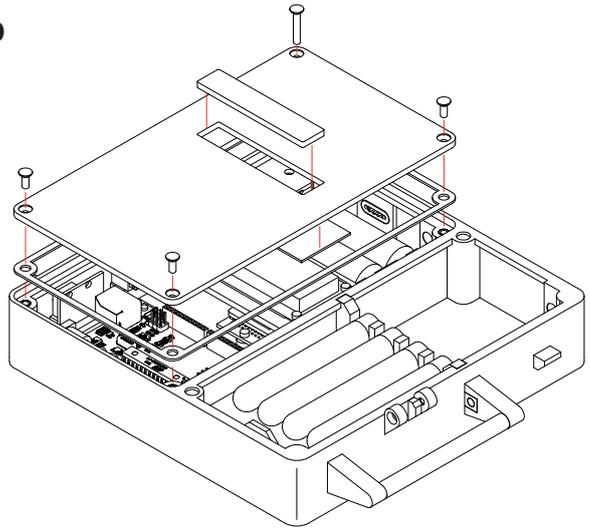
- 4X Screws M2x6
- 4X Nuts M2
- 1X P-S-1
- 1X Lcd 1602 display

9



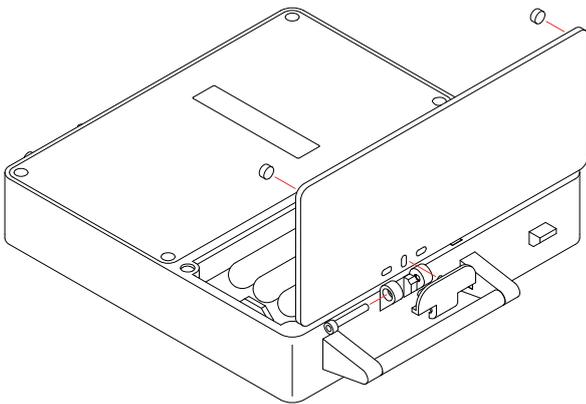
- 1X Led-1
- 1X Led-2
- 1X Led 3 pin
- 1X Led 2 pin

10



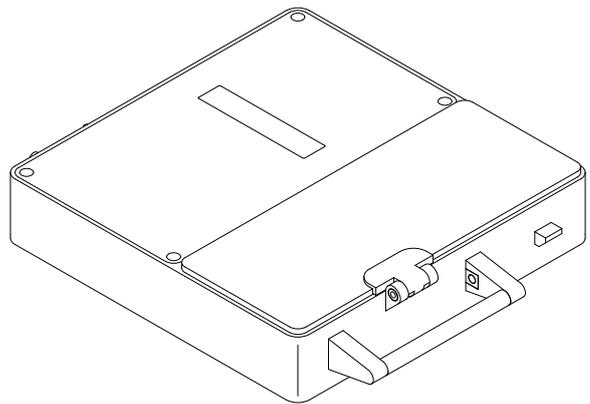
- 3X Screws M3x6
- 1X Screws M3x16
- 1X TOP-S-1
- 1X TOP-S-3
- 1X TOP-S-4
- 1X G-S-1

11



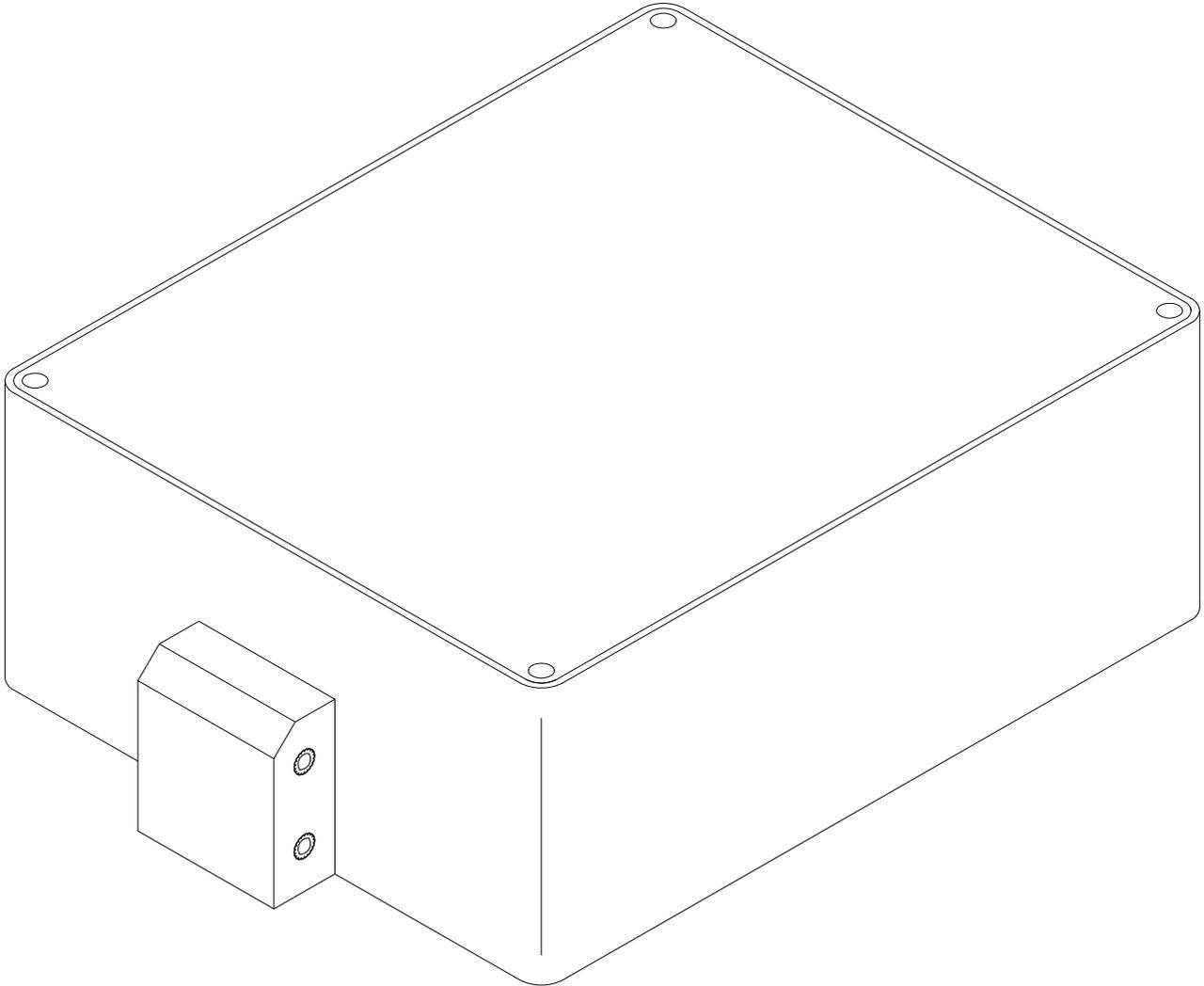
- 2X Magnets
- 1X F-S-2
- 1X Screws M3x20
- 1X TOP-S-2

12



Open Farmer Kit

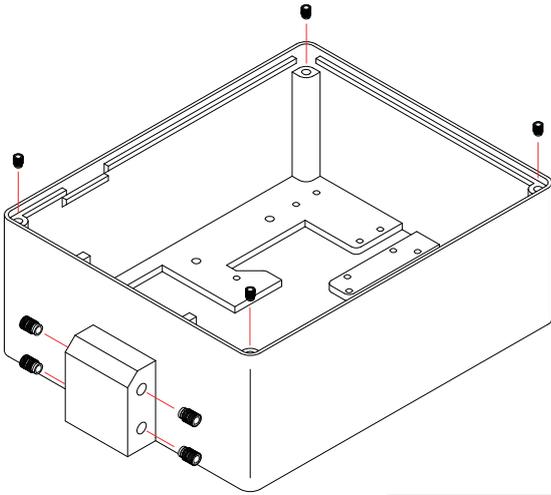
Operational module



Bill of materials

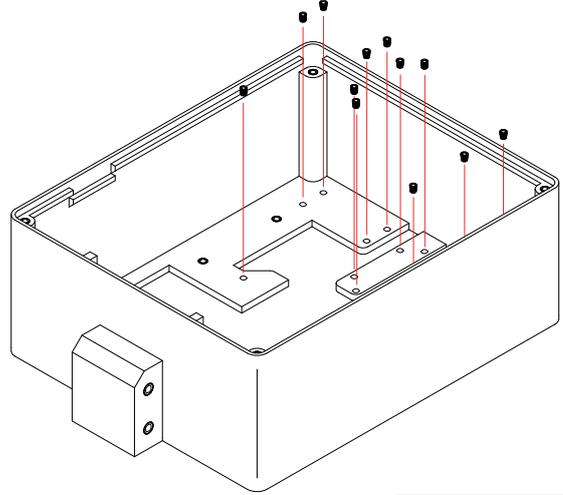
1X CA-0	1X P-0-5
4X Threaded inserts M3 1/2	1X P-0-6
4X Threaded inserts M5	1X Led-1
14X Threaded inserts M2	1X Led-2
1X Wifi shield ARCELI	1X Led 3 pin
1X WeMos D1 R2 WiFi ESP8266	1X Led 2 pin
16X Screws M2x6	1X Screws M3x16
2X Screws M2x10	1X TOP-O
1X Arduino Uno Rev 3	1X G-0
2X DC-DC converter 8-32V 5V	
1X P-O-4	
2X Screws M3x24	
4X Nut M2	
2X P-O-2	
1X Micro SD breakout board	
1X LoRa Adafruit RFM95W	
1X Solverable PCB	
1X P-O-1	
1X P-O-3	
7X Screws M3x6	
1X Solar charger controller	

1



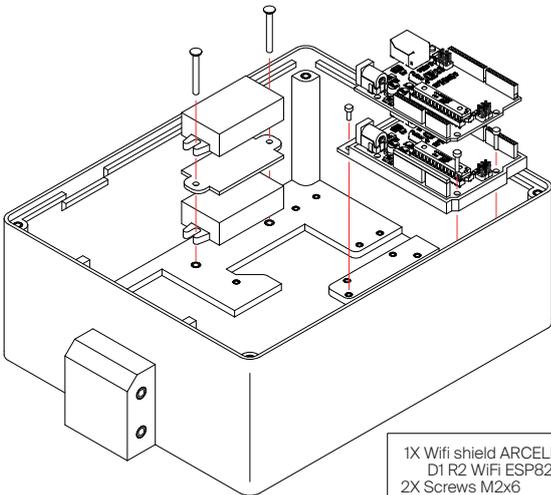
1X CA-0
4X Threaded inserts M3 1/2
4X Threaded inserts M5

2



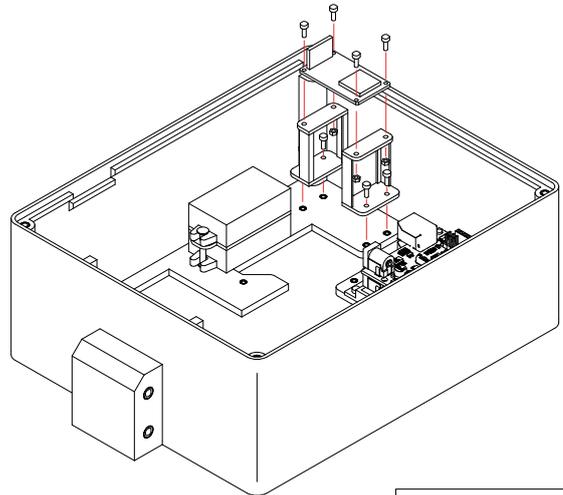
12X Threaded inserts M2

3



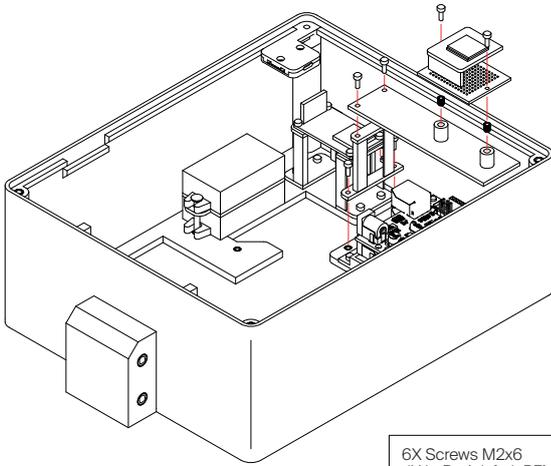
1X Wifi shield ARCELI WeMos
D1 R2 WiFi ESP8266
2X Screws M2x6
2X Screws M2x10
1X Arduino Uno Rev 3
2X DC-DC converter 8-32V 5V
1X P-O-4
2X Screws M3x24

4



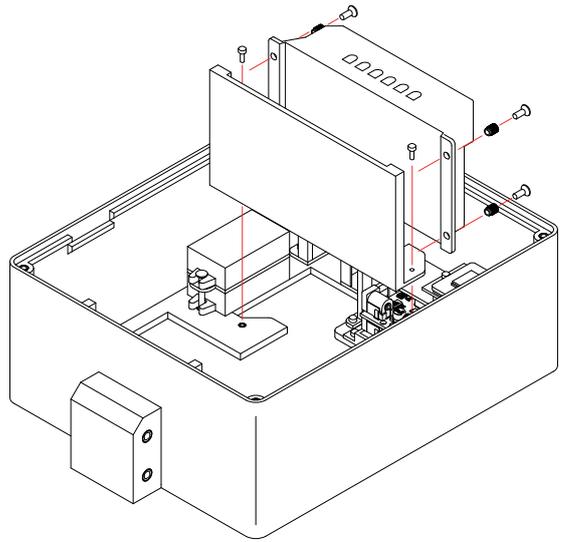
6X Screws M2x6
4X Nut M2
2X P-O-2
1X Micro SD breakout board

5



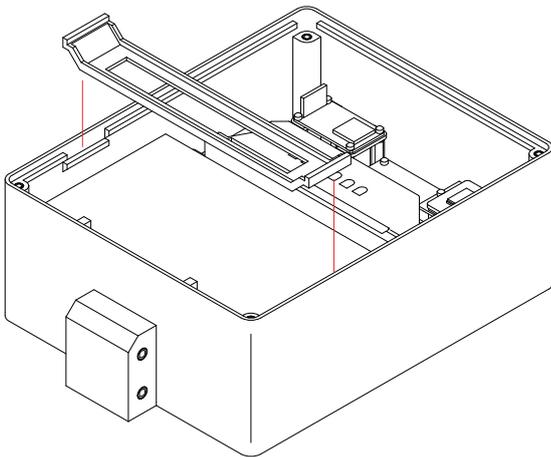
- 6X Screws M2x6
- 1X LoRa Adafruit RFM95W
- 1X Solverable PCB
- 2X Threaded inserts M2
- 1X P-O-1
- 1X P-O-3

6



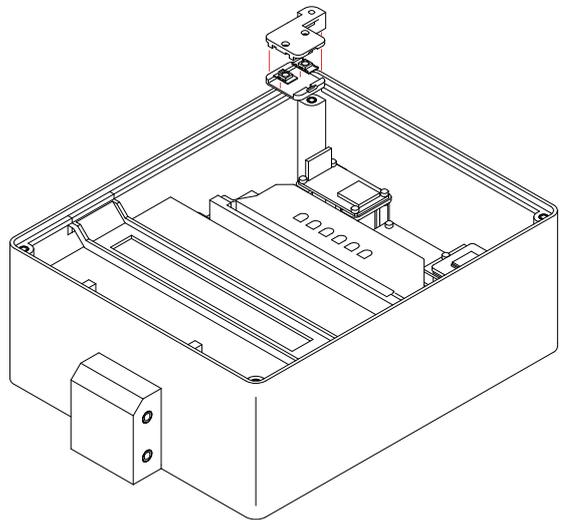
- 4X Screws M3x6
- 2X Screws M2x6
- 1X Solar charger controller
- 1X P-O-5

7



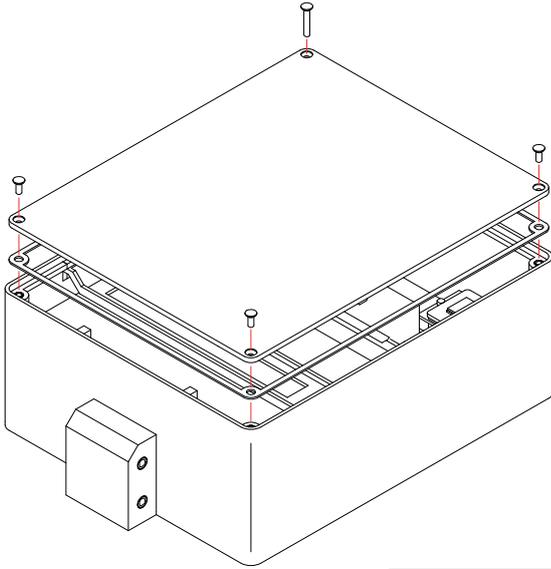
- 1X P-O-6

8



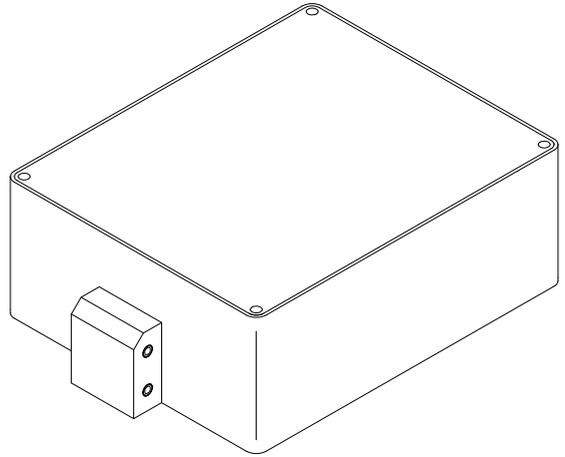
- 1X Led-1
- 1X Led-2
- 1X Led 3 pin
- 1X Led 2 pin

9

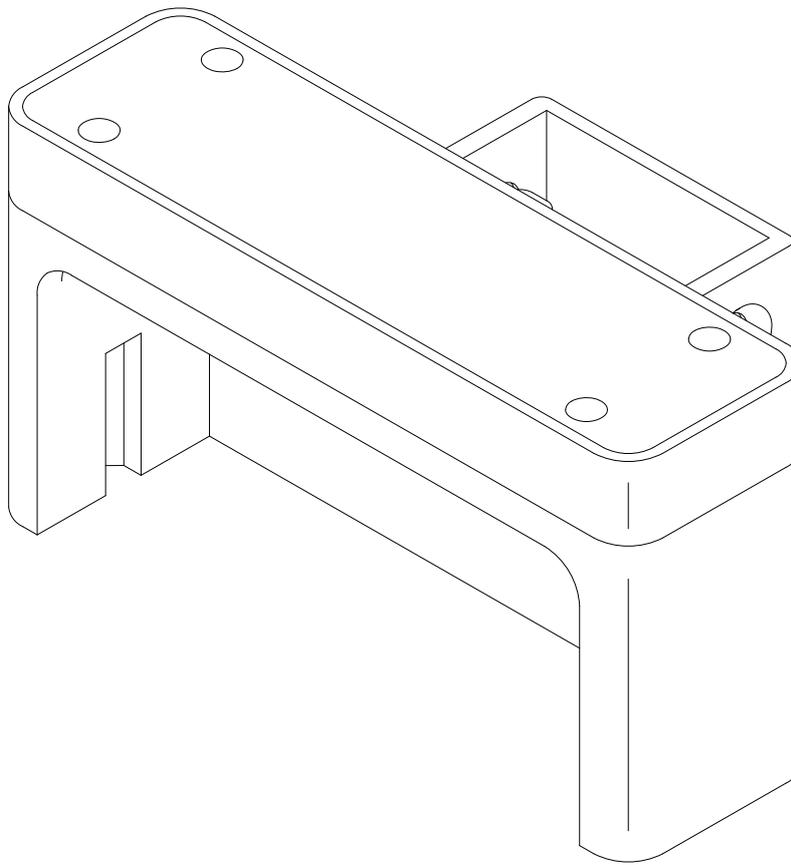


3X Screws M3x6
1X Screws M3x16
1X TOP-O
1X G-0

10



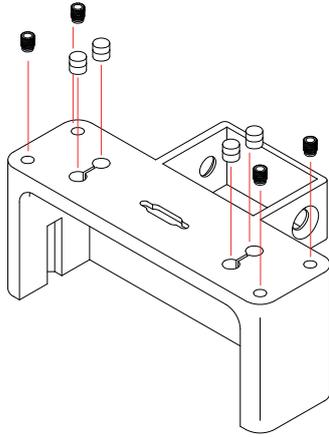
Open Farmer Kit Moisture-Bio docking base



Bill of materials

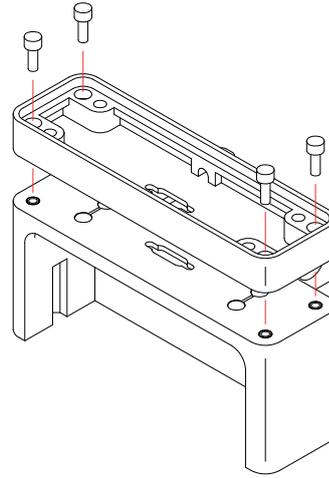
<p>1X BA-1 8X Magnets 8X Threaded inserts M3 1/2 1X BA-2 4X Screws M3X10 4X Threaded inserts M2 4X Screws M2X6 1X Pogo pin 1X P-BA 1X DDTCCRUB 2S-2A 4X Screws M3X6 1X G-BA 1X BA-3</p>

1



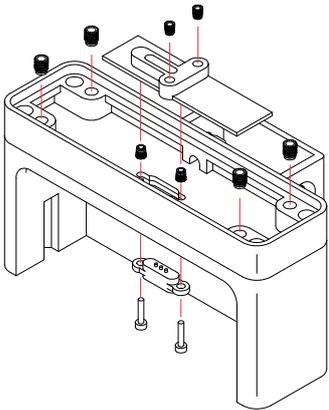
1X BA-1
8X Magnets
4X Threaded inserts M3 1/2

2



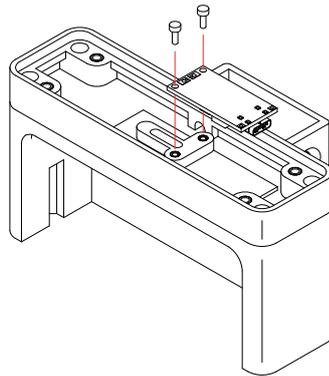
1X BA-2
4X Screws M3x10

3



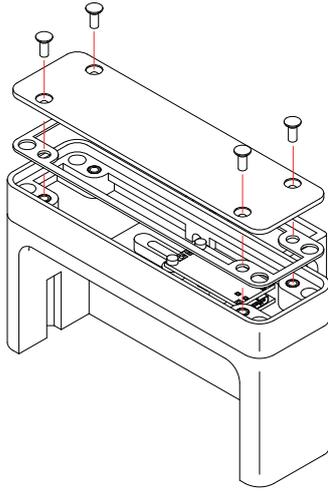
1X Pogo pin
4X Threaded inserts M2
4X Threaded inserts M3 1/2
2X Screws M2x10
1X P-BA

4



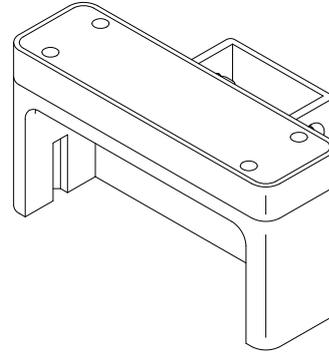
2X Screws M2x6
1X DDTCCRUB 2S-2A

5



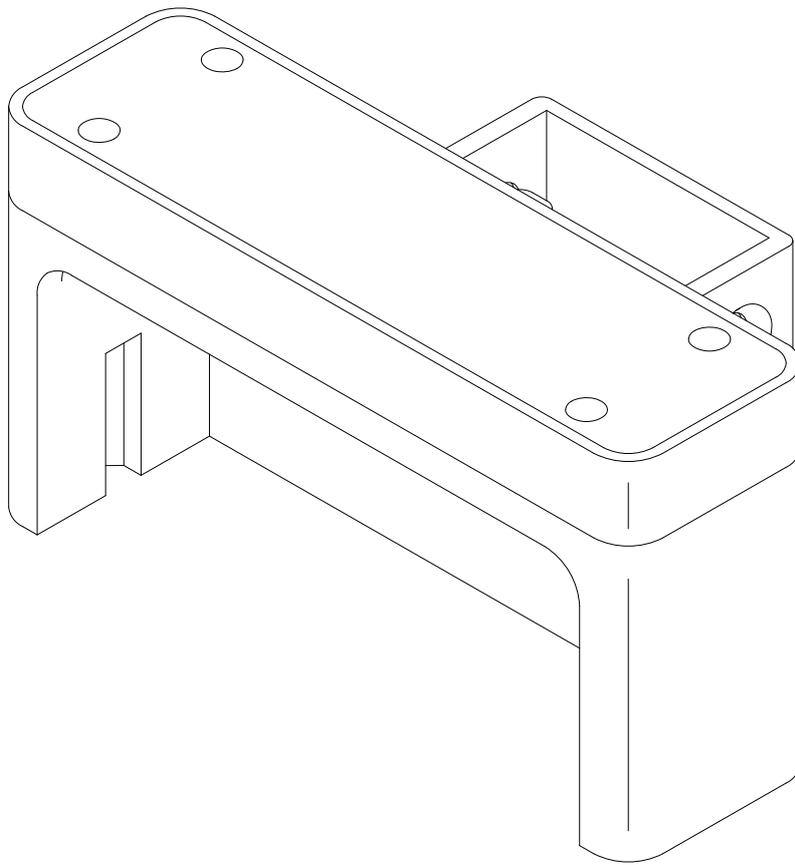
4X Screws M3X6
1X G-BA
1X BA-3

6



Open Farmer Kit

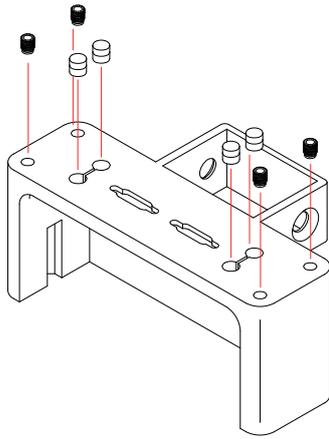
Air docking base



Bill of materials

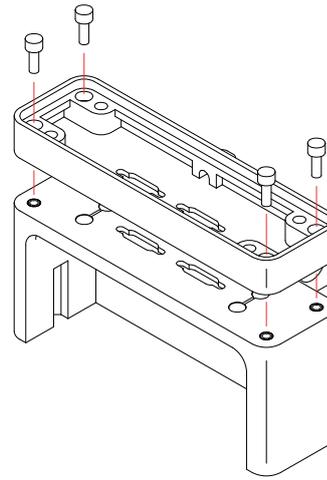
<p> 1X BA-1-A 8X Magnets 8X Threaded inserts M3 1/2 1X BA-2-A 4X Screws M3X10 4X Threaded inserts M2 4X Screws M2X6 2X Pogo pin 1X P-BA 1X DDTCCRUB 2S-2A 4X Screws M3X6 1X G-BA 1X BA-3 </p>

1



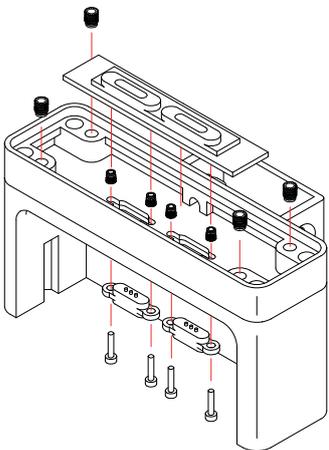
1X BA-1-A
8X Magnets
4X Threaded inserts M3 1/2

2



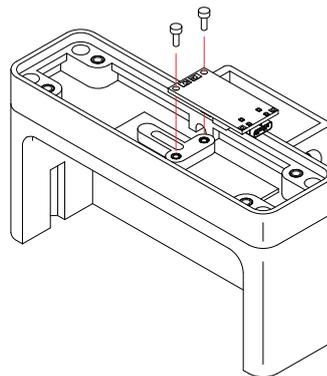
1X BA-2-A
4X Screws M3X10

3



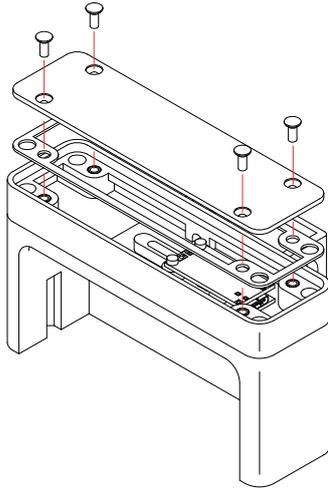
2X Pogo pin
4X Threaded inserts M2
4X Threaded inserts M3 1/2
4X Screws M2X10
1X P-BA-A

4



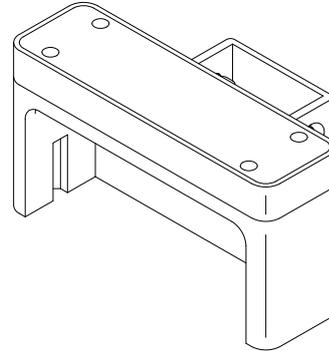
2X Screws M2x6
1X DDTCCRUB 2S-2A

5

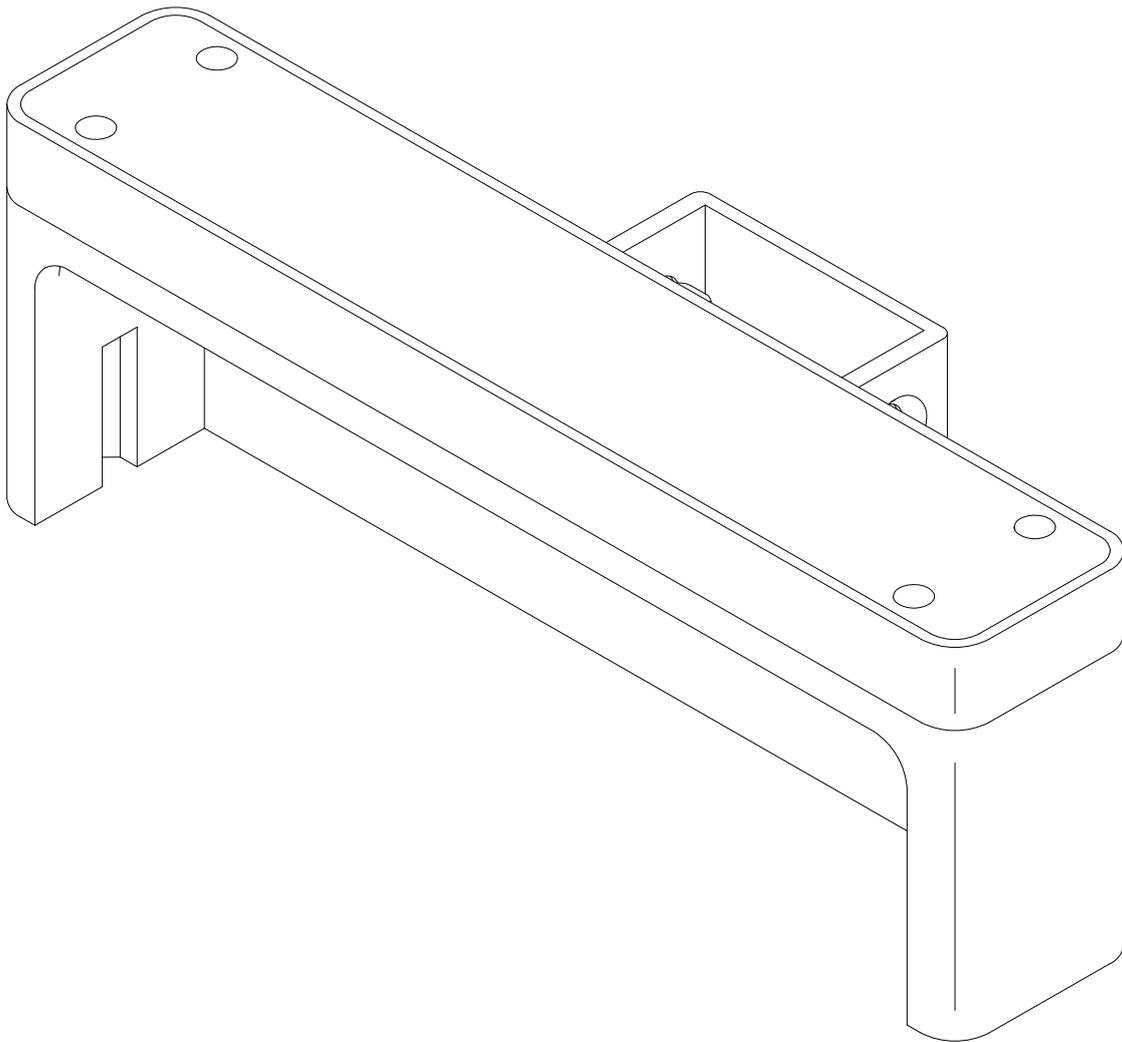


4X Screws M3X6
1X G-BA
1X BA-3

6



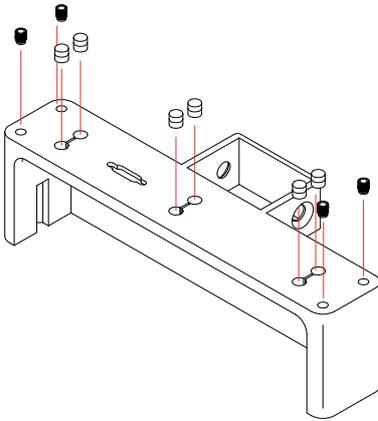
Open Farmer Kit Soil docking base



Bill of materials

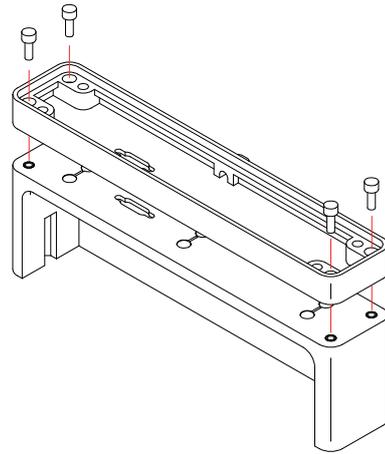
1X BA-1
8X Magnets
8X Threaded inserts M3 1/2
1X BA-2
4X Screws M3X10
4X Threaded inserts M2
4X Screws M2X6
1X P-BA
1X DDTCCRUB 2S-2A
4X Screws M3X6
1X G-BA
1X BA-3

1



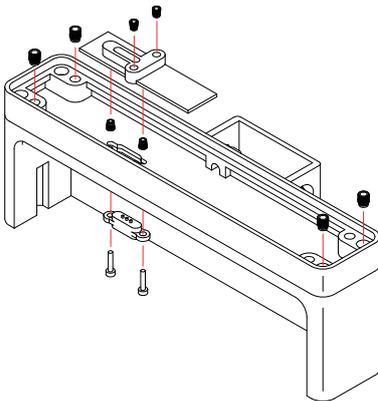
1X BA-1-S
12X Magnets
4X Threaded inserts M3 1/2

2



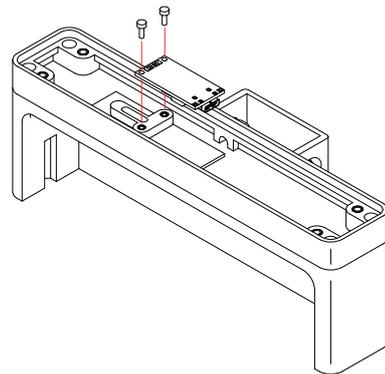
1X BA-2-S
4X Screws M3x10

3



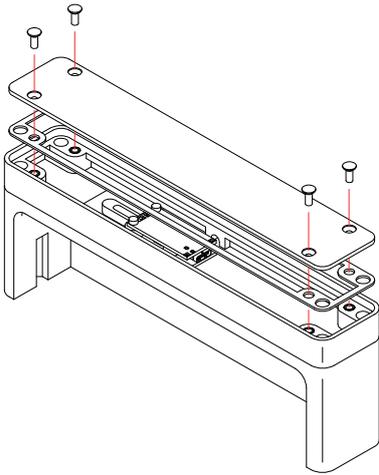
1X Pogo pin
4X Threaded inserts M2
4X Threaded inserts M3 1/2
4X Screws M2x10
1X P-BA-A

4



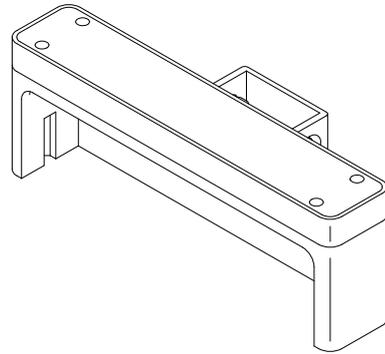
2X Screws M2x6
1X DDTCCRUB 2S-2A

5

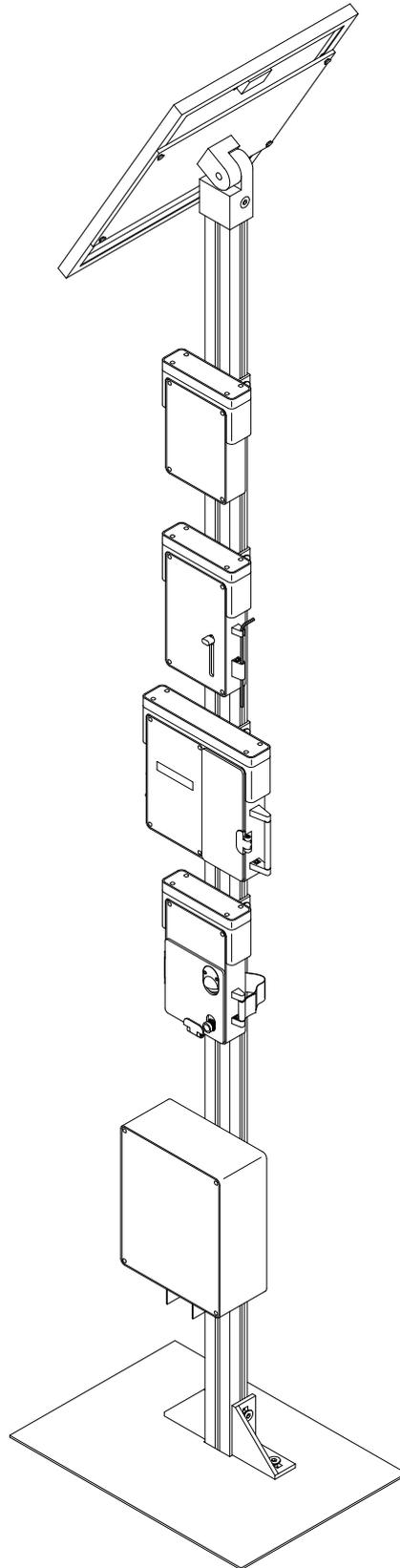


4X Screws M3X6
1X G-BA-S
1X BA-3-S

6



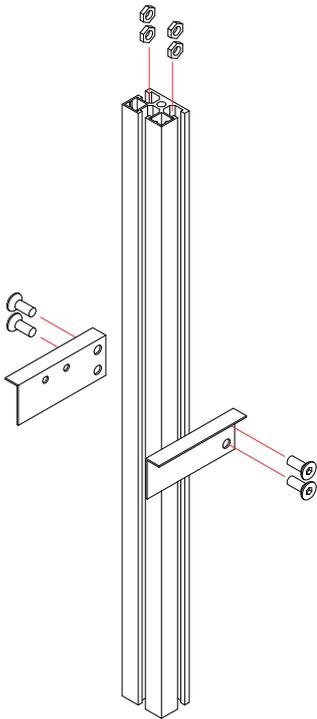
Open Farmer Kit



Bill of materials

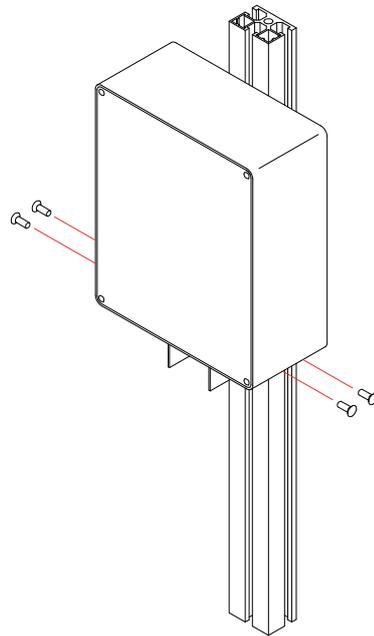
- 1X Extruded aluminum profile
- 24X Nuts M8
- 24X Screws M8X10
- 1X Operational module
- 12X Screws M5X10
- 1X Bio docking base
- 1X Bio module
- 1X Soil docking base
- 1X Soil module
- 1X Moisture docking base
- 1X Moisture module
- 1X Air docking base
- 1X Air module
- 1X J-1
- 4X Threaded inserts M5
- 5X Nut M5
- 1X Screws M5X45
- 1X J-2
- 1X Solar Panel
- 1X J-3
- 2X Angular joints
- 1X Base

1



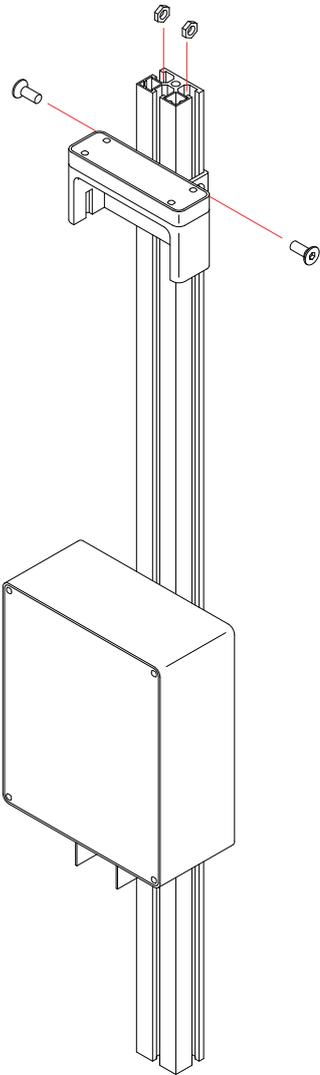
1X Extruded aluminum profile
4X Nuts M8
4X Screws M8X10

2



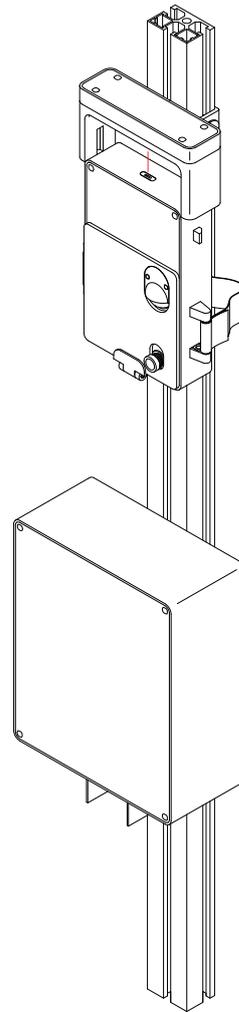
1X Operational module
4X Screws M5X10

3



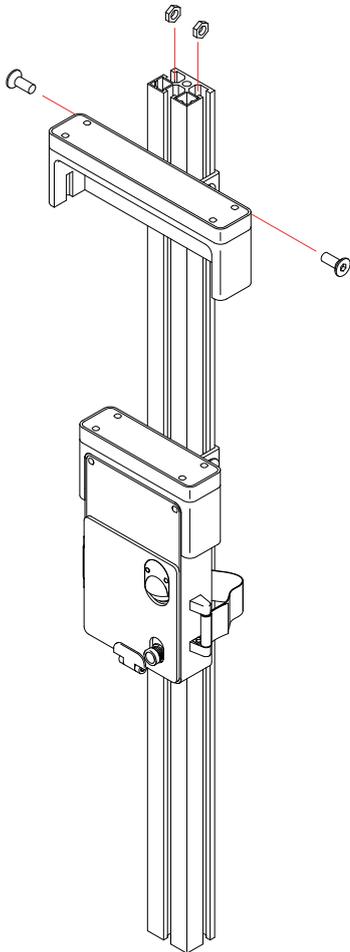
2X Nuts M8
2X Screws M8X10
1X Bio docking base

4



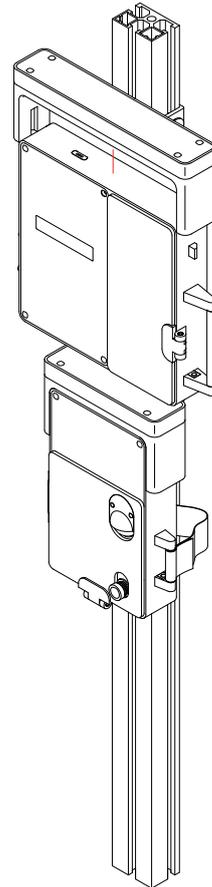
1X Bio module

5



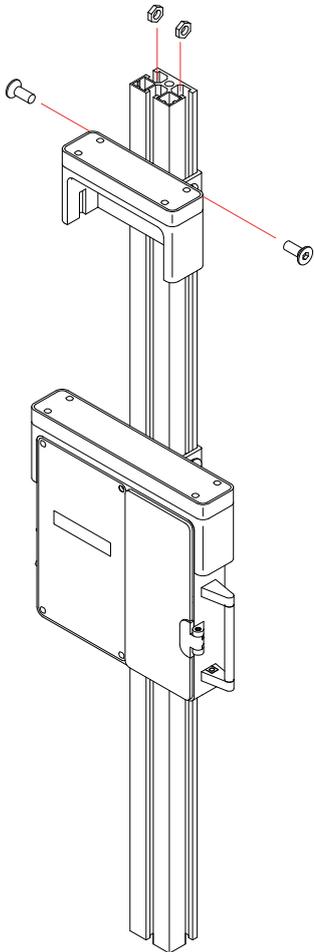
2X Nuts M8
2X Screws M8X10
1X Soil docking base

6



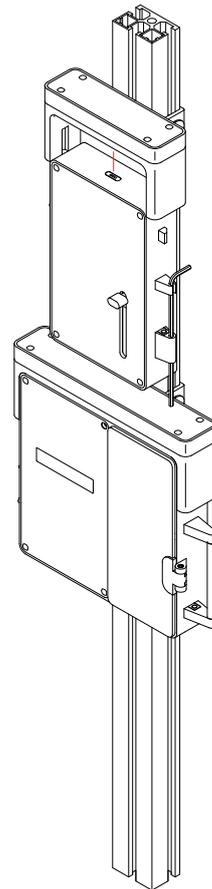
1X Soil module

7



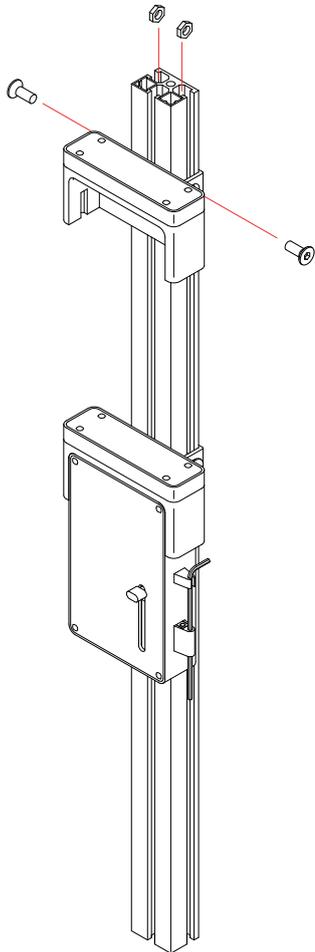
2X Nuts M8
2X Screws MBX10
1X Moisture docking base

8



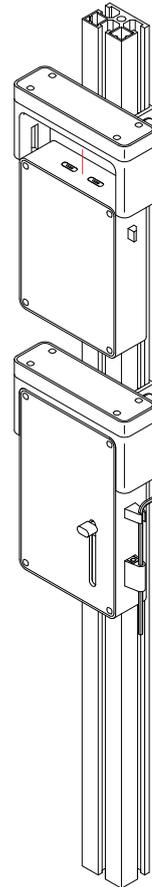
1X Moisture module

9



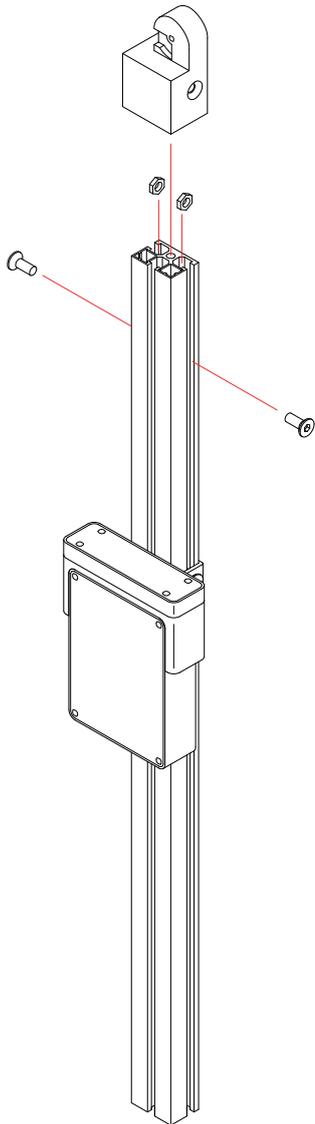
2X Nuts M8
2X Screws M8X10
1X Air docking base

10



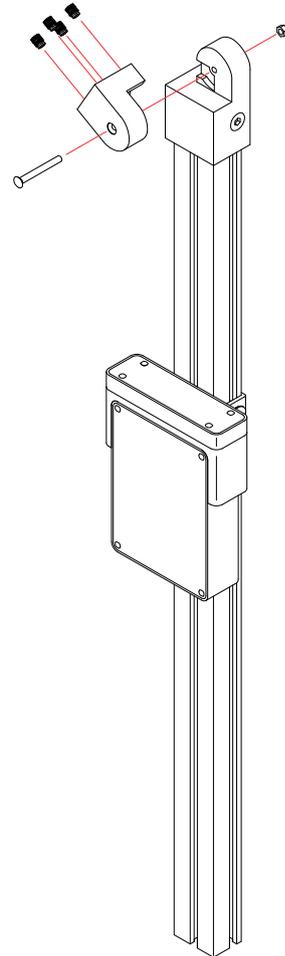
1X Air module

9



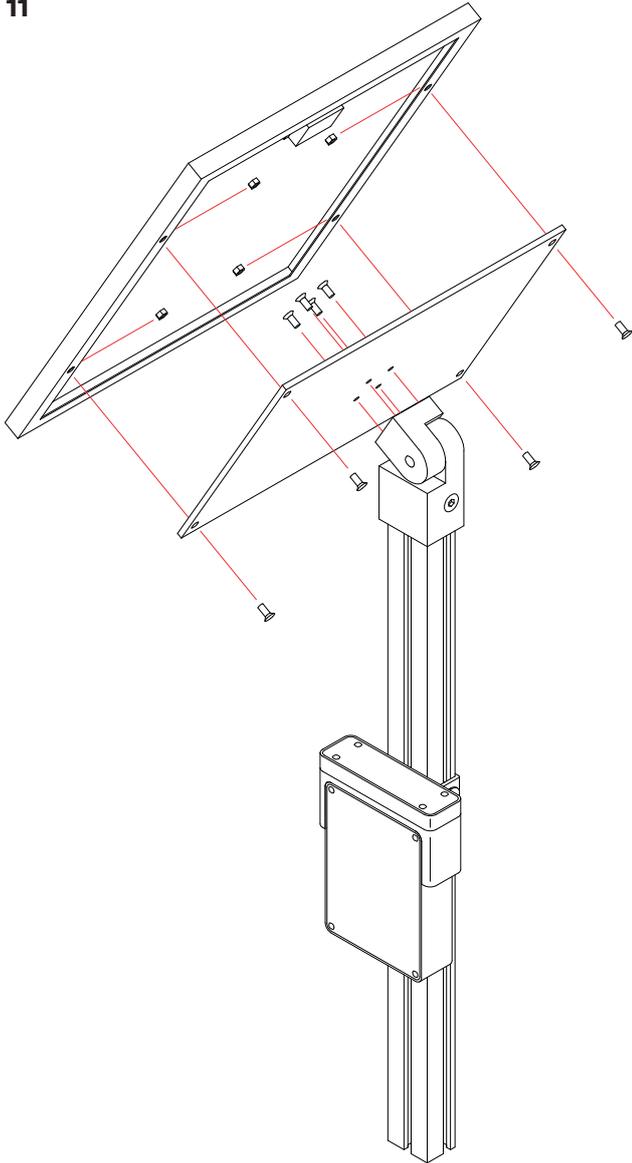
2X Nuts M8
2X Screws M8X10
1X J-1

10



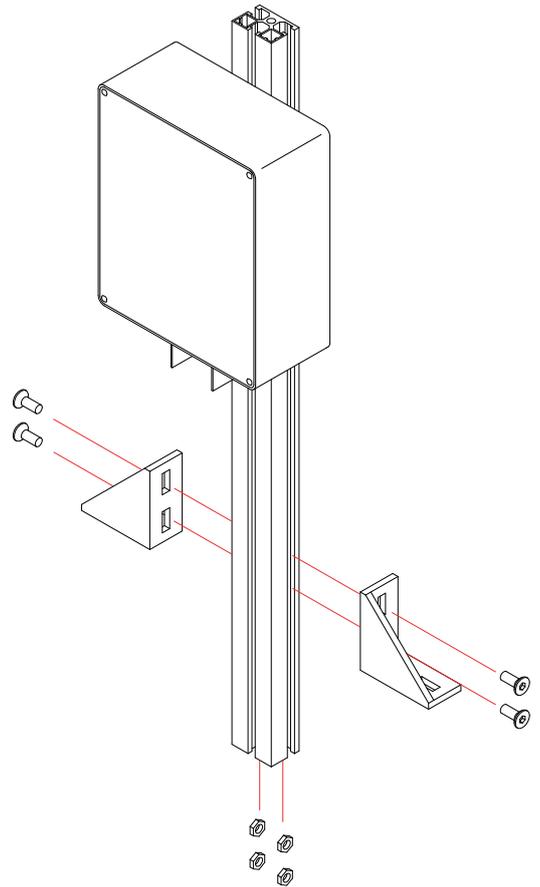
4X Threaded inserts M5
1X Nut M5
1X Screws M5X45
1X J-2

11



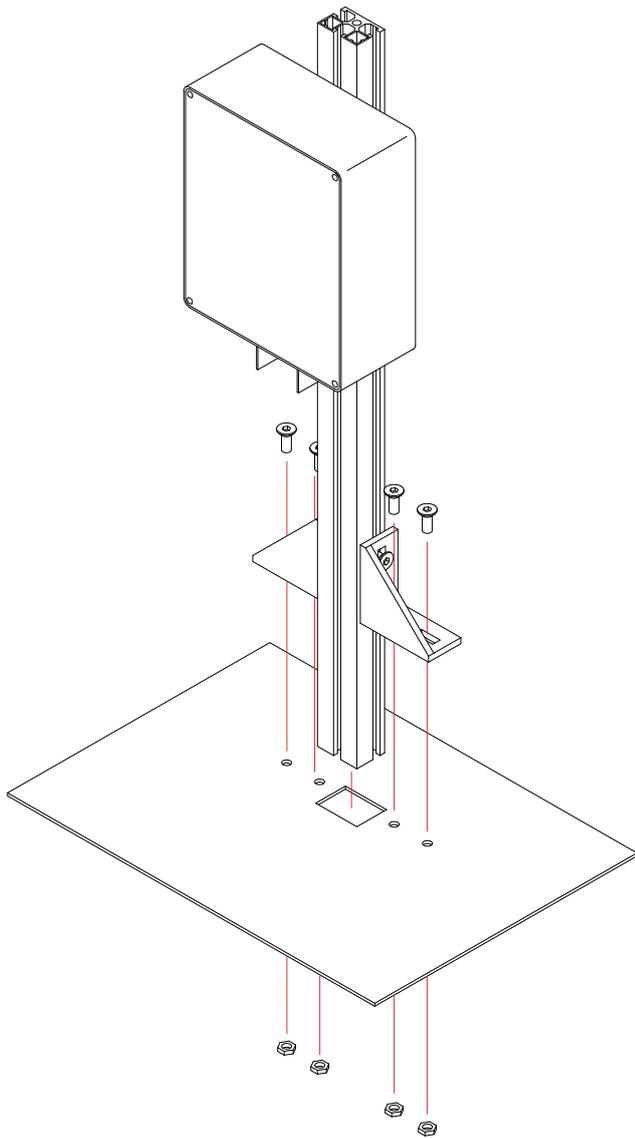
8X Screws M5x10
4X Nut M5
1X Solar Panel
1X J-3

12



4X Nuts M8
4X Screws M8x10
2X Angular joints

13



4X Nuts M8
4X Screws M8X10
1X Base

14

