

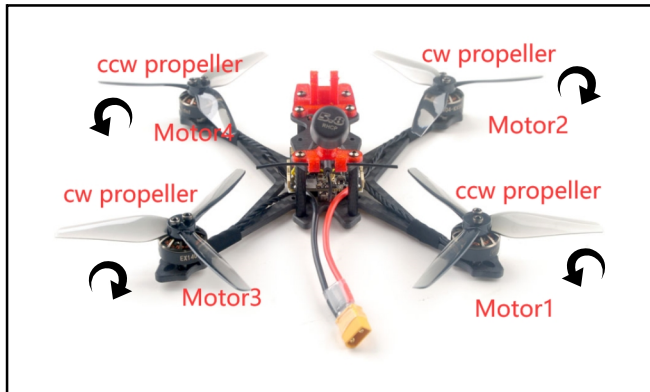
Features
Ultra-lightweight 3.5-inch BNF FPV Freestyle Drone
HD video transmission and analog video transmission are optional
Integrated ExpressLRS SPI receiver or Frsky SPI D8/D16 receiver
High efficiency EX1404 power system
Can be equipped with Naked Gopro or SMO4K
Support 3-4S battery 4S 750mah battery is recommended, maximum support 4S 1100mah

Specifications
Brand: HappyModel
Product name: Crux35/Crux35 HD
Wheelbase: 150mm
Weight: Crux35 87gram/Crux35 HD 108gram
Size: 130mmx130mmx45mm(without propellers)
Receiver option: SPI ExpressLRS 2.4GHz/SPI Frsky D8/D16 (S-FHSS compatible)
Camera option: HD version Nebula+Vista/Analog version Ant+OVX303 VTX
Flying time: 9min~15min 4s 750mah battery

Package Includes		
Item Name	Crux35	Crux35 HD
Crux35 Frame	1	1
Option1: ELRS X1 flight controller	1	1
Option2: CrazyF411 flight controller		
CaddxFPV Digital HD Camera Nebula Nano Kit	0	1
Analog FPV Camera Caddx Ant	1	0
HappyModel OVX303 5.8G analog VTX	1	0
HappyModel EX1404 KV3500 brushless motor	4	4
HQProp T3.5X2X3Grey (4cw+4ccw)	1	1
Screw Driver	1	1
Buckle Velcro for battery	1	1

### 1. Install propeller and mount the antenna holder

Default Propeller installation of 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.



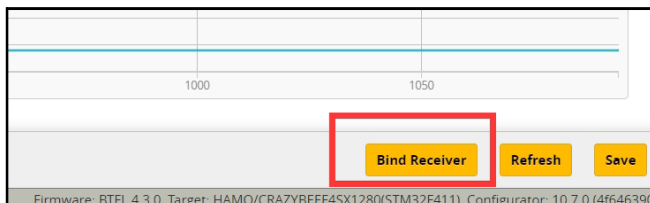
### 2. Bind procedure

Plug the USB and go to the CLI command tab from the Betaflight configurator, then type "Bind\_rx", the red LED will get to be solid, and it means the receiver is in bind mode. Make your radio transmitter get into bind mode, the red led would shining slowly if bound successful.

```

Entering CLI Mode, type 'exit' to return, or 'help'
#
# Building AutoComplete Cache ... Done!
#
# Bind_rx
Binding...
# save
  
```

Another way to get bind with the radio : Power the flight controller by connecting USB. And open Betaflight Configurator(Latest version) , enter to the "receiver" interface, and then click"Bind Receiver".



It should be noted that when you use some new version of Access remote controller to run ACCSTD16 mode for binding, even if the binding is successful, the red LED will not flash slowly, you need to manually enter "save" from the CLI command of the configurator to finished the binding procedure.

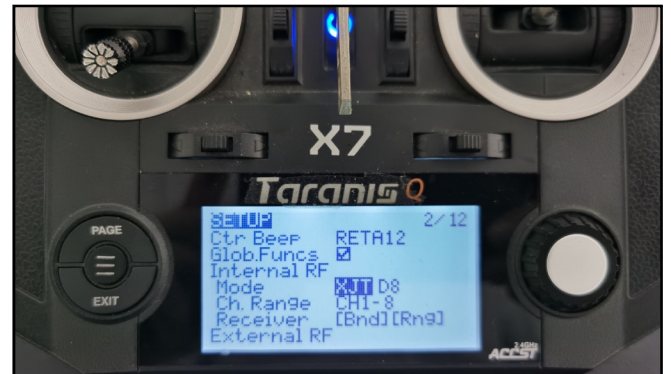
Notice:

Frsky\_D protocol is for D8 mode(Default setting is D8 mode out of factory)

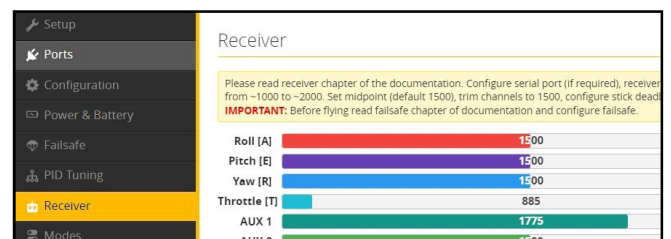
Frsky\_X protocol is for Frsky ACCST D16 mode,

Frsky\_X\_LBT is for EU-LBT Frsky ACCST D16 mode

S-FHSS protocol is for Futaba S-FHSS mode



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



### 3. Arm/Disarm the Motor

1)Turn on your radio transmitter and connect the battery to the Crux35. Then place Crux35 horizontally on the ground. We recommend 4S 750mah or 4S 850mah Li-po battery for Crux35 and Crux35 HD

2)Prepare your goggles, and match the channel with the VTX\_table

VTX Table

6

Number of bands

8

Number of channels by band

Name	Letter	Factory	1	2	3	4	5	6	7	8	
BOSCAM_A	A		5895	5845	5825	5805	5785	5765	5745	5725	Band 1
BOSCAM_B	B		5733	5752	5771	5790	5809	5828	5847	5866	Band 2
BOSCAM_E	E		5705	5685	5665	5645	5625	5605	5585	5565	Band 3
FATSHARK	F		5740	5760	5780	5800	5820	5840	5860	5880	Band 4
RACEBAND	R		5658	5695	5732	5769	5806	5843	5880	5917	Band 5
LOWRACE	L		5333	5373	5413	5453	5493	5533	5573	5613	Band 6

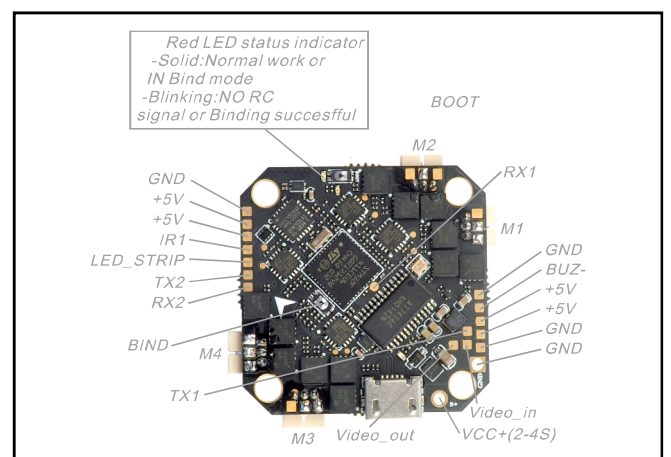
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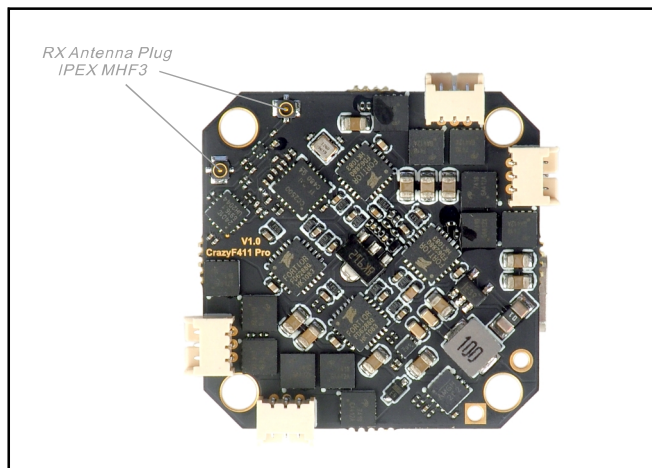
Number of power levels

1	2	3	4	5	
1	2	14	20	26	Value
0	RCE	25	100	400	Label

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.

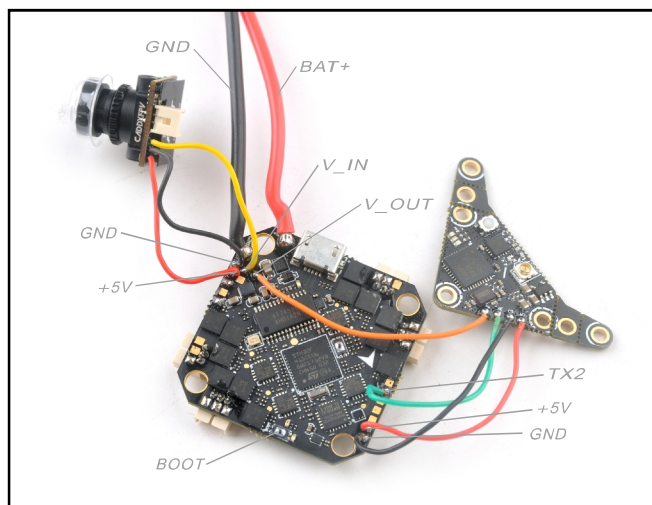
### 4. Flight controller connection diagram



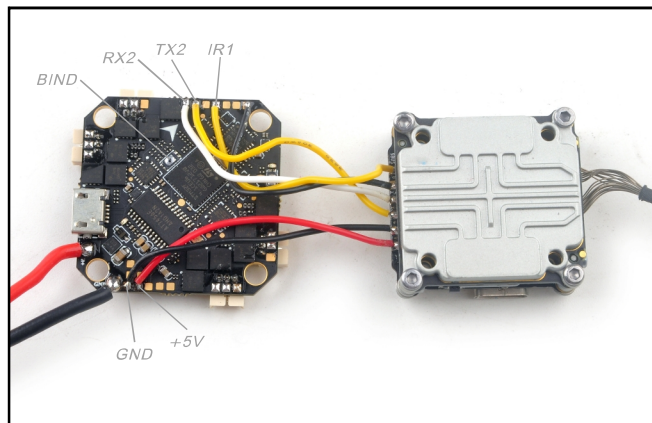


## 5. Electronic hardware connection diagram

### Analog version



### HD version



## 6. Some settings of Betaflight configurator

### Analog version

Ports					
<p>Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.</p> <p>Note: Do <b>NOT</b> 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.</p>					
Identifier	Configurations/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 ▾	VTX (TBS Sm) ▾ AUTO ▾

### HD version

Ports					
<p>Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.</p> <p>Note: Do <b>NOT</b> 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.</p>					
Identifier	Configurations/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 checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾

## If you want to work with DJI Radio, please setting like the following steps

Ports					
<p>Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.</p> <p>Note: Do <b>NOT</b> 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.</p>					
Identifier	Configurations/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 checked="" type="checkbox"/> 115200	<input 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.

SBUS
Serial Receiver Provider

## Voltage and Currents meter settings

**Voltage Meter**

Battery
0.6 V

110
Scale

10
Divider Value

1
Multiplier Value

**Amperage Meter**

Battery
0.00 A

470
Scale [1/10th mV/A]

0
Offset [mA]

## PID settings

**PID Profile Settings**
Rateprofile Settings
Filter Settings

	Proportional	Integral	D Max	D Min	Feedforward
ROLL	53	95	41	33	90
PITCH	50	90	43	35	95
YAW	55	95	0	0	90

Note: Sliders are disabled because values were changed manually. Clicking the 'Enable Sliders' button will activate them again. This will reset the values and any unsaved changes will be lost.

Enable Sliders

**Angle/Horizon**

	Strength	Transition
Angle	50	
Horizon	50	75
	Angle Limit	
	55	

## 7. Analog version VTX Bands and Channels setup

### Frequency and channel frequency table:

FR \ CH	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
BOSCAM_A	5865M	5845M	5825M	5805M	5785M	5765M	5745M	5725M
BOSCAM_B	5733M	5752M	5771M	5790M	5809M	5828M	5847M	5866M
BOSCAM_E	5705M	5685M	5665M	5645M	5625M	5605M	5585M	5565M
FATSHARK	5740M	5760M	5780M	5800M	5820M	5840M	5860M	5880M
RACEBAND	5658M	5695M	5732M	5769M	5806M	5843M	5880M	5917M
LOWRACE	5333M	5373M	5413M	5453M	5493M	5533M	5573M	5613M

## There are 2 ways to switch the vtx channels:

- If we need to use Channel 5705 then we should Go to Betaflight CLI, type the command:  
Set VTX\_band=3  
Set VTX\_channel=1  
save
- Disarm the Crux35 and then move the stick of the transmitter (THR MID+YAW LEFT+PITCH UP) to enter OSD Menu, Enter to Features, then enter to VTX SA to set VTX Band and channel

