# 80099

OMNIBUS F4 Fireworks

F405 / 32K Gyro Loop / 5VBEC / 8VBEC / Hall Current Sensor / Camera control / 5x UART / PDB

The Omnibus Fireworks flight controller uses the ICM20608 over SPI for the best possible flight performance. With onboard damping box, the ICM20608 runs perfectly under 32k Gyro loop. If you haven't already seen it, you should check out Josh's awesome video on different IMUs. Also onboard are a barometer and AB7456 OSD chip for the BetaFlight integrated OSD.

Omnibus Fireworks supports 3-6s LIPO direct input, build in hall Current Sensor and Power Filter too.

The on Board PDB is tweaked by using 12-Layer PCB design. There is only 0.2-0.5 mohm internal resistance from input to each output pads
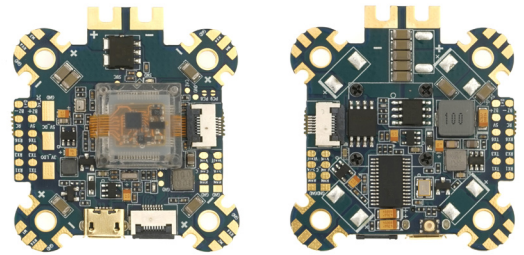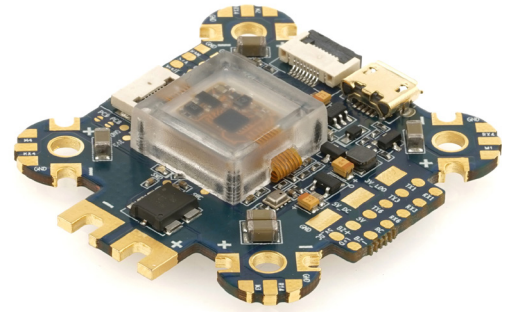
Modifications on v2:

- Tantalum Capacitors can be added to the board (not included)
- Solder pads added for SmartAudio and Camera Control (next to Video pads)
- The orientation of IMU FPC optimized
- Gyro ribbon cable redesigned to fit without extending outside the board
- Added an 8v BEC and LC Filter for the camera and VTX power
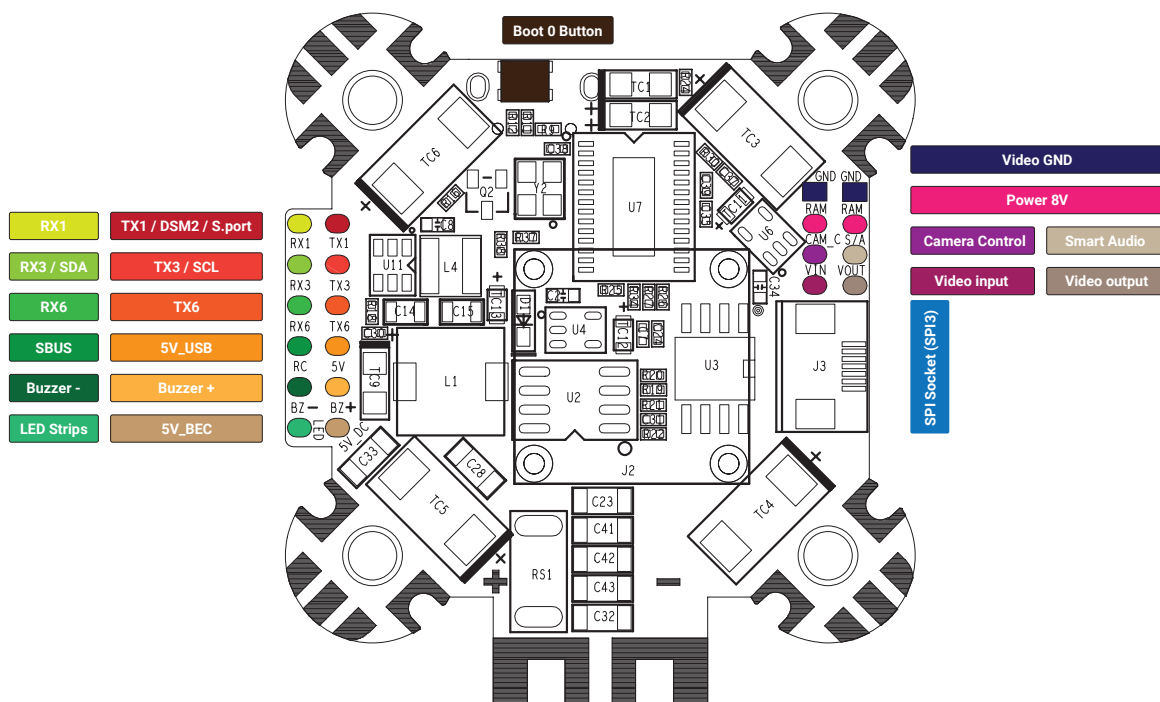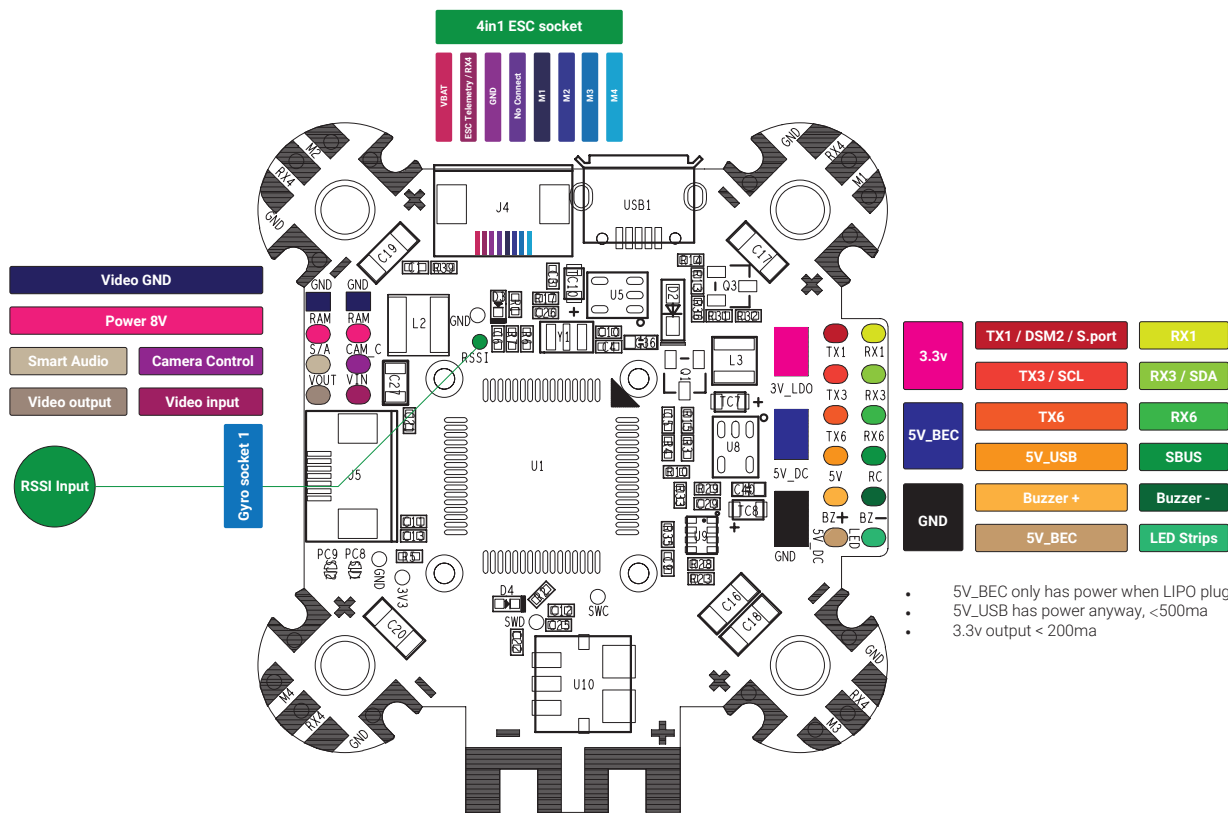- This board now has 5 UART ports

Features:

- STM32 F405 MCU, Runs Betaflight firmware(supported from v3.2)
- ICM20608 Over SPI Bus in damping box. (optional MPU6000)
- 30.5x30.5mm Mounting holes
- Supports Lipo direct plugin (3-6S)
- Supports 5V 1A BEC output (Buck)
- Supports 8V 1A BEC with LC filter output for the camera and VTX(Buck)
- STM32 controls OSD chip over SPI in DMA mode (Betaflight OSD)
- Built-in hall Current Sensor
- Built-in Professional Level PDB
- More caps to reduce power noise.

Resources:

Function	Solder Pad Silk screen	Resouces	MCU Pin	Notes
SBUS	RC	UART1	PA10	Build-in invertera
DSM2	TX1	UART1	PA9	CLI serialrx_halfduplex set to ON
Smart Audio VTX	S/A	UART2	PA2	
Smartport	TX1	Software serial	PA9	Invalid when using DSM2 RX
ESC Telemetry	RX4	UART4	PA1	
Camera Control	CAM_C		PB9	
IIC2_SDA	RX3	UART3	PB11	
IIC2_SCL	TX3	UART3	PB10	
GPS	RX6/TX6	UART6	PC7/PC6	
WS2812B LED	LED		PB6	
Buzzer	Bz-/Bz+		PB4	

Pinmap

4in1 ESC socket

VBAT | ESC Telemetry / RX4 | GND | No Connect | M1 | M2 | M3 | M4

Video GND
Power 8V
Smart Audio | Camera Control
Video output | Video input

RSSI Input

Gyro socket 1

3.3v
5V_BEC
GND

TX1 / DSM2 / S.port | RX1
TX3 / SCL | RX3 / SDA
TX6 | RX6
5V_USB | SBUS
Buzzer + | Buzzer -
5V_BEC | LED Strips

3V_LDO
5V_DC

TX1 RX1
TX3 RX3
TX6 RX6
5V RC
BZ+ BZ-
GND

Boot 0 Button

RX1 | TX1 / DSM2 / S.port
RX3 / SDA | TX3 / SCL
RX6 | TX6
SBUS | 5V_USB
Buzzer - | Buzzer +
LED Strips | 5V_BEC

RX1 TX1
RX3 TX3
RX6 TX6
RC 5V
BZ- BZ+

Video GND
Power 8V
Camera Control | Smart Audio
Video input | Video output

SPI Socket (SPI3)

Connection example

DSM2 RX

GPS+Compass

Receiver

Buzzer

Buzzer -
Buzzer +

WS2812B LED

LIPO

IIC SCL
IIC SDA
TX6
RX6
5V_BEC
GND

SBUS
5V
GND

TX1
GND
3.3v

S.port
SBUS
5V
GND

ESC 1

ESC 3

Lipo +

Lipo -

Power GND
PWM GND
Telemetry
ESC PWM
Power +

Power GND
PWM GND
Telemetry
ESC PWM
Power +

Micro USB
4in1 type 2

Power +
ESC PWM
Telemetry
PWM GND

Power GND
VTX GND
8V (with LC)
SmartAudio
Video OUT

Gyro port 1

Power +
ESC PWM
Telemetry
PWM GND
Power GND

Front *

ESC 2

ESC 4

Video IN
Cam_Ctrl
8V (with LC)
Cam GND

VTX

Camera