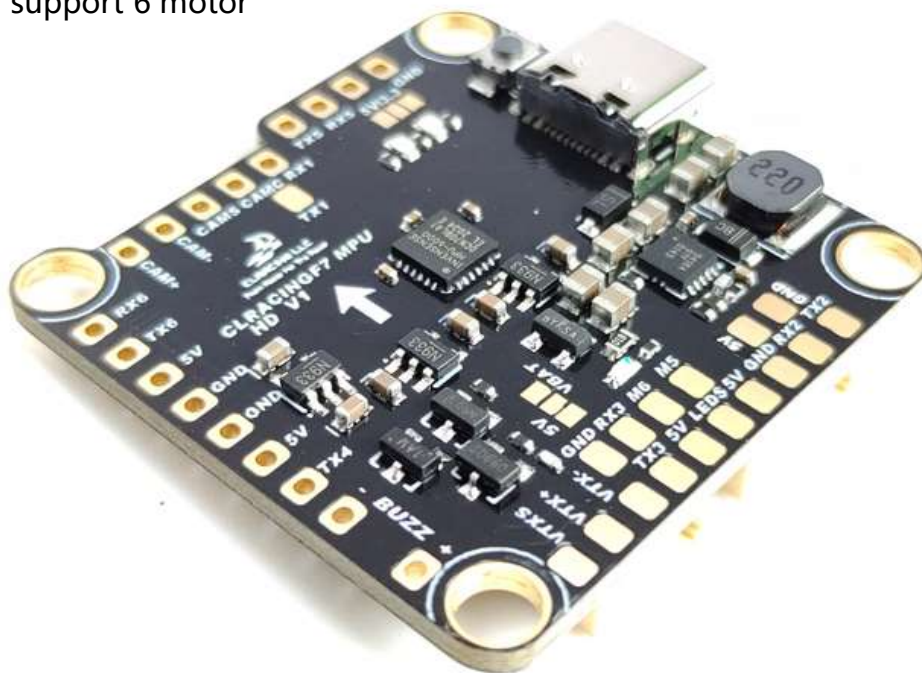# CLRACINGF7 HD MPU V1

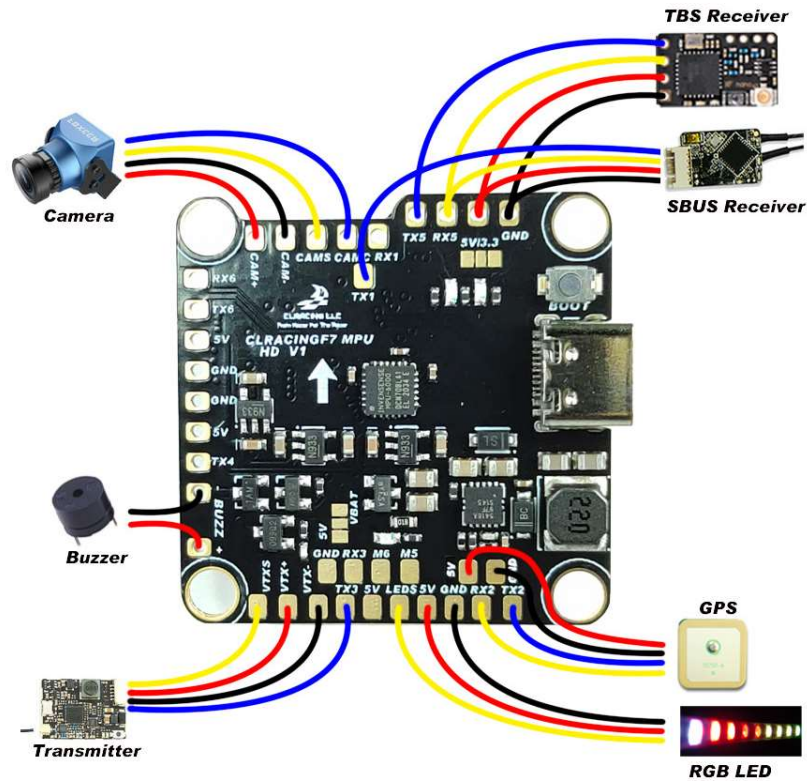## The Flight Controller for RACERS

Main Features

1. MCU: STM32F722RET6216MHz
2. 6-Axis MPU6000 Separated Interrupts
3. Build in Beta flight OSD
4. Up to 8S(36V) direct battery power
5. Build in Voltage monitoring resistor
6. Build in 5V/1.5A BEC and three groups of 3.3V/250mA for OSD,GYRO and SYS
7. Build in 10V/1.5A BEC for DJI
8. Led strip share 5V with 5V/1.5A BEC
9. 5V OR VBAT, camera and VTX POWER VIA Pit Switch
10. 6 Full UARTS: UART1, UART2, UART3, UART4, UART5, UART6
11. Build in Camera Control pin with necessary resistor and capacitor near camera connection
12. Buzzer pads for external buzzer
13. VBAT Polarity protection
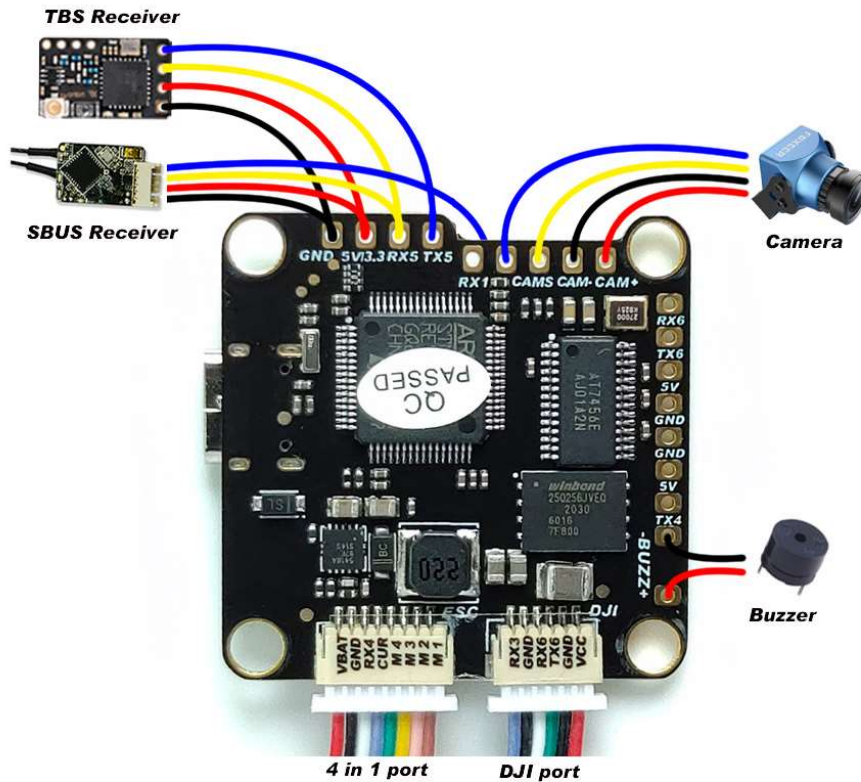14. Build in 32MB Blackbox flash chip
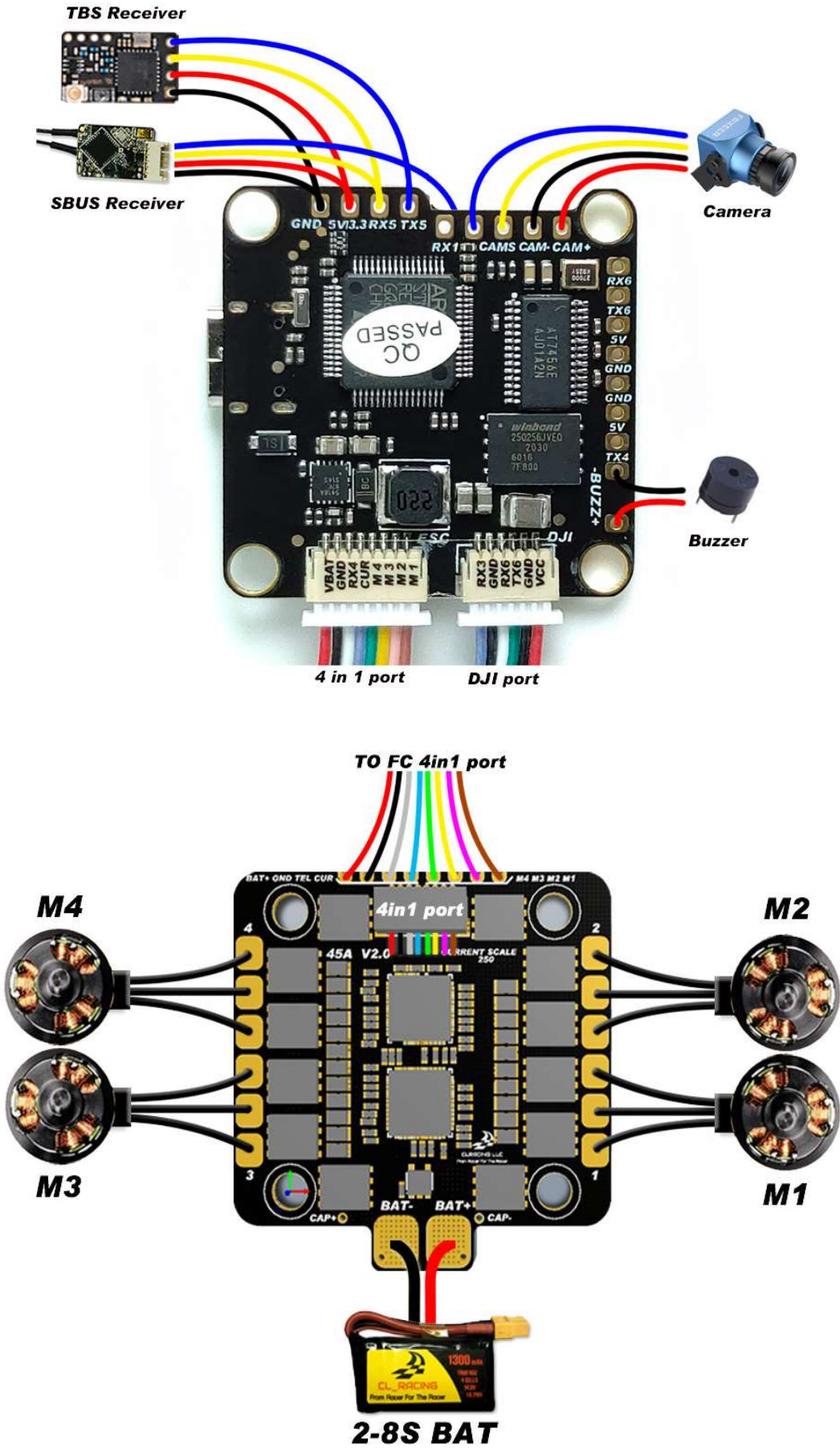15. Maximum support 6 motor
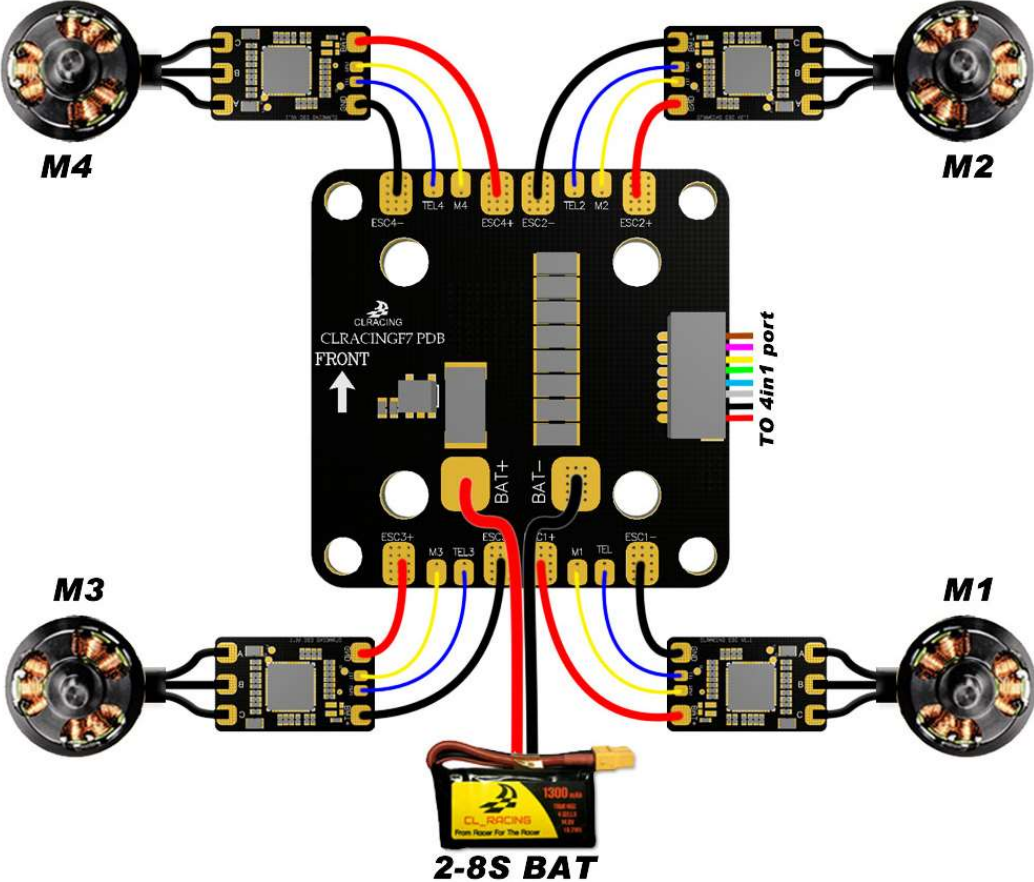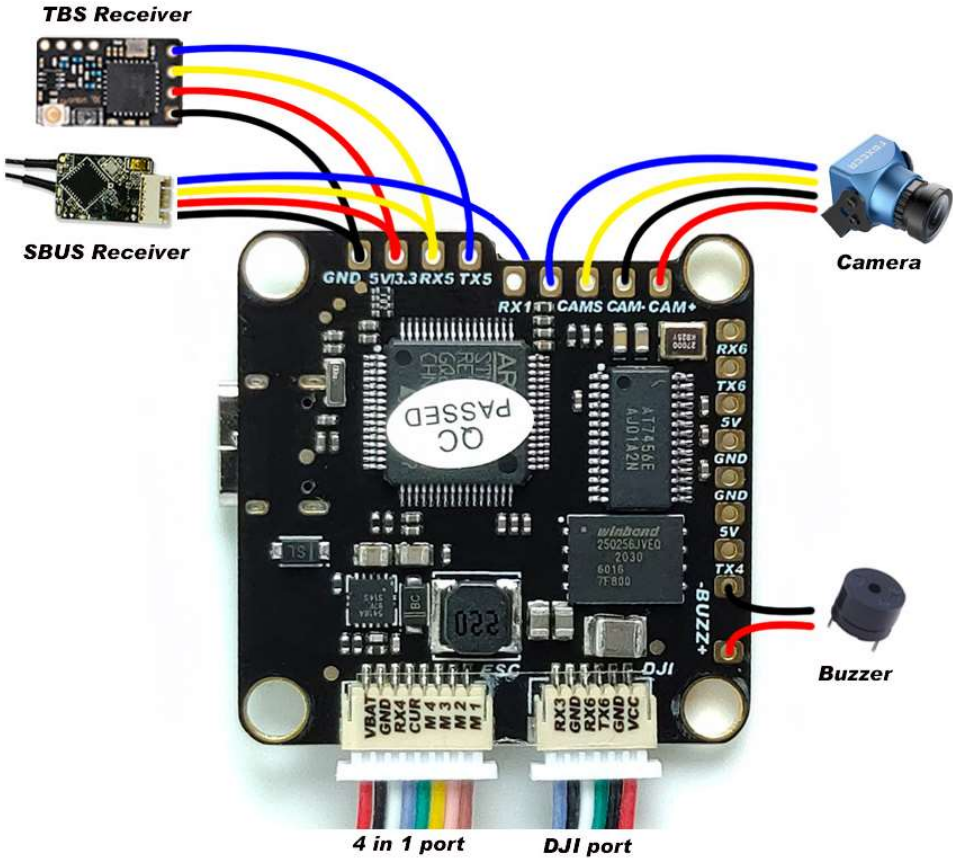
General Overview

1. FC TOP VIEW

2. FC BOTTOM VIEW

3. FC + 4in1 ESC

TBS Receiver

SBUS Receiver

GND 5V|3.3 RX5 TX5   RX1 CAMS CAM- CAM+

Camera

RX6
TX6
5V
GND
GND
5V
TX4
-BUZZ+

Buzzer

VBAT GND RX4 CUR M4 M3 M2 M1

RX3 GND RX6 TX6 GND VCC

4 in 1 port   DJI port

TO FC 4in1 port

M4

M2

BAT+ GND TEL CUR   M4 M3 M2 M1

4in1 port

45A V2.0   CURRENT SCALE 250

M3

M1

CAP+   BAT- BAT+   CAP-

2-8S BAT

4. FC + PDB

TBS Receiver

SBUS Receiver

GND 5V 3.3 RX5 TX5

RX1 CAMS CAM- CAM+

Camera

RX6
TX6
5V
GND
GND
5V
TX4

QC PASSED

ARM
REL
GP4
CH3

AT7456E
AJ01A2N

winbond
25Q256JVEQ
2030
6016
7F800

-BUZZ+

Buzzer

ESC

DJI

VBAT
GND
RX4
CUR
M4
M3
M2
M1

RX3
GND
RX6
TX6
GND
VCC

4 in 1 port

DJI port

M4

TEL4 M4

ESC4- ESC4+

M2

TEL2 M2

ESC2- ESC2+

CLRACING
CLRACINGF7 PDB

FRONT

TO 4in1 port

BAT+ BAT-

ESC3+ M3 TEL3 ESC C1+ M1 TEL ESC1-

M3

M1

1300 mAh
CL RACING
From Racer For The Racer

2-8S BAT

Common peripheral connection view
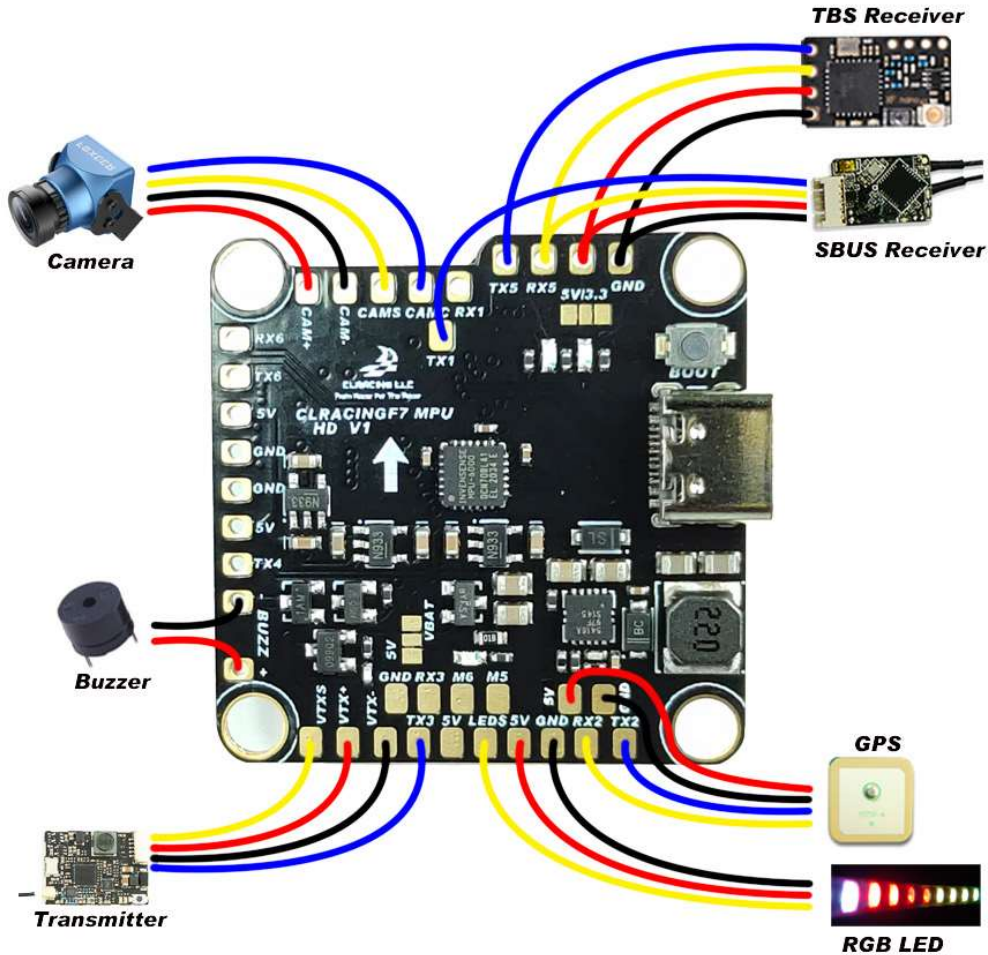
Silk screen purpose

SILK SCREEN	PURPOSE	SILK SCREEN	PURPOSE
CAM+	Camera Power positive	RX1	UART1 RX
CAM-	Camera power negative	TX1	UART1 TX
CAMS	Camera video signal in	RX2	UART2 RX
CAMC	Camera control signal out	TX2	UART2 TX
VTXS	Transmitter video signal out	RX3	UART3 RX
VTX+	Transmitter power positive	TX3	UART3 TX
VTX-	Transmitter power negative	RX4	UART4 RX
BUZZ-	Buzzer Negative	TX4	UART4 TX
BUZZ+	Buzzer Positive	RX5	UART5 RX
VBAT	Battery Positive	TX5	UART5 TX
CUR	Current Signal In	RX6	UART6 RX
5V/3.3	Receiver Power (5V or 3.3V)	TX6	UART6 TX
5V	5V Power positive	M1	MOTOR1 S
LEDS	RGB LED control signal	M2	MOTOR2 S
GND	Ground/Negative	M3	MOTOR3 S
8Pin port	4in1 ESC PORT	M4	MOTOR4 S
6Pin port	DJI PORT	M5	MOTOR5 S
		M6	MOTOR6 S

BETAFLIGHT SETUP

1. Sbus
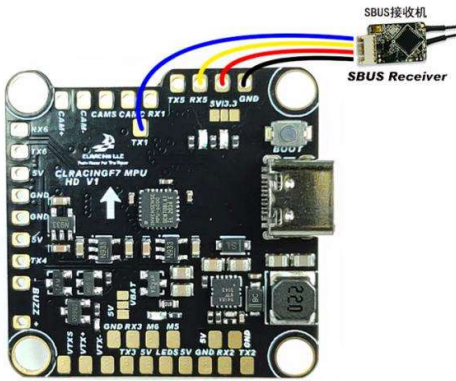
Choose UART5 AS Serial RX, Solder your sBUS signal to RX5 pad

Then in the configuration tab Choose

2. TBS

CHOSE UART 5 AS Serial RX, Sold the crossfire RX as manual indicated.

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	⬤ 115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART1	◯ 115200 ▾	◯	SmartPort ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART2	◯ 115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART3	◯ 115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	TBS SmartAuc ▾ AUTO ▾
UART4	◯ 115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART5	◯ 115200 ▾	⬤	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART6	◯ 115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾

Then in the configuration tab Choose

3. VTX
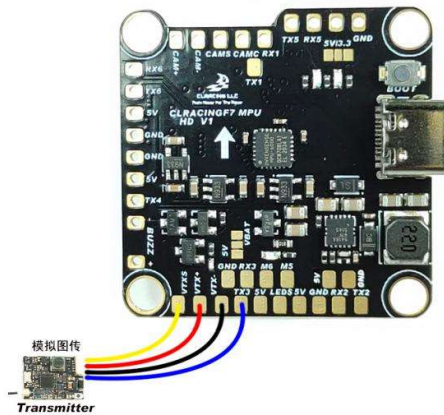
4. CAM
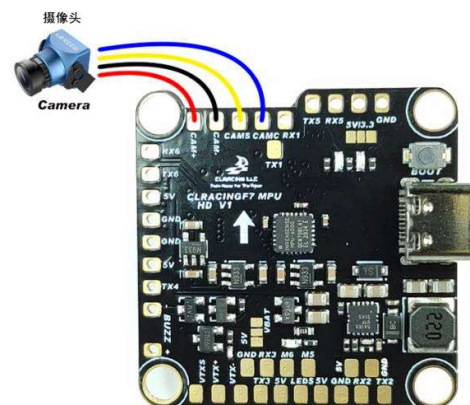
5. RGB LED

RGB LED

6. RX Voltage selection Jumper

Solder on the left will output 5V
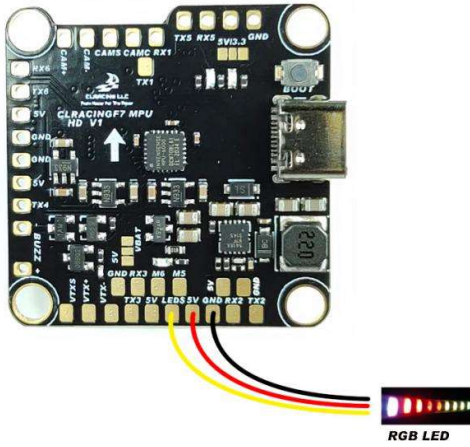

Solder on the left will output 3.3V

7. Smart port telemetry

Choose UART1 AS Smart port on the telemetry output, then go to CLI

Enter set tlm_halfduplex = OFF, Save

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART1	115200 ▾	◯	SmartPort ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART2	115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART3	115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	TBS SmartAu ▾ AUTO ▾
UART4	115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART5	115200 ▾	🟠	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART6	115200 ▾	◯	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾

8. Use True Pit mode for Team Racing

VBAT and 5V jumper control both VTX power and Camera Power

Solder on the bottom will output 5V
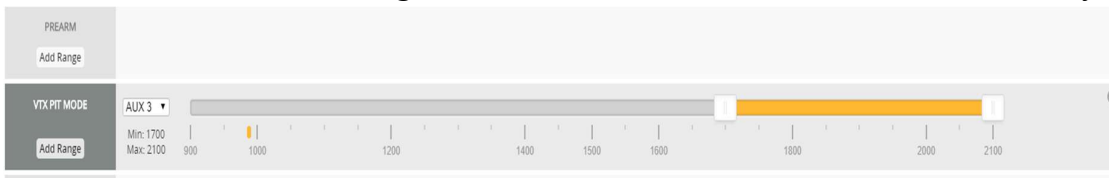

Solder on the top will output VBAT

Then go to CLI Copy the following command to the CLI

resource PINIO 1 A14

set pinio_box = 40,0,0,0

save

wait for the FC reboot then go to "MODE tab "set USER1 on a AUX switch you prefer

CAUTION: when using PIT mode, FC power up will not power your VTX until you turn on the switch on your radio you assigned to the VTX PIT mode