Features

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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

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

Package includes

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.
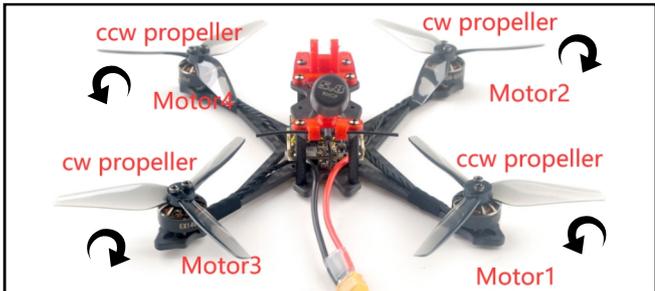
2. Bind procedure

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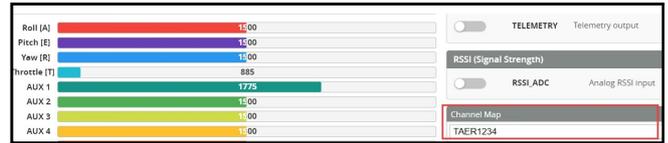
Make sure the VTX band is "OFF" from the vtx administrator, sometimes it would affect VTX or RX quality .

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
2)Prepare your goggles, and make sure that the goggles could receive VTX signal
3)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.

Toggle the AUX1 Switch,the Green LED on the Flight controller will getting to be solid
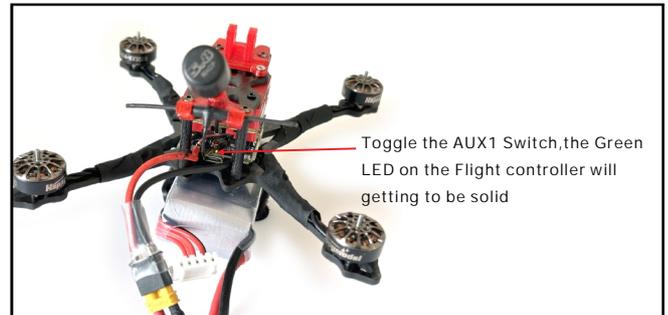
4. Flight controller connection diagram
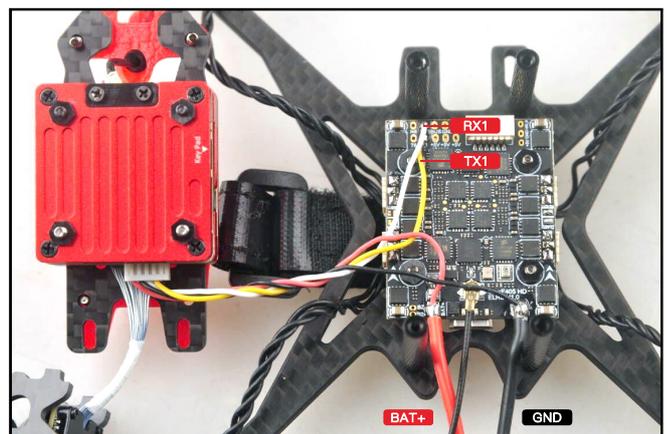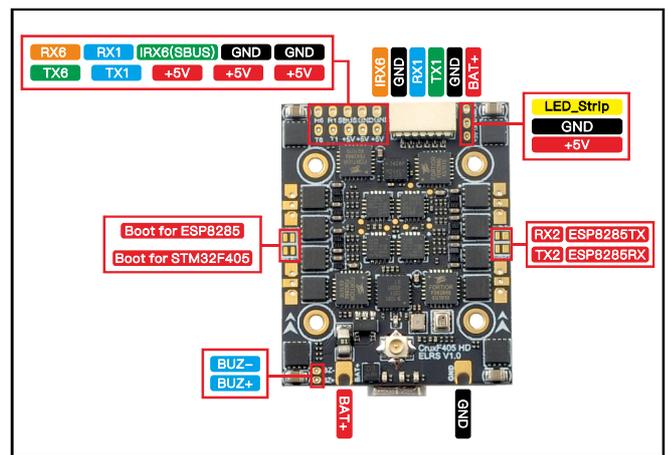
5. Voltage and Currents meter settings

Voltage Meter

		110	Scale
Battery	0.6 V	10	Divider Value
		1	Multiplier Value

Amperage Meter

Battery	0.00 A	470	Scale [1/10th mV/A]
		0	Offset [mA]

6.PID settings

PID Profile Settings	Rateprofile Settings	Filter Settings

PID profile name

	Proportional	Integral	D Max	Derivative	Feedforward
Basic/Acro					
ROLL	67	120	40	40	180
PITCH	70	126	45	45	187
YAW	67	120	0	0	180

Mode: RPY

		Low	Default	High	
Damping: D Gains	0.9				
Tracking: P & I Gains	1				
Stick Response: FF Gains	1				
Dynamic Damping: D Max	0				
Drift - Wobble: I Gains	1				
Pitch Damping: Pitch:Roll D	1				
Pitch Tracking: Pitch:Roll P, I & FF	1				
Master Multiplier:	1.5				

7. Port setting and receiver setting

HDZERO and HD DJI version

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 so.

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200		Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	115200		Disabled AUTO	Disabled AUTO	VTX (MSP + D) AUTO
UART2	115200		Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	115200		Disabled AUTO	Disabled AUTO	Disabled AUTO
UART6	115200		Disabled AUTO	Disabled AUTO	Disabled AUTO

ESC/Motor Features

DSHOT300	ESC/Motor protocol	
MOTOR_STOP	Don't spin the motors when armed	
ESC_SENSOR	Use KISS/BLHeli_32 ESC telemetry **over a separate wire**	
Bidirectional DShot (requires supported ESC firmware)		
12	Motor poles (number of magnets on the motor bell)	
5.5	Motor Idle (%, static)	

8. Board and gyro sensor alignment

Board and Sensor Alignment

0 Roll Degrees	0 Pitch Degrees	0 Yaw Degrees	
First GYRO/ACCEL	CW 90° First GYRO		
Default MAG Alignment			

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:

- Video Transmitter
- Sensors
- Tethered Logging
- Blackbox
- CLI

Write your command here. Press Tab for AutoComplete.

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.

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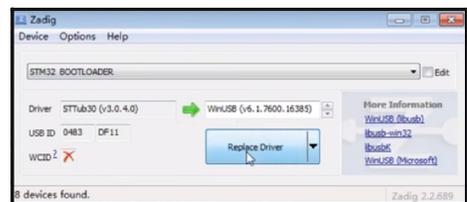
If upgrade firmware to betaflight 4.4.x , need to add custom Defines "GYRO_SPI_ICM42688P ACC_SPI_ICM42688P" from build configuration of betaflight configurator otherwise gyro will not working .