EACHINE

TURBINE

QX70

Micro FPV Racing Drones

Specification

Brand Name: Eachine	
Wheelbase: 73mm	
Fly Weight: 54g (with battery)	
Size: 98*98*75mm	
Flight controller: SP RACING F3_EVO_Brushed	
Firmware version: Cleanflight 1.13.0	
Coreless motor: 8520CW/CCW	
Propeller: 40mm 4-Blade CW/CCW	
Receiver option:	
Version1: Frsky compatible SBUS receiver	
Version2: Flysky compatible PPM receiver	
Version3: DSM2/DSMX Compatible Satellite receiver	
Camera: 520TVL HD CMOS 1/4 inch Camera	
AV Wireless Transmitter: 5.8g 25mw 48ch	
Battery: 3.7V 600mah Li-po	
Video format : PAL/NTSC	
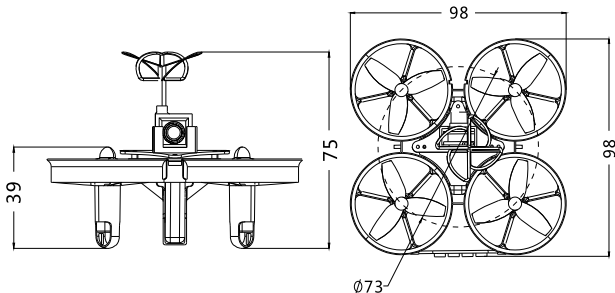
Components	QTY	FRSKY	FLYSKY	DSM2/DSMX	Part NO.
QX70 Aircraft frame	1	Include	Include	Include	QX701
8520 coreless Motor	4	Include	Include	Include	QX95CW/CCW
F3_EVO_BRUSHED Built-in Frsky receiver	1	Include			QX702
F3_EVO_BRUSHED Built-in Flysky receiver	1		Include		QX702
F3_EVO_BRUSHED Built-in DSM2/DSMX receiver	1			Include	QX702
5.8G 48CH 25MW VTX with 520TVL Camera	1	Include	Include	Include	QX70V
Camera mount	1	Include	Include	Include	QX703
Propellers(2pcs cw+2pcs ccw)	2	Include	Include	Include	FB90P
3.7V 600mah Lipo battery	1	Include	Include	Include	QX912
USB Charger	1	Include	Include	Include	QX95C
Propeller Disassembly tool	1	Include	Include	Include	FB907
USB cable	1	Include	Include	Include	QX70C
LED Rear light	1	Include	Include	Include	QX95L

⚠ CAUTION: Read and follow all instructions and warnings in the manual prior to setup or use. Failure to operate the product correctly can result in damage to the product, personal property and/or injury. This is a sophisticated hobby product. It must be operated with caution and common- sense and requires some basic mechanical ability.

1.General Product Safety Precautions

- As the user of this product, you are responsible for operating it safely, not endangering yourself and others,or damaging the product or the property of others.
- Operate your product in open spaces away from people and property.
- Never operate your product with damaged electrical components.
- Keep the transmitter powered on while model is powered on.
- Let parts cool after use before touching, motors will get hot in use.
- Remove batteries after use, as applicable.
- Keep all batteries, chemicals, small parts and anything electrical out of the reach of children.
- Avoid water exposure to this product. Keep parts dry.
- Keep moving parts clean.

2. 5.8G VTX channels list

FR / CH		FR					
		GA	GB	GC	GD	GE	GF
CH	CH1	5740MHz	5705MHz	5865MHz	5658MHz	5733MHz	5362MHz
	CH2	5760MHz	5685MHz	5845MHz	5695MHz	5752MHz	5399MHz
	CH3	5780MHz	5665MHz	5825MHz	5732MHz	5771MHz	5436MHz
	CH4	5800MHz	5645MHz	5805MHz	5769MHz	5790MHz	5473MHz
	CH5	5820MHz	5885MHz	5785MHz	5806MHz	5809MHz	5510MHz
	CH6	5840MHz	5905MHz	5765MHz	5843MHz	5828MHz	5547MHz
	CH7	5860MHz	5925MHz	5745MHz	5880MHz	5847MHz	5584MHz
	CH8	5880MHz	5945MHz	5725MHz	5917MHz	5866MHz	5621MHz

NTSC/PAL Switch still touch up 2S; Short touch switch to reverse video display

Frequency group A~F selected still touch up to 2S; Channel ch1~ch8 selected with short touch.
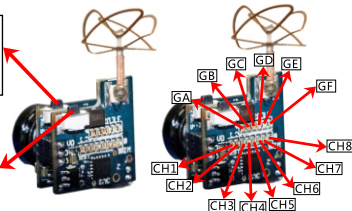
3.Charge the Flight Battery

⚠ NOTICE: Inspect the battery to make sure it is not damaged e.g., swollen, bent, broken or
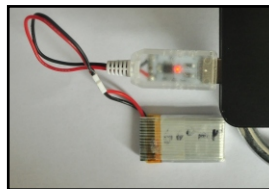   punctured. Charge only batteries that are cool to the touch and are not damaged.

Charging with USB Li-Po Charger
Connect the battery to the USB Li-Po Charger,
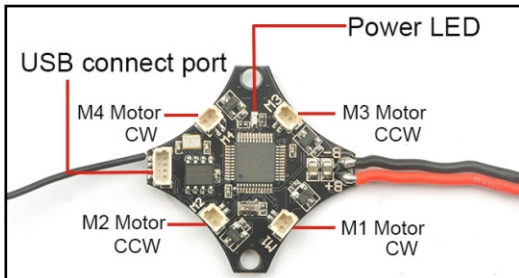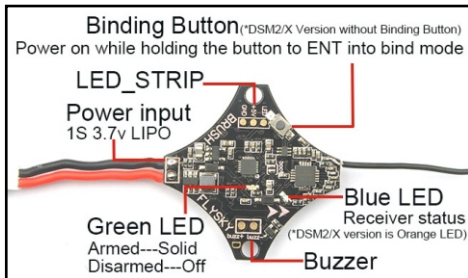then plug into the USB port of your computer
LED STATUS:
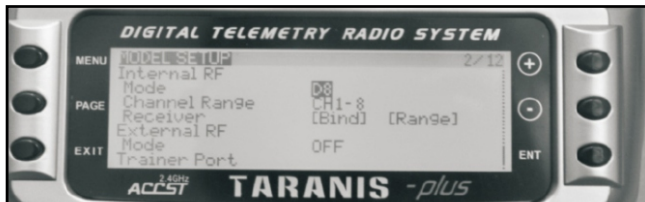Solid Red LED --Charging
Solid Blue LED --Charge Complete
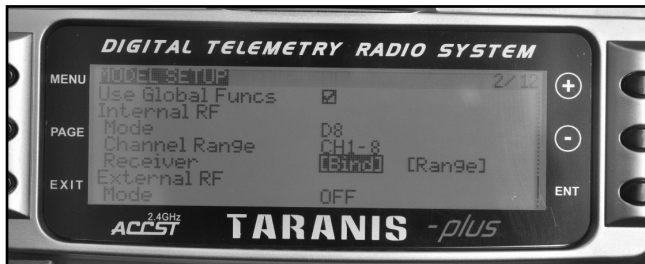

4.Flight controller connection diagram

Binding Button(*DSM2/X Version without Binding Button)
Power on while holding the button to ENT into bind mode
LED_STRIP
Power input
1S 3.7v LIPO
Green LED
Armed---Solid
Disarmed---Off
Buzzer
Blue LED
Receiver status
(*DSM2/X version is Orange LED)

Power LED
USB connect port
M4 Motor
CW
M3 Motor
CCW
M2 Motor
CCW
M1 Motor
CW

5.(Frsky version)Binding Procedure

1.Turn on the transmitter , select D8 mode for the Receiver.

2.Connect the battery to the Turbine QX70 while holding the binding button, the Blue LED will get be solid, this indicates the receiver get into the binding mode.
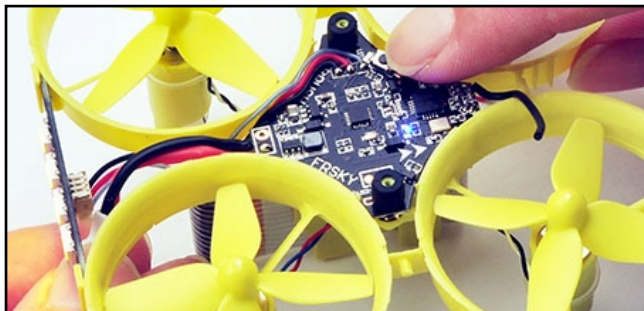
3.Move to the Receiver [Bind] option in the transmitter and ENT to Bind with the receiver, The transmitter beeps.

4. The Blue LED on the board will turning off, this indicates that the bind process was successful. Reconnect the battery for the flight controller, and the Blue LED on the receiver is solid again. It means connection is established with your transmitter

The Blue LED turns off
indicate binding successfully
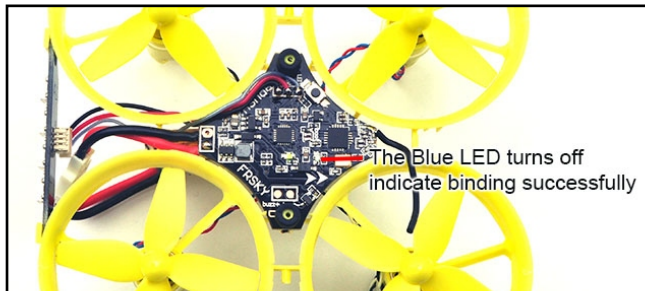
5.We have configured the Frsky receiver before shipping. If you flashed the firmware ,Please setup as the following steps: Enable Seria_RX for UART2 and Set Receiver mode RX_SERIAL ,Select SBUS in Cleanflight or Betaflight Configurator.

6.(Frsky version)Set the switch to ARM/DISARM the motor

1.Turn on the transmitter and move to the MIXER interface, Set "SA" or "SB" switch etc. for Ch5 to ARM/DISARM the motor.
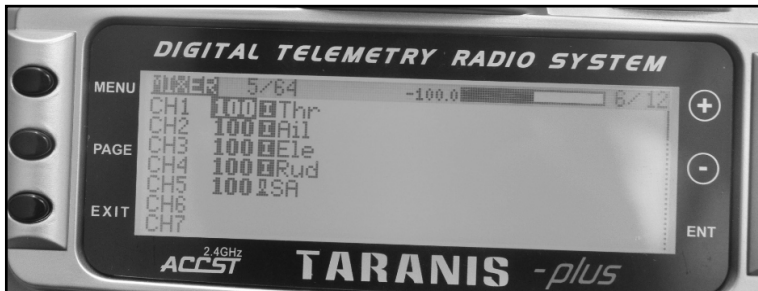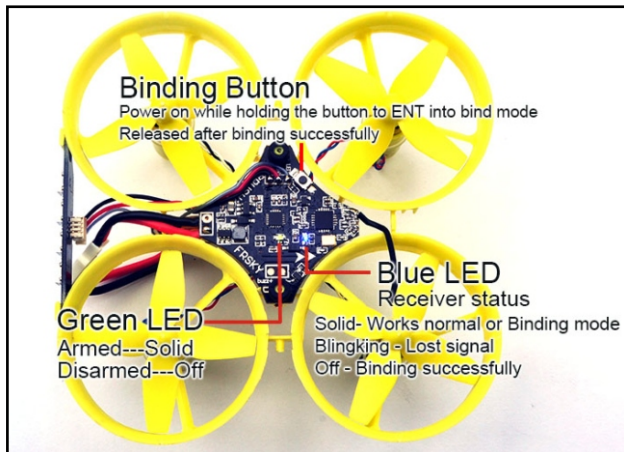

2.The QX70 Frsky Version BNF was set AUX1(CH5) to ARM/DISARM the motor before shipping, you can also customize it.

3.The default receiver channel map for frsky version is TAER1234, please ensure your transmitter is matched with it, otherwise it can't be armed.

Channel Map	RSSI Channel
TAER1234 ▾	Disabled ▾

4.Toggle the Switch and the green LED on the flight controller will get be solid, this indicate the motor was armed ,enjoy yourself now !

Binding Button
Power on while holding the button to ENT into bind mode
Released after binding successfully

Blue LED
Receiver status
Solid- Works normal or Binding mode
Blingking - Lost signal
Off - Binding successfully

Green LED
Armed---Solid
Disarmed---Off

7.(Flysky Version)Binding procedure

1.Turn on your radio and Set receiver mode to AFHDS, then get your radio into binding mode(Take FLYSKY I6 as an example)
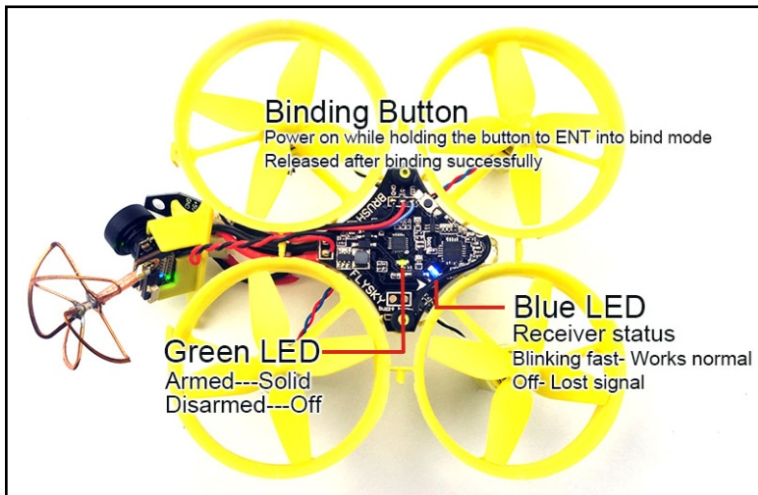

1.Select RX setup to AFHDS Mode

2.Turn on the transmitter while holding the bind button

www.eachine.com

2.Connect the battery to the QX70 while holding the Binding button on the board ,the Blue LED will getting to be solid first and turn off for a second ,then it will getting to be solid again , this indicates binding successfully.

3.Re-power for the QX70, the Blue LED will blinking fast, this indicate the connection was established between the receiver and the transmitter, it works normal.

4.We have configured the Flysky receiver before shipping. If you flashed the firmware ,Please set receiver mode to be RX_PPM in Cleanflight or Betaflight Configurator

## 8.(Flysky Version)Set the switch to ARM/DISARM the motor

1.Turn on the transmitter and move to the AUX. Channels interface, Set "SWA" or "SWB" switch etc. for CH5 to ARM/DISARM the motor, Take FLYSKY I6 as an example.

2.The Turbine QX70 was set AUX1(CH5) to ARM/DISARM the motor before shipping ,and you can also customize it with Cleanflight or Betaflight Configurator. The default receiver Channel map for Flysky Version is AETR1234, please ensure your transmitter is matched with it, otherwise it can't be armed.

Channel Map	RSSI Channel
AETR1234	Disabled

3.Turn on the transmitter and then power on for the QX70, Toggle the switch and the green LED on the flight controller will get be solid, this indicate the motor was armed, enjoy the flight now but be careful !

Green LED is solid
This indicate the motor is armed
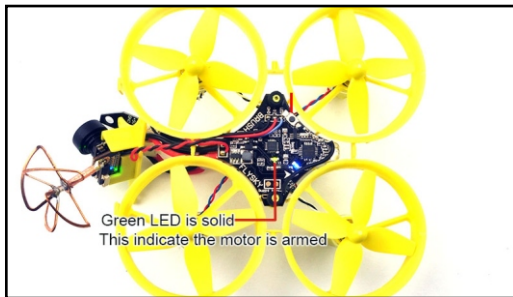
9.(DSM2/DSMX Version)Binding procedure and Satellite setup

1. The Turbine QX70 DSM2/DSMX Version is integrate a DSM2/DSMX compatible Satellite receiver. The binding procedure is like following:

● Connect flight controller to computer and open Cleanflight or Betaflight configurator, From CLI tab type: "set spektrum_sat_bind = 9" for DSMX or "set spektrum_sat_bind = 5" for DSM2.

● Type "save" and after Flight controller reboot remove USB cable (=Power off the board).

● Wait a sec and reconnect the USB cable. After cold start satellite led(Orange color LED) should start blinking and transmitter should be turned on while pressing the bind button(DX9 is get into the system setup and select bind option).

● After binding satellite the orange led should be solid. Connect Cleanflight or Betaflight and use receiver tab to test that satellite is working correctly.

● 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 satellite doesn't go back to binding mode when the flight controller is repowered again.


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

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

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

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

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

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

*Cautions The orange LED is blinking slowly after binding successfully with some DSM2 Radio

2.The Turbine QX70 was set AUX1(CH5) to ARM/DISARM the motor before shipping ,and you can also customize it with Cleanflight or Betaflight Configurator. The default receiver Channel map for DSM2/DSMX Version is TAER1234, please ensure your transmitter is matched with it, otherwise it can't be armed.
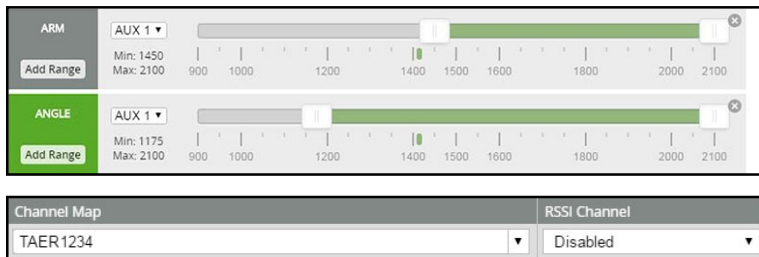
3.Turn on the transmitter and set a switch for CH5 to ARM/DISARM the motor, some transmitter like SPECKTRUM DX6/DX6I, the default CH5 is GEAR Switch.

4.Turn on the transmitter and then power on for the QX70, Toggle the switch and the green LED on the flight controller will get be solid, this indicate the motor was armed, enjoy the flight now but be careful !

5.We have configured the satellite receiver before shipping. If you flashed the firmware ,Please setup as the following steps: Enable Seria_RX for UART3 and Set Receiver mode RX_SERIAL ,Select SPEKTRUM1024 for DSM2 Radio and Select SPEKTRUM2048 for DSMX Radio in Cleanflight or Betaflight Configurator.

⚠️ If you flashed the firmware or erase chip, please first do the bellowing procedure , don't connect the battery otherwise the motor will auto-spin

1.Cleanflight: Go to the CLI tab, type "Set motor_pwm_rate=1000" ,then enter save

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

# set motor_pwm_rate=1000
motor_pwm_rate set to 1000
# save
```
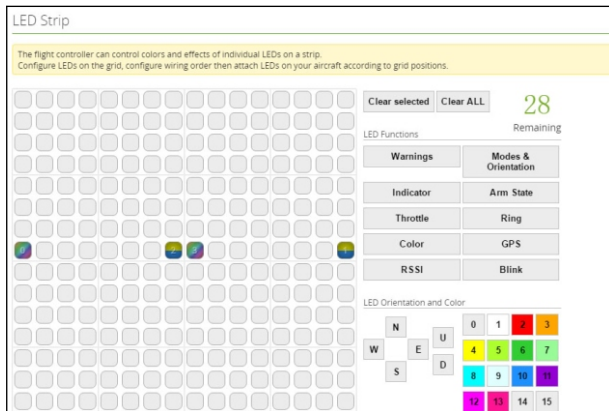
2.Betaflight: Go to Configure Tab and set ESC/Motor protocol to BRUSHED

ESC/Motor Features

BRUSHED ▼	ESC/Motor protocol
⚪	Motor PWM speed Separated from PID speed
🟠 MOTOR_STOP	Don't spin the motors when armed
🟠 Disarm motors regardless of throttle value (When arming via AUX channel)	

*This step is in order to avoid motor auto-spinning when connect the battery

10.LED Strip function

The flight controller of QX70 can control colors an effects of individual LEDS on a strip. The default setup is like this, you can also customize by yourself effects.

11.LED Strip status

	Disarm
	Armed
4 LEDS Blinking Fast	Brake
	Throttle
2 LEDS Blinking Fast	Roll left
2 LEDS Blinking Fast	Roll right

www.eachine.com