

Turtlebee F3 brushed flight controller built-in DSMX RX/OSD/Current meter Manual

1.Specification:

MCU: STM32F303CCT6

Gyro& Accelerometer: MPU6000

Working Voltage:1s Lipo or LiHV

Firmware Target: Betaflight OMNIBUS

Motor Driver: Texas Instruments DRV8850

Continuous Current: 5A each

Peak Current: 8A each

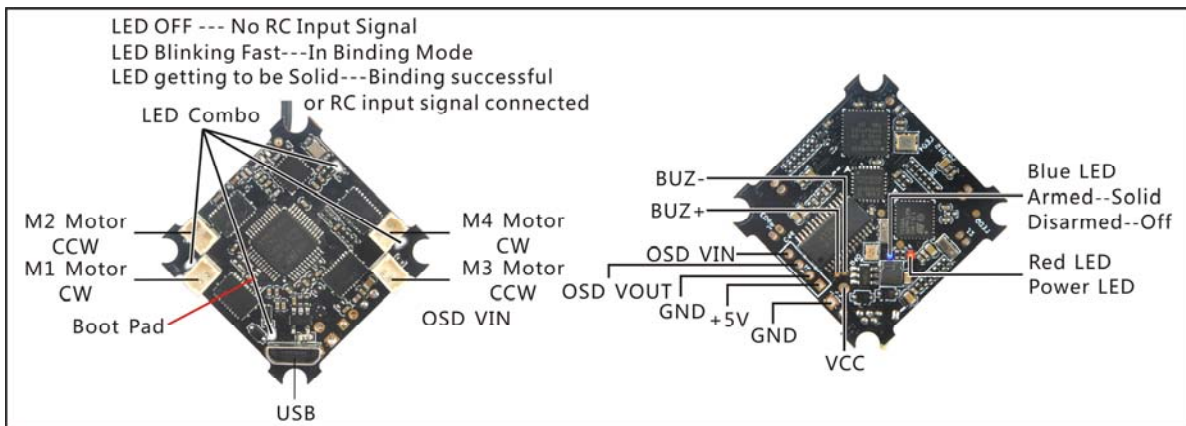
Receiver mode: Frsky D8/ Flysky AFHDS-2A/ DSM2 DSMX to choose

Motor Socket: JST 1.25MM 2pin

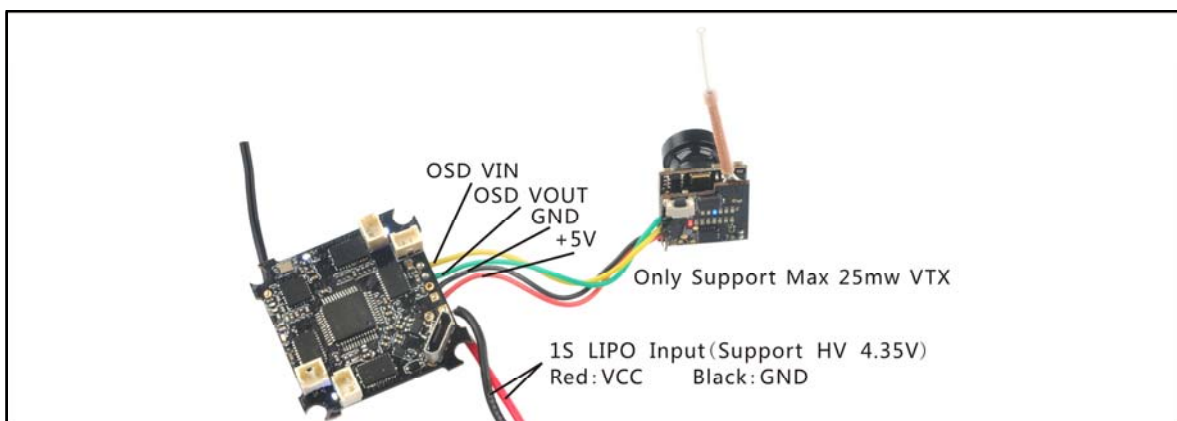
Weight:4g

Mounting Hole Distance:25.45*25.45mm

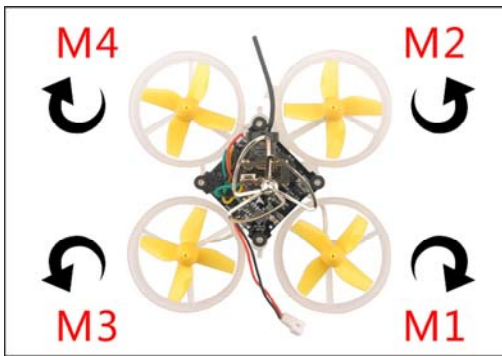
2.Connection and LED



3.Camera connection



4.Mixer type and ESC/Motor protocol



ESC/Motor Features

DSHOT150 ESC/Motor protocol

MOTOR_STOP Don't spin the motors when armed

Disarm motors regardless of throttle value (When ARM is configured in Modes tab via AUX channel)

5 Disarm motors after set delay [seconds] (Requires MOTOR_STOP feature)

4.5 Motor Idle Throttle Value [percent]

Notes:ESC protocol must set to be Dshot150

5.Receiver configuration

Ports and receiver mode sets like the bellowing diagram: First Enable Serial_RX for uart3 and Set Receiver mode to "RX_SERIAL" , Select "Spektrum2048" signal for DSMX radio and "Spektrum1024" signal for DSM2 radio in Betaflight configurator . And the default channel map is "TAER1234", please check your RC transmitter channel map, make sure they are matched, otherwise it will not armed.

Ports WIKI

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.
Note: Do NOT disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART2	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	<input type="checkbox"/> 115200	<input checked="" type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO

Receiver

Serial-based receiver (SPEKSAT, S) Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.

SPEKTRUM2048 For DSMX Radio

SPEKTRUM1024 For DSM2 Radio

Channel Map: TAER1234

RSSI Channel: AUX 5

'Stick Low' Threshold: 1050

Stick Center: 1500

'Stick High' Threshold: 1900

6.Binding procedure

- (1) Connect TURTLEBEE F3 FC DSM2/DSMX Version to computer and open Betaflight configurator, From CLI tab type: "set spektrum_sat_bind = 9" for DSMX radio or "set spektrum_sat_bind = 5" for DSM2 radio
- (2) Type "save" and after Flight controller reboot remove USB cable (=Power off the board)
- (3) Wait a second and reconnect the USB cable. After cold start the led combo(2 white color LED and 2 red color LED) should start blinking fast and transmitter should be turned on while pressing the bind button
- (4) After binding the led combo should be solid. Connect Betaflight and use receiver tab to test that receiver is working correctly.
- (5) Final step is to go to CLI tab and type "set spektrum_sat_bind = 0" and then type "save". This must be done so that the receiver doesn't go back to binding mode when the TURTLEBEE F3 FC is repowered again.

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Entering CLI Mode, type 'exit' to return, or 'help'

# Set spektrum_sat_bind=9
spektrum_sat_bind set to 9
# save
For DSMX

Entering CLI Mode, type 'exit' to return, or 'help'

# Set spektrum_sat_bind=5
spektrum_sat_bind set to 5
# save
For DSM2

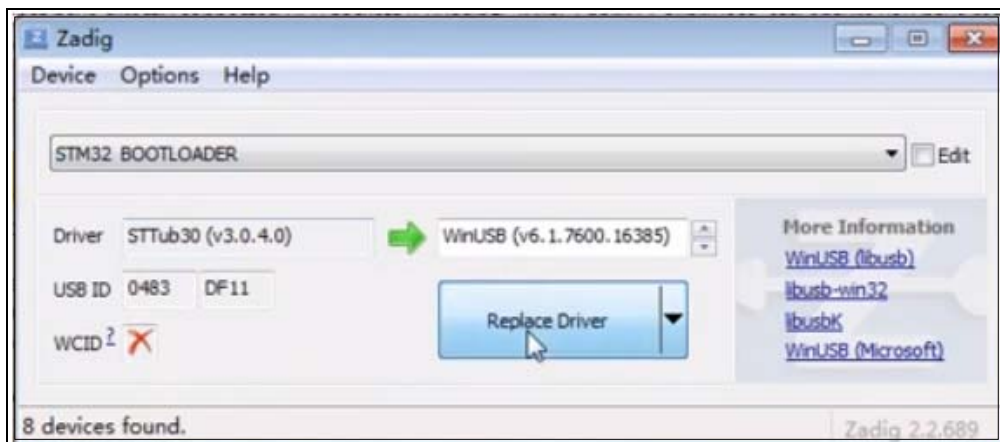
Entering CLI Mode, type 'exit' to return, or 'help'

# Set spektrum_sat_bind=0
spektrum_sat_bind set to 0
# save
Close Binding

```

7. Firmware update

1. Install latest STM32 Virtual COM Port Driver <http://www.st.com/web/en/catalog/tools/PF257938>
2. Install STM BOOTLOAD Driver (STM Device in DFU MODE)
3. Open Betaflight configurator and choose firmware target "OMNIBUS", then select the firmware version.
4. There are 2 ways to get in DFU Mode: 1). solder the boot pad and then plug USB to computer 2). loading betaflight firmware and hit "flash", then it will getting into DFU Mode automatically.
5. Open Zadig tools to replace the drivers from STM32 Bootloader to WINUSB Driver.
6. Reconnect the flight controller to the computer after replace driver done , and open Betaflight configurator, loading firmware and flash.



8. "Flip over after crash" procedure

Set one channel of your radio transmitter to activate the Flip over function in the Mode tab of Betaflight configurator

