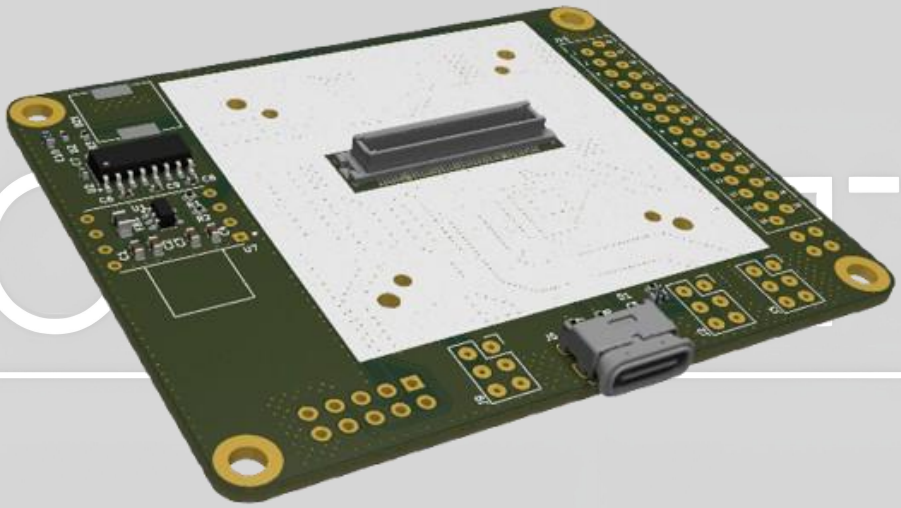
OTOBOT Mega Cube Carrier



Revision No 1.0

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Features

- Capable connector for “OTOBOT Mega Cube”[1] Autopilot and Cubepilot’s Cube Autopilots.
- Main and Backup power inputs, Current and Voltage sense for Main Power Input.
- Internal Differential Pressure Sensor for pitot tube.
- Internal RS - 232 Transceiver.
- USB Type-C PD support.
- Internal Alert Buzzer

Internal Connections

Feature	Connected Port
RS - 232	Serial - 2
Pitot Tube	I2C - 2

Pinout Schematics

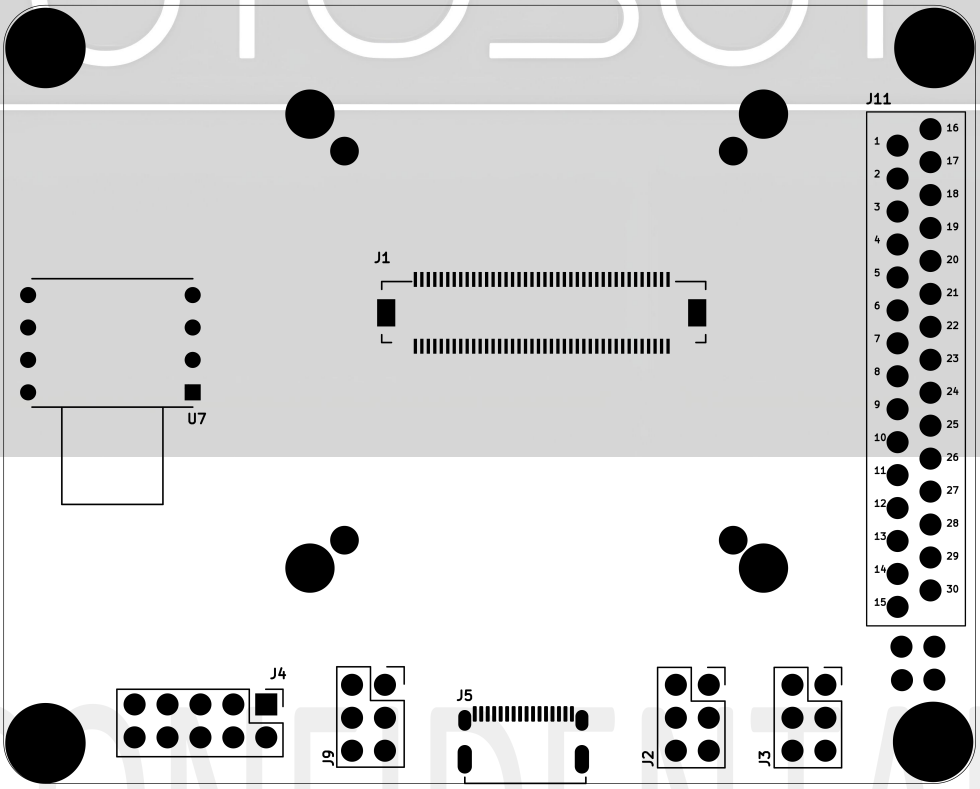

Image.1 Top View of Mega Cube Carrier

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1. “OTOBOT Mega Cube” is temporary name for OTOBOT based autopilot
2. Short of “Reserved for Future Use”. Do not use this pins or ports

J1 - Cube Array Connector

Cube array connector used for connecting Cube Autopilot to Mega Carrier. Screw holes and array connector pin-outs are compatible for Cubepilot's Cubes too.

For assembly, USB ports of Carrier and Cube must facing same way, other way Autopilot may take damage and screw hole do not match to each other.

!! Warning: Before flying, all four screws are must tightened.

J2 - GPS Connector

3x2 Array connector for GPS. Contains Serial - 3 and I2C - 1 ports of cube autopilot.

Pin Location	Pin Function
Top Left	Periph 5V Power Output
Top Right	MCU RX <- GPS TX
Middle Left	I2C SCL (I2C - 1)
Middle Right	MCU TX -> GPS RX
Bottom Left	I2C SDA (I2C - 1)
Bottom Right	GND

Table.1 Pin Functions Of GPS Connector

J3 - Power Input

Main and Secondary(Backup) power input of carrier and autopilot. Sense input tolerances is max 3.3V. be careful to hold sense input between 0 and 3.3 Volts.

Pin Location	Pin Function
Top Left	Backup 5V Power Supply
Top Right	Current Sense Input
Middle Left	No Connection
Middle Right	Voltage Sense Input
Bottom Left	Main 5V Power Supply
Bottom Right	GND

Table.2 Pin Functions Of power Input Port

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J4 - Telemetry Connector

Telemetry connector has TTL Serial Port with 2 Flow Control IO pins (RTS - CTS) and 1 Futaba S-Bus Input. Autopilot's *Serial - 1* port using as telemetry port.

On the Table.3 , pins are sorted by left to right and top to bottom.

Pin Location	Pin Function
Top Left	GND
-	RFU[2]
-	Serial RTS
-	Serial CTS
Top Right	High Power 5V Supply Output
Bottom Left	GND
-	S-Bus Input
-	MCU RX <- Telemetry TX
-	MCU TX -> Telemetry RX
Bottom Right	High Power 5V Supply Output

Table.3 Pin Functions Of Telemetry Connector

J5 - USB Type-C Connector

USB Type - C is used for connect to Mavlink network and reach DFU Mode of Autopilot. This connector has Type - C PD support and supplies 5V to Carrier.

J9 - LED Indicator Outputs

Pin Location	Pin Function
Top Left	RFU[2]
Top Right	Power OK LED
Middle Left	Safety LED
Middle Right	RFU[2]
Bottom Left	MCU Activity LED
Bottom Right	GND

Table.4 Pin Functions Of LED Indicator Port

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J11 - GPIO Port

On top of Carrier PCB, every GPIO pin has own number. Function described in Table.5 .

#	Pin Function	#	Pin Function
1	RS-232 RXD	16	GND
2	I2C - 2 SCL	17	RS-232 TXD
3	Serial - 5 RX	18	I2C - 2 SDA
4	Serial - 4 RX	19	Serial - 5 TX
5	RFU[2]	20	Serial - 4 TX
6	Aux PWM Out - 1	21	RFU[2]
7	Aux PWM Out - 3	22	Aux PWM Out - 2
8	Aux PWM Out - 5	23	Aux PWM Out - 4
9	S-Bus Input	24	Aux PWM Out - 6
10	Main PWM Out - 7	25	Main PWM Out - 8
11	Main PWM Out - 5	26	Main PWM Out - 6
12	Main PWM Out - 3	27	Main PWM Out - 4
13	Main PWM Out - 1	28	Main PWM Out - 2
14	CAN - 1 Low	29	CAN - 1 High
15	Safety Button Input	30	Pressure Sense In

Table.5 Pin Functions Of GPIO Port

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Electrical Specifications

Description	Min	Typ	Max	Unit
Main Power Supply Voltage	4	5.0	5.7	V
Backup Power Supply Voltage	4	5.0	5.7	V
USB Power Supply Voltage	4	5.0	5.7	V
Current and Voltage Sense Voltages	0	-	3.3	V
High Power 5V Current Output	-	-	1.5	A
Periph 5V Current Output	-	-	1	A

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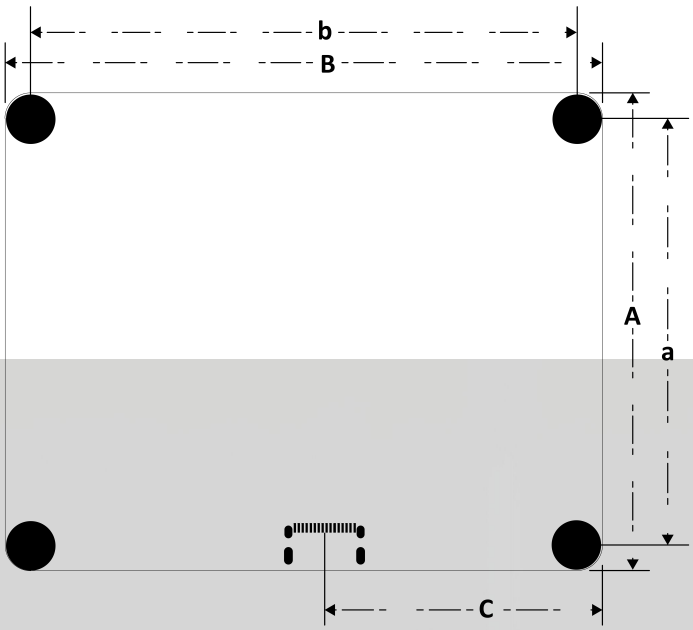
Mechanical Dimensions



Dimension	Value	Unit
A	60	mm
a	53.6	mm
B	75	mm
b	68.6	mm
C	34.92	mm

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