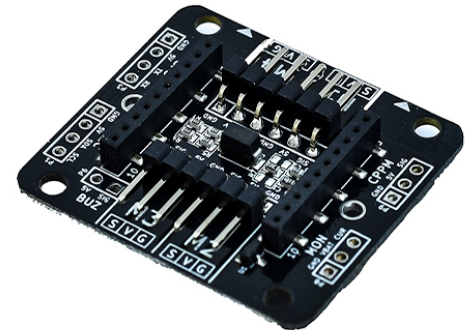# BigQuad deck
SKU: 102990227

With the BigQuad deck you can transform your Crazyflie 2.X to a bigger quad by connecting external ESCs (Electronic Speed Controller) to the breakout connectors on the deck.

> This product is in early access stage. It means that while the hardware is working and tested, the software is still pretty much work in progress. For more information see our early access description page.

1. Introduction

With the BigQuad deck you can transform your Crazyflie 2.X to a bigger quad by connecting external ESCs (Electronic Speed Controller) to the breakout connectors on the deck. The autodetection of the deck makes this transformation possible to do in seconds. The deck contains breakout header connectors for additional accessories such as external receiver (CPPM input) and GPS. It also has the possibility to monitor battery voltage and current.

2. Features

- 4 x ESC connectors
- 0.1" header mounting holes for additional connectivity:
  - CPPM input (3 pin)
  - GPS input (4 pin)
  - I2C expansion (4 pin)
  - Battery and current monitoring input (3 pin)
  - Buzzer output (2 pin)
- Connect one or two additional decks
- Automatic detection of expansion deck

3. Electrical specification

- Power Crazyflie 2.X with 4.5V - 5.5V from ESC
- BiqQuad deck inputs are 5V tolerant
- Battery voltage monitoring divider scaled for input up to 23V
- Current monitoring input 0V - 3V
- BiqQuad deck and Crazyflie 2.X current consumption:
  - ~120mA without any additional decks
  - Up to 500mA if Crazyflie 2.X battery is connected and charging
- 1-wire memory for automatic expansion deck detection
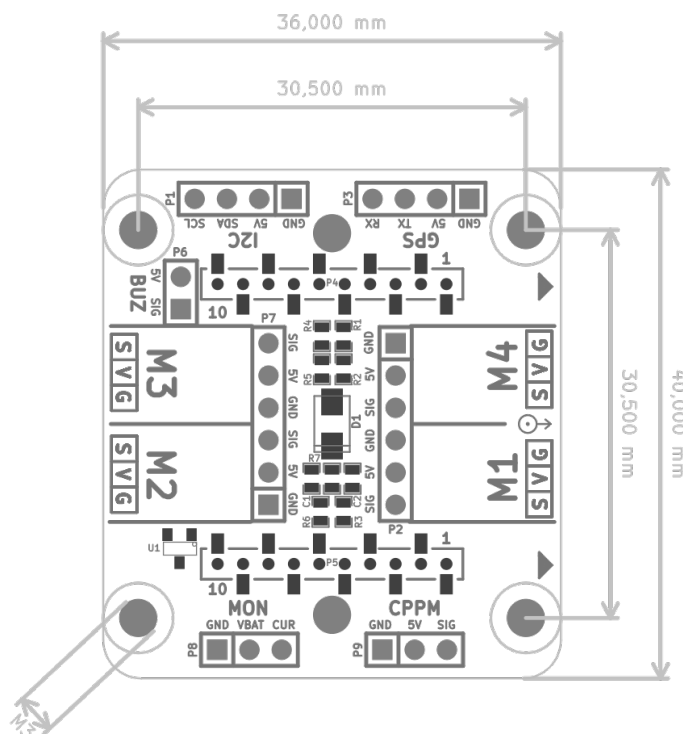
4. Pinout

Connector	Pin	Signal
GPS	1	GND
GPS	2	5V

Connector	Pin	Signal
GPS	3	TX
GPS	4	RX
I2C	1	GND
I2C	2	5V
I2C	3	SDA
I2C	4	SCL
CPPM	1	GND
CPPM	2	5V
CPPM	3	signal
MON	1	GND
MON	2	VBAT
MON	3	current

5. Mechanical specifications

- Weight: 3.8g
- Size (WxHxD): 36x40x5mm
- M3 mounting holes placed 30.5mm square
- Designed for mounting above or under the Crazyflie 2.X

6. Mechanical drawing

7. Package contents

- 1 x BigQuad deck
- 4 x M2x4 nylon screw
- 2 x M2x6 hex spacer

8. Errata

8.1. Compatibility with Loco deck, microSD and Flow (v2) deck

The Loco deck, microSD and Flow (v2) deck all uses the SPI bus. As the BigQuad deck uses the deck SPI buss pins for possible voltage and current measurement, and they are multiplexed with analog input, the BigQuad deck is not out-of-the-box

compatible with these decks.

To work around this issue do the following:

- By removing capacitor C1 on the BigQuad deck (only valid for Rev C, Rev C1 already has this capacitor removed)
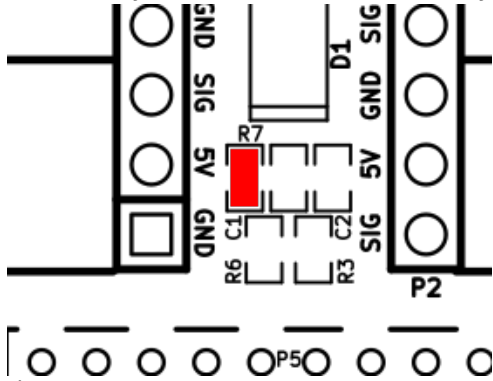
- Not having BQ_DECK_ENABLE_PM defined.
- Disabling the extRx functionality by commenting out extRxInit() in bigquad.c

To make it work with the Flow (v2) deck more changes/patching are needed:

- The Flow HW ChipSelect (IO3) interfere with BigQuad PWM and needs to be moved. Cut trace and solder patch on Flow deck from IO3 to IO1.
- Change the CS pin in flowdeck_v1v2.c (IO3 → IO1)

Next problem is how to mount the deck in a nice way on the quad, we leave that up to you.

9. Hardware revisions

Revision	Comment
C	Initial release
C1	Capacitor C1 is not mounted

10. History

Version	Comment	Date
1	Initial release	2020-03-25
2	Updated with hardware version C1, added hardware revision section and updated errata	2022-01-25