Happymodel



Features
Ultra-lightweight 3.5-inch BNF FPV Freestyle Drone
HD video transmission
Integrated ExpressLRS UART receiver
High efficiency EX1404 power system
Can be equipped with Naked Gopro or SMO4K
Support 3-4S battery 4S 750mah battery is recommended, maximum
support 4S 1100mah
Specifications
Brand: HAPPYMODEL & HDZERO CO-Brand
Product name: HDZERO CRUX35
Wheelbase: 150mm
Weight: 115.15gram
Size: 130mmx130mmx47mm(without propellers)
Receiver option: UART ELRS v3.0
Come out with HDZERO Freestyle v2 and HDZERO Nano90 camera
Flying time: 8min~12min 4s 750mah battery

Item Name	Crux35 HDZERO
Crux35 Frame	1
CurxF405 HD ELRS AIO Flight controller	1
HDZERO Freestyle v2 VTX + Runcam Nano90 Camera	1
Happymodel EX1404 KV3500 brushless motor	4
HQProp T3.5X2X3Grey (4cw+4ccw)	1
Screw Driver	1
Buckle Velcro for battery	1

1.Install propeller and mount the antenna holder

Default Propeller installation of HDZERO CRUX35 was set to be "Prop Out", please install CCW propeller to Motor1 and Motor4 and install CW propeller to Motor2 and Motor3, make sure you have mounted the screws tightly for the propellers.



2. Bind procedure

Bind procedure video for your refrence https://bit.ly/3RWMApM

1.Supply power to the flight controller by plug USB, wait until the red LED on the FC is off, immediately turn off the power, and then repeat again the above steps. When the FC is powered on for the third time, the red LED light will start to double-flash, which means that the Receiver enters the binding mode 2.Please make sure your ExpressLRS tx module firmware is v3.x.x. And go to ExpressLRS.lua from "TOOLS" menu of your radio transmitter. Then hit [Bind] to binding with the onboard ExpressLRS receiver. The red LED should blinking slowly first then turn to solid, that means binding was successfully. If the red led keep tri-flash after binding ,please change Model Match tab value from "off" to "on" or from "on" to "off"

Receiver LED status meanings:

Red LED solid means bind successful or RC link established; Red LED double-flash means get into bind mode; Red LED flash slowly means no RC signal input from TX module; Red LED continuous flash fast means ExpressLRS wifi enabled;

UART description:

ELRS receiver was connected to UART2 default out of factory. Usually UART1 or UART6 Could be used for MSP OSD with HD VTX. IRX6 is an inverted serial RX6 for SBUS input. IRX6 and TX6/RX6 couldn't be used at the same time.



3) Check the receiver channel map and channel value is correct after bind successful.

Roll [A]	1500		TELEMETRY	Telemetry output
Pitch [E]	1500			
Yaw [R]	1500	RSSI (Signa	l Strength)	
hrottle [T]	885			
AUX 1	1775		RSSI_ADC	Analog RSSI input
AUX 2	1500	-		
AUX 3	1500	Channel Map		
AUX 4	15 <mark>00</mark>	TAER1234		

Make sure the VTX band is "OFF" from the vtx administrator, sometimes it would affect VTX or RX quality .

[BACK]

3. Arm/Disarm the Motor

1)Turn on your radio transmitter and connect the battery to the HDZERO CRUX35. Then place HDZERO CRUX35 horizontally on the ground. We recommend 4S 750mah or 4S 850mah Li-po battery for HDZERO CRUX35

Prepare your goggles, and make sure that the goggles could receive VTX signal
 Toggle Aux1 switch to arm the motors, the Green LED at the bottom of the flight controller would get be solid once armed, happy flying.



4. Flight controller connection diagram









5. Voltage and Currents meter settings

Voltage Meter		
		110 🗘 Scale
Battery	0.6 V	10 Divider Value
		1 🗘 Multiplier Value
Amperage Met	er	
Batten/	0.00 A	470 🗘 Scale [1/10th mV/A]
battery	0.00 A	0 Cffset [mA]

6.PID settings



7. Port setting and receiver setting

HDZERO and HD DJI version

Ports					WIKI
Note: not all comi Note: Do NOT dis	binations are valid. When the flight co able MSP on the first serial port unle	ontroller firmware dete ss you know what you i	cts this the serial port configuration will be re- are doing. You may have to reflash and erase ;	tet. Jour configuration if you do.	
Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 ¥		Disabled v AUTD v	Disabled v AUTO v	Disabled v AUTO v
UARTI	115200 -		Disabled v AUTO v	Disabled v AUTO v	VTX (MSP + D - AUTO -
UART2	115200 ¥		Disabled v AUTO v	Disabled v AUTO v	Disabled v AUTO v
UART3	115200 ¥		Disabled v AUTO v	Disabled v AUTO v	Disabled v AUTO v
UART6	115200 ¥		Disabled v AUTO v	Disabled v AUTO v	Disabled v AUTO v

ESC/M	otor Features		
DSHO	T300 V	ESC/Motor protocol	0
0	MOTOR_STOP	Don't spin the motors when armed	
0	ESC_SENSOR	Use KISS/BLHeli_32 ESC telemetry over a separate wire	
	Bidirectional DSh	ot (requires supported ESC firmware)	0
12	Motor poles (number of magnets on the motor bell)		0
5.5	Motor Idle (%, st	atic)	0

8. Board and gyro sensor alignment

0 🗘 Roll Degrees	1 0 C Pltch Degrees	🗊 0 🜲 Yaw Degrees
	CW 00° First GVRO	
First V GYRO/ACCEL	CW 90° V First GYRO	

9. Barometer Enabled method

If you want to enable Barometer , please connect to betaflight configurator and go to CLI command ,then type the following command:



resource I2C_SCL 2 B10 resource I2C_SDA 2 B11 set baro_bustype = I2C set baro_i2c_device = 2 save

10. ESC and motor settings

1. Plug USB to the computer



2. Visit https://esc-configurator.com and choose correct serial port then connect and click "Read settings"



3. You can change settings and flash new firmware on this site , but all the settings and firmware were pre-install , we don't recommend to change unless the drone

flying not normal.

	. coming	and a company of the second	
			English 1 vsc2zzok 2 Solling/ msc0 6 0 Open for Edictory Open for Edictory Description Description
Note: Connect power to	the ESCs.		
Common Parameters			ESC 1: F-H-49 - Bluejay, 0.19, 488Hz
1025		Moimum Stanup Power (Doost) 🛞	Reversed v Maior Denoise () Flash Perseave to this ESC
		Maanum Slarbp Power (Pretectory) (2)	ESC 2: F-H-40 - Disejey, 0.19, 488/12
Low Dx	•	Demag Compensation (1) RPM Power Protection (Rampup) (1)	Reversed v later freeders (*)
Beacon Settings			E3C 3: F-H-49 - Oberian 0 19 - 4004c
		Deep Strength 🗶 Deacon Strength 🛞	Reversed v Mater Director (B) Flash Fireware to this ESC
10 minutes	×	Beacon Doky 😤	ESC 4: F-H-40 - Blueiny, 0 19, 488-br
Safety Settings			Reversed v morthector (*
28*	×	ESC Power Rating 🛞	Flash Firmware to this ESC
140 C	~	Temperature Protection (2)	

11.Flight controller 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 "BETAFLIGHTF4", 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.

🔛 Zadig			
Device	Options Help		
STM32	BOOTLOADER		• Edit
Driver	STTub30 (v3.0.4.0)	WinUSB (v6.1.7600.16385)	More Information WinUS8 (libusb)
USB ID	0483 DF11	Replace Driver	IbusbK WinUSB (Microsoft)
8 devices	found.		Zadig 2.2.689

If upgrade firmware to betaflight 4.4.x , need to add custom Defines "GYRO_SPI_ICM42688P ACC_SPI_ICM42688P" from build configuration of betaflight configurator otherwise gyro will not working .

Enable Expert Mode				Warning		
Show release candidates	Please do not try to file	sh non-Bet	aflight hardware with this	firmware flasher.		
BETAFLIGHTF4	DO NOT DISCONNECT OF	2 Deard of t	an on your composer with	e nasinig.		
4.4.3 [14-Nov-2023]	 Note: STM32 bootload Note: Auto-Connect in 	ler is stored s always dis	in ROM, it cannot be bricke abled while you are inside f	sti. Irmwore flasher.		
No reboot sequence	Note: Make sure you h	ave a back	ip: some upgrades/downgr	ades will wipe your co	nfiguration.	
Flesh on connect	Note: When flashing b	oards that I	ave directly connected US8	sockets (most newer	boards) ensure you have read t	he USB Flashing section of
Full chip erese	the Betaflight manual.	and have th	e correct software and driv	ers installed		
Manual haudizate 57600 × 0	IMPORTANT: Ensure y	ou flash a fi	e appropriate for your targ	et. Flashing a binary fo	or the wrong target can cause be	ed things to happen.
Core Only	Bull	d Configur	ation			
Radio Protocol		Tel	emetry Protocol			
CR8F	~	0 0	one			~ 0
Other Options		M	ter Protocol			
×Acro Trainer ×GPS ×LED Strip ×OSD (SD) ×OSD (HD) ×F	in IO ×VTX	0 0	SHOT			v 0
Functions Definent						
GYRO SPI ICM260PACC SPI ICM260P	Add	custor	n defines			
	Recovery	Lost com	munication			
If you have lost communication with your board follow these steps to restore c	ommunication:		🕘 🛛 Flash f	irmware	2 Load firmware[online]
Power off				×		
Neara load firmwara file		_	For ARL Made	Park Dominate	Load Discussion (Online)	Load Economic II or
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