

Hyperion F3 Evo Brushed Manual



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The Hyperion F3 EVO Brushed Flight Controller gives you all the features in a small size and designed for micro size quads with brushed motors.

Dedicated Open source Cleanflight software ensures that you are always updated.

Board layout



Description: Brand Name: Hyperion Item Name: F3 EVO Brushed Flight Controller Dimension: 22mm*32.5mm Thickness: 1.2mm Weight: 3g

Features:

1. F3_EVO_Brush is in the revision on the basis of the F3 EVO SP RACING, it is a 32bits brush flight controller based on SP RACING F3 EVO firmware.

2. The flight control support 1S (4.2V) and 2S (8.4V) power supply, with 2S power, flying experience can be more wild.

3. Independent design of the circuit structure, comes with the pressure reduction technology, whether it is 1S or 2S power input, UART1/2 output 5V, UART3 output 3.3V

4. Using STM32F303CCT6 + MPU6500, advanced hardware platform F3 guarantee more stable flight.

5. With a 6-ways large current NMOS transistors, operating current of up to 10A or more. Each machine is equipped with freewheeling diodes.

- 6. Support for PPM, SBUS, DSM receiver input signal.
- 7. With battery voltage detection and buzzer interface.
- 8. Support for 6 motors, including 1020 coreless motor.

Connection diagram:



Micro USB socket: Connect to computer to flash firmware and configure the flight controller

M1/M2/M3/M4: Connect to Brush motor

VCC/GND: Connect to the battery 1s~2s input (Configure by the voltage input pad)

UART1: GND +5V RX1 TX1, could connect to GPS/OSD

UART2: GND +5V RX2 PPM/SBUS Receiver input (RX2)

UART3: GND +5V RX3 TX3 Could connect to GPS OR Telemetry module, could not use when DSM/DSM/DSMX Receiver Used

BUZ+ -: Connect to an external buzzer

DSM/DSM2/DSMX: 3.3V GND RX3 DSM/DSM2/DSMX Receiver input

Receiver configuration:

 DSM receiver soldered directly to the DSM/DSM2/DSMX Receive interface 3.3V, GND, RX3. Enable Serial_RX for UART3 and Set Receiver mode RX_SERIAL, Select Spektrum1024(DSM/DSM2) or Spektrum2048(DSMX) in Cleanflight configurator.

te: not all o	combinations are valid. When the flight contro	oller firmware detects this the serial port configu	ration will be reset.				
e: Do NOT	T disable MSP on the first serial port unless yo	u know what you are doing. You may have to re	flash and erase your configuration if you do.				
utier	Data	Logging	Telemetry	RX	GPS		
VCP	MSP 115200 •	Blackbox 115200 •	Disabled • AUTO •	Serial RX	57600 •		
15	MSP 115200 ¥	Blackbox 115200 •	Disabled • AUTO •	Serial RX	57600 •		
r2	MSP 115200 •	Blackbox 115200 •	Disabled • AUTO •	Serial RX	57600 •		
3	MSP 115200 •	Blackbox 115200 •	Disabled • AUTO •	Serial RX	57600 •		
Rece	eiver Mode						
© RX_PPM		PPM RX in	PPM RX input				
RX_SERIAL		Serial-base	Serial-based receiver (SPEKSAT, SBUS, SUMD)				
	RX_PARALLEL_PWM	PWM RX in	PWM RX input (one wire per channel)				
0	RX_MSP MSP RX input (control via MSP port)						
Seria No	al Receiver Provider te: Remember to com SERIAL feature.	figure a Serial Port (via	Ports tab) and choose a S	Serial Receiver Pro	ovider when using		
SPE SPE SBU SUN SUN XBU XBU	KTRUM1024 KTRUM2048 IS AD AH IS_MODE_B IS_MODE_B_RJ01						

2. SBUS receiver welded to the UART2 GND, + 5V, RX2. Then Enable Serial_RX and Set Receiver mode RX_SERIAL, Select Sbus signal in Cleanflight configurator.

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at all combinations are valid. When the flight contro NOT disable MSP on the first serial port unless yo	oller firmware detects this the serial port o ou know what you are doing. You may have	onfiguration will be reset. e to reflash and erase your configuration if you do	x	
Data	Logging	Telemetry	RX	GPS
eiver Mode				
RX_PPM	PPM RX i	nput		
RX_SERIAL	Serial-ba	sed receiver (SPEKSAT, S	SBUS, SUMD)	
RX_PARALLEL_PWM	PWM RX	input (one wire per cha	nnel)	
RX_MSP	MSP RX i	nput (control via MSP p	ort)	
	t al combinations are valid. When the fight conto NOT daable MSP on the first senial port unleasy ceiver Mode RX_PPM RX_SERIAL RX_PARALLEL_PWM RX MSP	tail combinations are valid. When the flight controller firmware detects this the serial port or NoT duable MSP on the first serial port unless you know what you are doing. You may have seriever Mode RX_PPM PPM RX i RX_SERIAL Serial-baa RX_PARALLEL_PWM PWM RX RX MSP MSP RX i	tail combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset. Not daable MSP on the first serial port unless you know what you are doing. You may have to reflesh and erace your configuration if you do Data togging RX_PPM PPM RX input RX_SERIAL Serial-based receiver (SPEKSAT, S RX_PARALLEL_PWM PWM RX input (one wire per cha RX MSP MSP RX input (control via MSP p)	tail combinations are valid. When the fight controller firmware detects this the serial port configuration will be reset. Interview of combinations are valid. When the first serial port onless your configuration if you do. tail Logging Telemetry RX Telemetry PPM RX input RX RX_PPM PPM RX input Serial-based receiver (SPEKSAT, SBUS, SUMD) RX_PARALLEL_PWM PWM RX input (one wire per channel) RX MSP MSP RX input (control via MSP port)

Note: Remember to configure a Serial Port (via Ports tab) and choor RX_SERIAL feature.	ose a Serial Receiver Provider when using
SPEKTRUM1024 SPEKTRUM2048	
SBUS	
SUMD	
SUMH	
XBUS_MODE_B	
XBUS_MODE_B_RJ01	
IBUS	

3. PPM receiver welded to the UART2 GND, + 5V, RX2. Then set Receiver mode to RX_PPM in Cleanflight configurator.

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ite: not a ite: Do N	ll combinations are valid. When the flight contro OT disable MSP on the first serial port unless yo	iller firmware detects this the serial port configu u know what you are doing. You may have to re	ration will be reset. Rash and erase your configuration if you do.			
ntifier	Data	Logging	Telemetry	RX	GP5	
B VCP	MSP 115200 •	Blackbox 115200 •	Disabled • AUTO •	Serial RX	57600 •	
RT I	MSP 115200 •	Blackbox 115200 •	Disabled • AUTO •	Senat RX	57600 •	
RT2	MSP 115200 •	Blackbox 115200 •	Disabled • AUTO •	Serial RX	57600 •	
873	MSP 115200 •	Blackbox 115200 •	Disabled * AUTO *	Serial RX	57600 •	
Rec	eiver Mode					
۲	RX_PPM	PPM RX inp	ut			
0	RX_SERIAL	Serial-based receiver (SPEKSAT, SBUS, SUMD)				
0	RX_PARALLEL_PWM	PWM RX input (one wire per channel)				
0	RX_MSP	MSP RX inp	ut (control via MSP port)			
Cori	al Receiver Provider					

SPEKTRUM1024 SPEKTRUM2048 SBUS SUMD SUMH XBUS_MODE_B XBUS_MODE_B_RJ01 IBUS

Notice:

Before applying power, pay attention to the battery voltage selection.

The default setting is 1S (4.2V); if you use 2s lipo, please first need to disconnect pin2 and pin 3 and then solder pin 1 and pin2. Prohibit the same three pads shorted together.



FIRMWARE FLASHING for F3 EVO Brush

The following tutorial covers flashing Cleanflight Firmware onto the F3 EVO Brush Flight Controller. Betaflight is the same steps like Cleanflight.

Installing the ST drivers:

(For Windows Only)

Download and install the DfuSe demo package.

Open an explorer window and browse to (assuming you've installed to the default path) C:\Program Files (x86)\STMicroelectronics\Software\DfuSe v3.0.5\Bin\Driver

Browse two folders deeper to the folder relative to your Operating System version, and x86-32bit or x64-64bit variant.

Click the dpinst_x##.exe to install the driver.



Installing Cleanflight Configurator:

(For Windows Only)

You must use Cleanflight Configurator v 1.0.0 or newer.

The following assumes you also have the <u>Chrome Browser</u> installed.

Get the latest Cleanflight Configurator (+ Add to Chrome)



Replacing the ST Driver with WinUSB driver:

(For Windows Only)

1. Plug your F3 EVO_Brush board onto your computer. Open cleanflight configurator, you should see the serial com port

7	D CLEANFLIGHT NAFIGURATOR 1.2.2		COM187 115200 → Auto-Connect	÷ ¢ Connect	¢°
2016-07-	13 @ 16:18:39 Running - OS: WIndows, Chrome: 51.0.2704.10	B, Configurator: 1.2.2			
CF					
18:		Welcome to			goli
	—	EODET IEL	-		Jange
		ZAI IP LIGA			0
	Welcome to Cleanflight - Configurator , a	utility designed to simplify updating, configur	ing and tuning of your 1	flight controller.	
	The application supports all hardware that can run cleanflight (SPRacingF3, Vortex, Sparky, DoDo, CC3D(EVC) Air Hero 32, Elin32/c/Deliuxe, DragonElv32	If you would like to help make Cleanflight even help in many ways, including:	better you can Op No Th	oen Source / Donation otice is utility is fully open	
	CJMCU Microquad, Chebuzz F3, STM32F3Discovery,	Answering other users questions on the forum	s and IRC. so	urce and is available	
	Hermit, Naze32 Tricopter Frame, Skyline32, Naze/32/Mini/Pro/Blackbox etc)	Contributing code to the firmware and configur features, fixes, improvements	ator - new cle	e of charge to all anflight users. you found the cleanflight	
	The firmware source code can be downloaded from here	Testing new features/fixes and providing feedb	or or	cleanflight configurator	
	The newest binary firmware image is available here, development builds available here	Helping out with Issues and commenting on fe requests	ature su	pporting its	+
Port utili	zation: D: 0% U: 0% Packet error: 0 I2C error: 0 Cycle T	ime: 0			1.2.2

2. Click "Firmware Flash" menu, select the latest firmware for F3 EVO_Brush and load firmware [online] or load firmware [Local]

FELERNFLIE CONFIGURATOR 1.2.2	GHT	COM187 € 115200 Connect Connect
2016-07-13 @ 16:18:39 Running - OS	5: Windows, Chrome: 51.0.2704.103, Configurator: 1.2	2 Show Log
CF Welcome		
Documentation & Support	1.13.0 SPRACINGF3EVO 2016-6-6 22:20 (stab	Available online firmware releases - Select the correct firmware appropriate for your board.
Firmware Flasher	No reboot sequence	Enable if you powered your FC while the bootloader pins are jumpered or have your FC's BOOT button pressed.
	Full chip erase	Wipes all configuration data currently stored on the board.
T	Manual baud rate 115200 V	Manual selection of baud rate for boards that don't support the default speed or for flashing via bluetooth. <mark>Note:</mark> Not used when flashing via USB DFU
	Show unstable releases	Show Release-Candidates and Development Releases.
	Please do not try to flash non-cleanflight hardware	Warning with this firmware flasher.
	Do not disconnect the board of turn off your com	Juder write nashing.
		Flash Firmware Load Firmware [Online] Load Firmware [Local]
Port utilization: D: 0% U: 0% Packet	t error: 0 12C error: 0 Cycle Time: 0	1.2.2

3. Click "Flash Firmware" and wait the ST DFU DRIVER Automatic installation. It's successfully installed when you see the DFU port on the Up right corner.



- 4. Download and launch Zadig
- 5. From Zadig, a.) Select Options, b.) Tick List All Devices

EVICE	Opi			
	~	List All Devices D.		
STM3	~	Ignore Hubs or Composite Parents		🗾 Edi
	~	Create a Catalog File		
Driver	✓	Sign Catalog & Install Autogenerated Certificate	*	WinUSB (libusb)
USB II		Advanced Mode		libusb-win32
WCID		Log Verbosity	•	libusbK WinUSB (Microsoft)

 a.) Select STM32 Bootloader from the dropdown, b.) Choose WinUSB as the replacement, c.) Click Replace Driver. Sometimes the Replace progress will be slow or no response, you can close it and do it again, you will find the dropdown is no STTUB30 but WinUSB, just click replace driver from WinUSB to WinUSB.

evice (Options Help		A.)
STM32	BOOTLOADER	D \	▼) 🖾 Edit
Driver	STTub30 (v3.0.5.0)	B.) WinUSB (v6.1.7600.16385)	More Information WinUSB (libusb)
USB ID	0483 DF11	C.) Replace Driver	libusb-win32 libusbK

* Credits for the Zadig option - Cleanflight Docs

Flash Firmware

Go back to Cleanflight configurator and Click Flash Firmware again after the Driver replace completed, and you will see

the firmware flashed successfully!

Warnings!

This F3 EVO_Brush flight controller is only for use with BRUSH MOTOR, and Not compatible for BRUSHLESS MOTOR