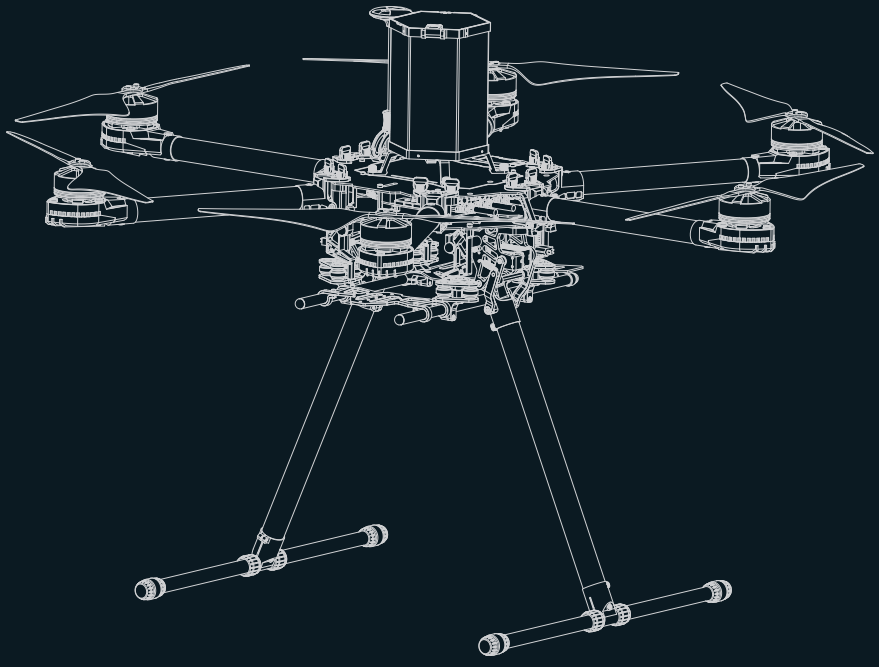
QR X900

Multi-function HExAcopter

QUICK START GUIDE V1.0



www.walkera.com

Contents

1.0 Important Statement

Thank you for purchasing the QR X900. Please read it carefully before you use it. Once used, it shall be deemed to have approved and recognized the entire contents.

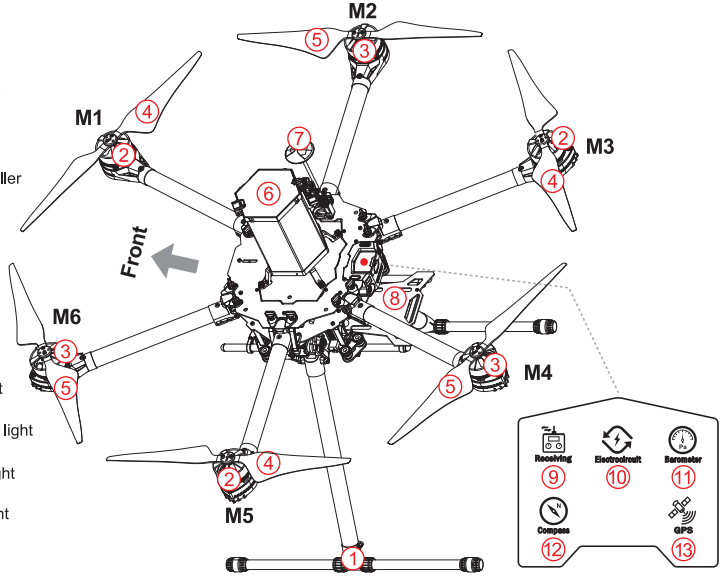
This drone is provided to those adults who have the experience on operating the model planes. the users should fly the drone within the legal and safe place. our company will not responsible for the accidents that caused by wrong operation and or improper control after the drones sold.

The installation instruction should be followed strictly. Otherwise the Walkera will not bear any loss and legal responsibility due to the improper operation, assembling and retrofit.

2.0 Get to know your QR X900

- QR X900 is a level 900, professional 6-axis drone for aerial photo.
- The new industrial and structure design, retractable landing gear, folding arm and GPS folding seat can bring you excellent portability and user experiences.
- The propellers, arm fixed-tube and skid landing supporting tube are used with carbon fiber composite material, which is superior toughness and rigidity.
- Module circuit design and intelligent monitor system could inspected automatically the circuit, control signal, GPS, compass, barometer
- During the flight, if any of the motor stopped and the drone could land safely with stable and reliable flight control appliance.
- Retractable landing gear, a high powered suppressing vibration and stable gimble structure to bring you the aerial photo perspective in all direction and high-quality shooting.
- It is easy to DIY with folding arm and change from 4-axis to 6-axis; 6-axis to 4-axis.

1. Skid landing
2. Counterclockwise motor
3. Clockwise motor
4. Counterclockwise propeller
5. Clockwise propeller
6. Drop safe
7. GPS
8. Battery install position
9. Receiving detecting light
10. Electrocircuit detecting light
11. Barometer detecting light
12. Compass detecting light
13. GPS detecting light



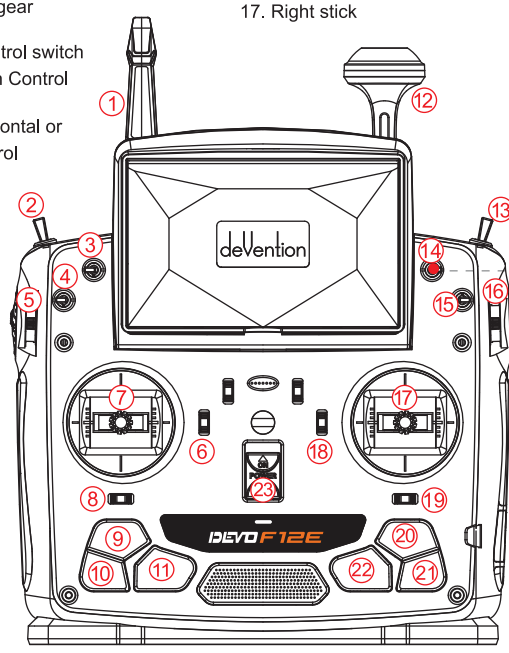
3.0 Get to know your DEVO F12E Radio (black version)

Integrated with 5.8G image transmitting system, it's convenient to receive aerial photos, and equipped with swithes for GPS Hold Mode, Round Fly Mode, Hyper IOC mODE, One key Return To Home, control Drop safe / Gimbal/ Landing skid functions, easy to operate.

Mode 2 (Throttle stick on the left)	Left stick	THRO/RUDD stick
	Right stick	ELEV/AILE stick
	Left trim	THRO trim
	Right trim	ELEV trim
Mode 1 (Throttle stick on the right)	Left stick	ELEV/RUDD stick
	Right stick	THRO/AILE stick
	Left trim	ELEV trim
	Right trim	THRO trim

(0) Manual Mode	(1) GPS-hold Mode	(2) Return TO Home
		
MIX Switch to “0”	MIX Switch to “1”	MIX Switch to “2”

1. 2.4G TX antenna
2. RUDD D/R - Drop Safe switch
3. GEAR - Landing Gear Retract Switch and Deploy landing gear
4. ELEV D/R - IOC control switch Inteligent Orientation Control
5. AUX5 - Gimbal horizontal or ROLL control
6. Left trim
7. Left stick
8. RUDD trim
9. UP key
10. DN key
11. EXT key
12. 5.8G RX antenna
13. FMOD - Round flight mode
14. MIX(Control Mode Switch)
15. AILE D/R - Not used
16. AUX6 - Gimbal pitch control
17. Right stick
18. Right trim
19. AILE trim
20. R key
21. L key
22. ENT key
23. Power switch



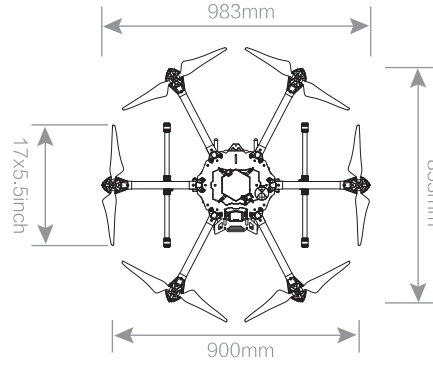
Warmth Warning:

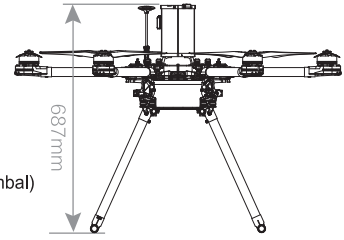
(1) The 2.4G TX antenna and 5.8G RX antenna must be installed.

(2) Please refer to DEVO F12E user manual.

4.0 Aircraft specifications

Main Rotor Dia.:	17x5.5inch
Symmetric motor wheel base:	900mm
Overall (L x W x H):	983x853x687mm
Weight:	6950g(Battery included)
Takeoff Weight:	＜10000g
Transmitter:	DEVO-F12E(black version)
Main Controller:	FCS-RX705
Brushless Motor:	WK-WS-60-001(KV350)
Brushless ESC:	QR 900(R/B)
Battery:	22.2V 16000mAh 15C Li-Po
Flight Time:	12~14 minutes(with camera and gimbal)
Working environment:	–10℃~ +40℃





5.0 Attention before flight

(1) This product is suitable for those adults who have model plane operating experience.

(2) Do not fly in bad weather, such as windy, snowy, foggy etc..

(3) Select the open, no-tall-buildings area. Extensive use of steel buildings will affect the compass work, blocking the GPS signal, causing worse on the aircraft positioning or even not able to locate.

(4) Please keep away from highly spining parts(such as propellers and motors).

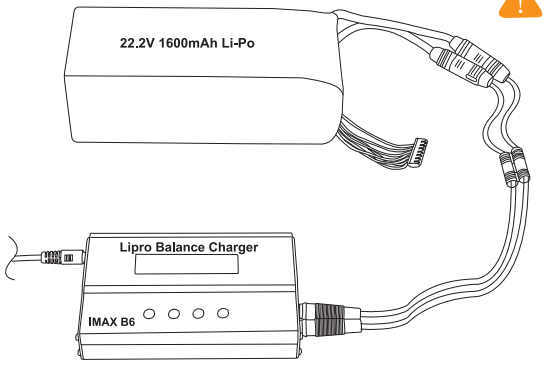
(5) Please keep away from obstacles, people, water and so on.

(6) Do not fly it in where there is high-voltage lines, communication base stations or radio towers, in order to avoid signal interference.

(7) Don't fly in no-fly zone according to the local laws and regulations.

(8) Flight performance will be effected with environment when you fly it with altitude of 4500 meters, as the battery and gravity system will be influenced.

6.0 Charge the battery



- **For safety, please connect/disconnect the power supply according to the guide. When connect the power supply, please connect the black plug first, then connect the red plug; When Power cuts, please pull out the red plug first, and then pull out the black plug.**

The operation instructions are as follows:

After connecting to the power, the screen will show main menu: Program Select LiPo BATT

→

Press Start / Enter to confirm, the screen will show LiPo CHARGE 5.0A 22.2V(6S)

→

Press Inc., the screen will show LiPo BALANCE 5.0A 22.2V(6S)

↓

Press Start / Enter, getting into current setting, then press Dec. or Inc. to set the current amount to 5.0A

←

Press Start / Enter, to get into voltage setting and then press Dec. or Inc. to set the voltage amount to 22.2V(6S)

←

Press start / Enter button for 3 seconds,the screen will show R: 6SER S: 6SER and will switch between CANCEL(STOP) and CONFIRM(ENTER)

↓

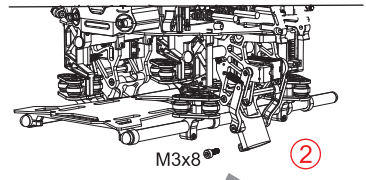
Press Start/ Enter to start charging

→

Remarks: For more details, PLZ check the manual of iMAX B6 charger.

7.0 Assemble

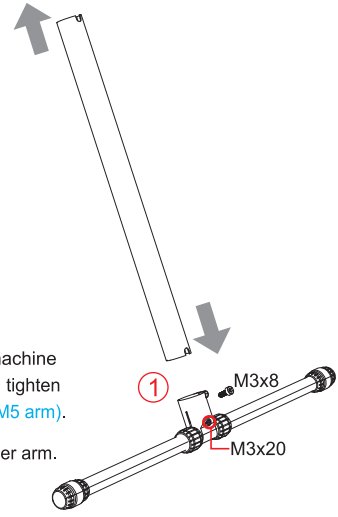
7.1 Install skid landing



① Install the skid landing mounting pipe to lower skid landing fixing block, and tighten up M3x8/M3x20 screws

② Install the skid landing mounting pipe to upper skid landing fixing block, and tighten up M3x8 screws.

③ Right and left skid landing install method are same



⚠ **● Ensure the skid landing mounting pipes insert the upper and lower skid landing mounting blocks.**

7.2 Install aircraft arm

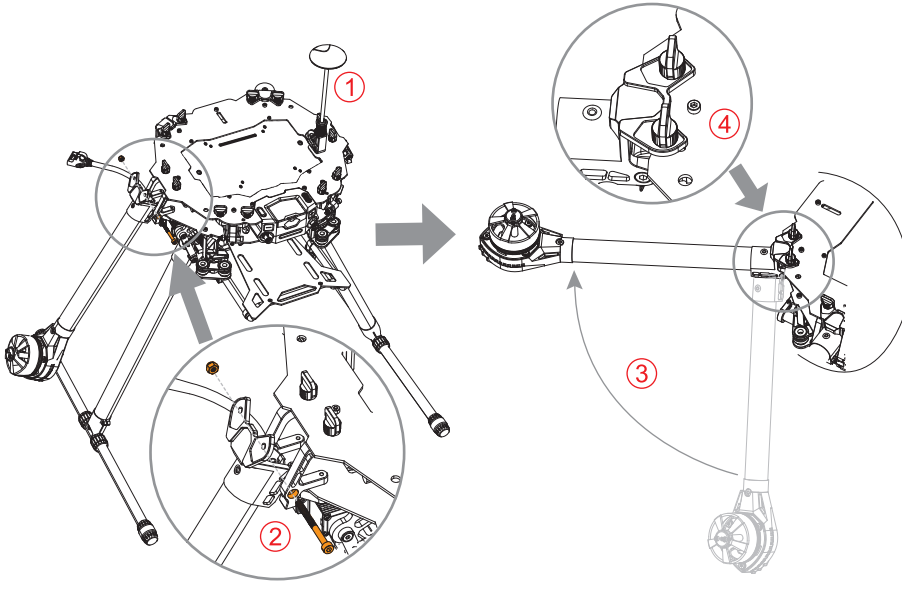
① Stand up GPS mounting pipe.

② Insert the arm into centre frame, adjust the position, Make the machine arm screw mounting holes fit to the center frame screw holes, and tighten up the M4x30 screws(M1,M3,M4,M6 arm) and M4x45 screws(M2, M5 arm).

③ Take out the center knob screw on the shelf, tractor from living under arm.

④ Tighten Knob screw to the center of the shelves.

⚠ **● The machine arm M1 ~ M6 must correspond to the load center of M1 ~ M6 position.**

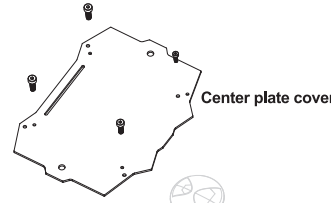


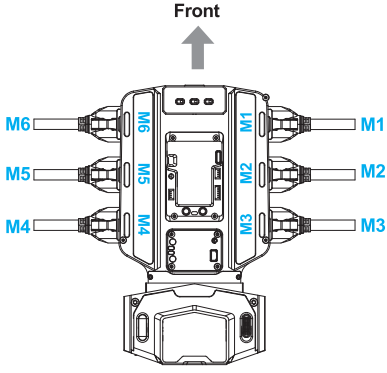
7.3 Connect brushless motor line

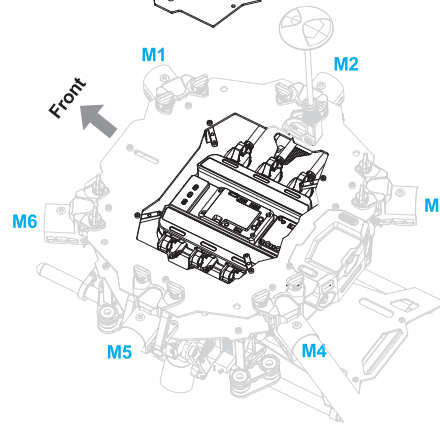
① Unscrew four M2.5x6 screw from center plate cover, remove the center plate cover.

② Brushless motor speed controller line insert according to lable.

③ Install the center plate cover again, tighten up four M2.5x6 screw.





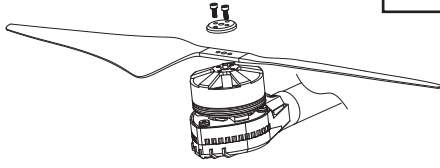


7.4 Install the propeller

① Unscrew the screw M3x12, and take off the propeller grips.

② Install the Propeller to the aircraft arm according to the direction of arrow, and tighten the propeller and propeller with screw M3x12.

- **M2/M4/M6 are clockwise direction, please install the clockwise propeller .**
- **M1/M3/M5 are counterclockwise direction, please install counterclockwise propeller .**
- **Please make sure the direction of propeller and arrow are same.**

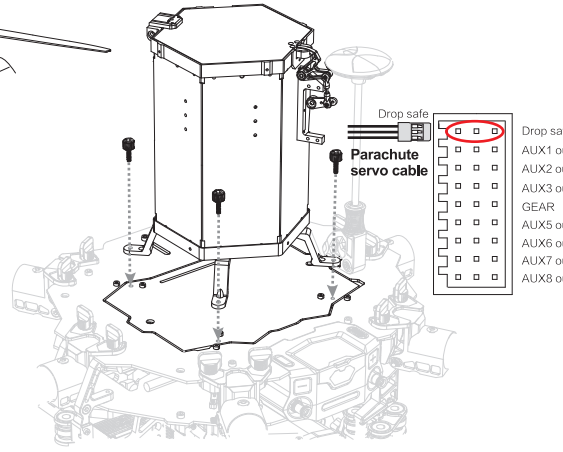


7.5 Install the dropsafer

(if equipped with this device)

① Install the dropsafer into the hole of the center board, fixed with screw M3x10.

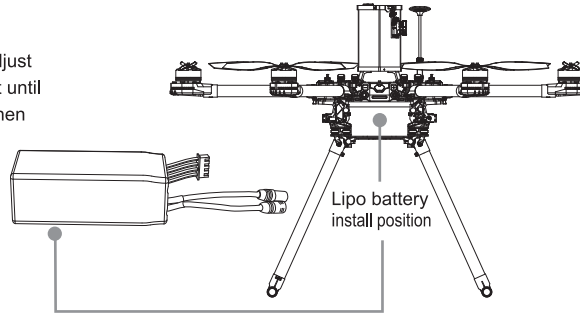
② Put the dropsafer servo cable into Drop safe channel of the power box.



7.6 Install the battery

Put the lipo battery into aircraft,and adjust centre-of-gravity positon of the aircraft until the head and tail are keep balanced,then fixed the battery with balt.

Attention: In order to keep safely, when turn on the power, please insert the black plug first, and then insert the red plug.when cut down the power, please pull out the red plug first, and then pull out the black plug.



8.0 Ready for flight

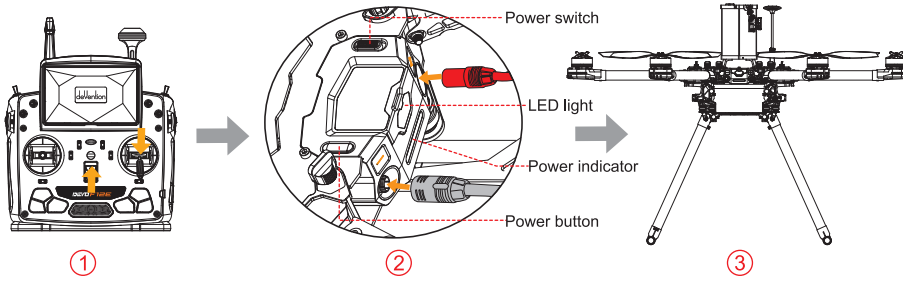
Put the model plane to outdoor an open area, and the user face tail of it.

8.1 Binding of the QR X900

① **Put all the function switches to the 0 position, put all trims/knobs to the Middle position,** move the throttle to the lowest position, then turn on the radio.

② Keep the aircraft at the horizontal position, contact the aircraft battery.(Insert the black cable to "--"pole first, and then insert the red cable to "+"pole), turn the power switch to "ON"position,and keep press on the power switch for 3~5s till the green LED bright.

③ Within approx. 40 sec. the red LED light will stop flashing indicating that the code binding has finished.

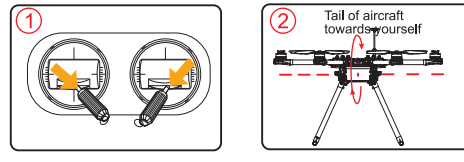


8.2 Compass Calibration

When come to a new flying ground or change the flying ground far away from original place, please calibrate compass first.(the motor must be locked and red LED burn out)

① Enter the calibration mode Do this by moving both sticks DOWN and to the middle position at the same time. The aircraft will start a blinking fast RED.

② FORWARD rotation. Smoothly rotate the aircraft forward in 90 degree increments, pausing for 1 second every 90 deg. (0 / 90 / 180 / 270 / 360)

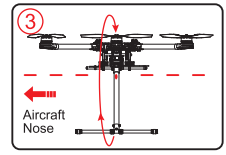


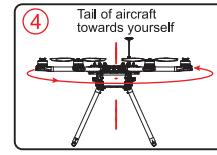
③ CLOCKWISE rotation. Rotate the aircraft around the roll axis smoothly in 90 deg increments. Pausing 1 second for each 90 deg. (0 / 90 / 180 / 270 / 360)

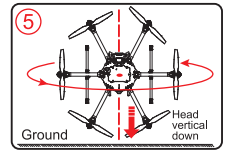
④ HORIZONTAL rotation. Rotate the aircraft around the YAW axis smoothly in 90 deg increments. Pausing 1 second for each 90 deg.(0 / 90 / 180 / 270 / 360)

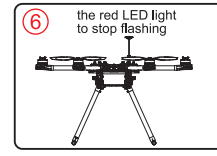
⑤ NOSE DOWN rotation. Rotate the aircraft facing the nose down. rotate smoothly in 90 deg increments. Pausing 1 second for each 90 deg. (0 / 90 / 180 / 270 / 360)

⑥ Place the aircraft in normal position. The rapid RED blinking will stop. This indicates that the calibration is finished. Disconnect the battery to save the settings.









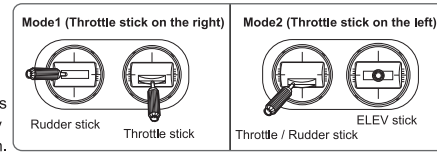
- **IMPORTANT: The first couple of flights, you may experience the aircraft drifting,**
  This is normal, please continue to fly the aircraft manually, while the system refines the calibration. After 5-10 minutes land, lock the motors, to save the improved settings.
  Notice: The slight drifting may continue for a couple of batteries, you will notice significant improvement in GPShold & stability after 4-5 batteries.
  Notice: Always perform the calibration away from eletric fields and metal surfaces.
  Trivia: Different brands have different calibration processes, the process is typically refered to as "the Calibration Dance".

8.3 GPS indicator lights

GPS Satellites	<6	6	7	8	9	10	11	12	13
The blue LED status	No blinking	Blinking once	Blinking 2 times	Blinking 3 times	Blinking 4 times	Blinking 5 times	Blinking 6 times	Blinking 7 times	Blinking 8 times

IMPORTANT: For SAFE flight in GPS flight mode:
The BLUE indicator light should at least "double" blink, (two blinks at a time).
It is highly recommended that you wait for "triple blink" 8 statelites before starting the flight.
NEVER attempt to AUTO-START with less than "triple blinks"

8.4 Motor Unlock / Lock

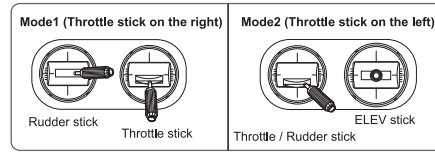


● Motor Unlock

After binding the DEVO F12E to the QR X900, Check that all trims are neutral, the throttle stick is ALL the way Down with the display indicating 0% throttle. Check that ALL switches are in the UP position.
Note: that you can start the motors in the Manual Mode or the GPS-HOLD MODE.Gently push the throttle stick down and move the rudder (YAW) stick to the left side. (on mode 2 radios throttle and rudder is the same stick)
You will see the RED indicator LED turn on, indicating that motors are unlocked.
Be very careful at this point, as pushing the thottle up will start the motors. You can test by pushing the stick up a little, the motors should start. For your safety, the motors will dis-arm again after 10seconds.

● Motor Lock

Lock the motors by moving the throttle stick all the way down and the rudder (YAW) stick all the way to the right.
The RED LED light will go out when the motors are disarmed.
TEST: push the throttle stick up a little, the motors will not start when locked.
NOTICE:
* The motors are LOCKED by default after successful binding.
*** Motors can be unlocked or locked in GPS-hold mode.**
if you land in GPS mode, move the "MIX" switch to position "0" or position "1" before locking the motors, make sure you wait until the QR X900 is safely on the ground before changing the switch to "0" (manual) while changing, make sure to keep the throttle DOWN to prevent motors from starting.

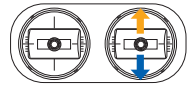


9.0 Operation Instruction

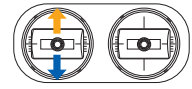
Aircraft posture(⬅ the direction of head) | **Radio control instruction**

THROTTLE

Up/down



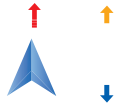
Mode1 (Throttle stick on the right)

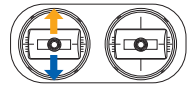


Mode2 (Throttle stick on the left)

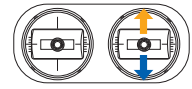
PITCH

Forward/backward





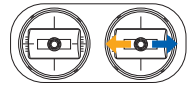
Mode1 (Throttle stick on the right)



Mode2 (Throttle stick on the left)

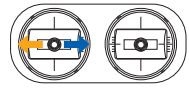
ROLL (lean)

Left / right



YAW (turn)

Left / right



GPS hold mode

In this mode, maneuver by moving the controls, and simply let go of the controls and the QR X900 will hold its position.

Ground

MIX switch to “1” position

Throttle stick return neutral

DO NOT switch to manual before landing. It is safer to land in GPS hold mode, then swtich to manual AFTER landing to lock motors

NOTE:

(1) NEVER use this mode with less than 8 satelites locked, you should see BLUE TRIPLE BLINK.

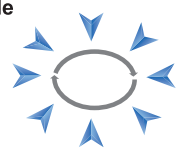
(2) Before switching mode, always put the throttle stick to middle position (50%).

(3) IF the GPS signal degrades, the QR 900 will automatically enter “Altitude hold mode” note in this mode it will drift, but will hold its altitude.
After flying 50% of the battery, do NOT switch from GPS mode to Manual, this may cause a sudden drop / crash.
You can land in GPS mode, after landing, keep the throttle stick DOWN and switch to manual, then lock the motors.

(4) DEVO F12E setting: Model Menu ➡ Device Output ➡ Gear ➡ MIX SW ➡ Active

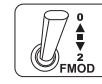
ROUND FLY mode

This mode is used for making circles aroundan object of interest. RADIUS is set in the F12E menu by adjusting Position 2 value for AUX3



MIX switch to “1” position

Move FMOD switch to “2” The Round Fly will start



Move FMOD switch to “0” The Round Fly will stop

NOTE:

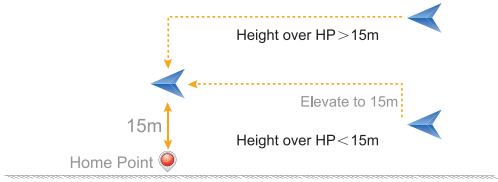
(1) This mode require 8 satelites locked, you should see BLUE TRIPLE BLINK.

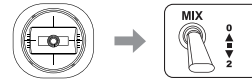
(2) Before activating the round-fly mode, you should be in “GPS hold mode” always put the throttle stick to middle position(50%)

(3) The default roundfly radius is 5 meters (15 feet), You can change the Round Fly radius by editing the AUX3 EPA (End Point Adjustment) on the DEVO F12E transmitter, for details on editing EPA settings, see the “**Servo Travel Adjust**”. After having changed the setting, you should turn FMOD switch to “0” position to save the data, then return to “2” position to read the new Roundly radius.

(4) DEVO F12E setting: Model Menu ➡ Device Output ➡ AUX3 ➡ FMOD SW ➡ Active

RETURN TO HOME





a. If the flight altitude is higher than 15m, the aircraft will keep the current altitude and return above the Home Point then descend vertically.

b. When the flight altitude is lower than 15m, the aircraft will elevate automatically to 15m then fly back above the Home Point and land vertically.

NOTE:

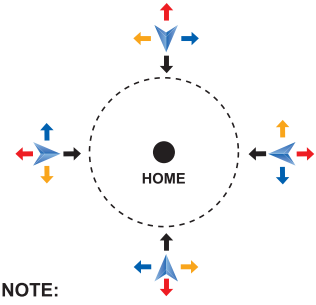
(1) The Return To Home mode, will only work when you have a solid GPS lock, it is recommend that you avoid flying if GPS lock is missing.

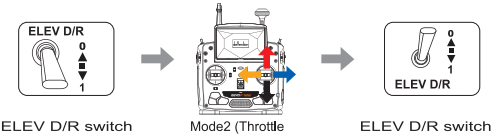
(2) After engaging Return to Home mode, leave the throttle stick at 50% (centered) DO NOT touch any switches on the DEVO F12E radio.
To REGAIN control of the QR X900, make sure the throttle is centered, then flip the MIX switch to position “1” . In an emergency such as losing the control link between the F12E and the QR X900, the Failsafe system will automatically start RTH. You may not be able to interupt an emergency RTH, simply let the aircraft continue until it lands.

(3) DEVO F12E setting: Model Menu ➡ Device Output ➡ GEAR ➡ MIX SW ➡ Active

Hyper IOC Mode

IOC or Intelligent Orientation Control mode means that the aircraft’s flight direction is only relative to the orignal take-off point (where you armed the motors). REGARDLESS of the actual aircraft headding, in this mode you can fly past something and pan the aircraft to frame your shot, without having to worry what direction the aircraft is facing.





NOTE:

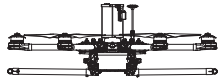
(1) The IOC mode requires a strong GPS lock, you should have trible blinks on the blue GPS indicator light.

(2) IOC is inactive if the QR X900 is less than 10 meter (30 feet) from the original take-off position. (point where you armed the motors) Fly the QR X900 manually beyond 10 meters using the GPS mode, then activate the IOC mode, the QR X900 will now fly IOC until you change the mode, you can pan freely for video shots, when you push the stick right or left, the QR X900 will move sideways relative to the original take-off position. Pushing the pitch stick up will push the QR X900 away from you, pulling the stick back brings the QR X900 back to the starting point. When flying in IOC mode, you can make the QR X900 return to the starting point simply by pulling the stick toward you.
WARNING: The IOC turns off when the aircraft gets closer than 10meters to the take off point. Be prepared for this, as the system will switch back to GPS hold mode at that point. This switch can cause confusion if the pilot are not prepared.

(4) DEVO F12E setting: Model Menu ➡ Device Output ➡ AUX2 ➡ ELEV D/R ➡ Active

Landing gear Extended and retracted

Extend landing gear



Retract landing gear

GEAR switch to “0” position:
Extend landing gear

GEAR switch to “1” position:
Retract landing gear

NOTE:

(1) Keep the Gear switch on “0”, then make sure the servo lines of left/right landing gear insert into the GEAR channel and connect the aircraft power.

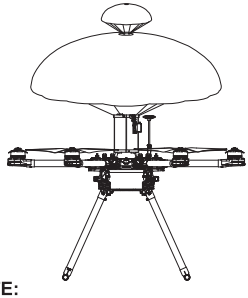
(2) Make sure the landing gear retracted (Gear switch on “1”) after the aircraft takes off.

(3) When the aircraft lands manually, extend the landing gear(Gear switch on “0”).

(4) In the “RETURN TO HOME” mode, the landing gear will extend automatically till the flight end, no matter where is the GEAR switch.

(5) DEVO F12E setting: Model Menu ➞ Device Output ➞ AUX4 ➞ GEAR SW ➞ Active
Model Menu ➞ Device Output ➞ AUX5 ➞ GEAR SW ➞ Active

Dropsafer control



Push the RUDD D/R switch two round turn or above within 3 seconds then the dropsafer will open.

(one round turn: push the switch from“0” to“1”, then push back to“0”)

NOTE:

(1) Keep The RUDD D/R switch on “0”, then connect the servo line of the dropsafer with the “Drop safe”channel and connect the aircraft power.

(2) During the flight, do not open the dropsafer.

(3) When the flying model inclines to 80 degree, the parachute will open automatically.

(4) DEVO F12E setting: Model Menu ➞ Device Output ➞ Flap ➞ RUDD D/R ➞ Active

10.0 End flight

① Manual landing or back home function landing.

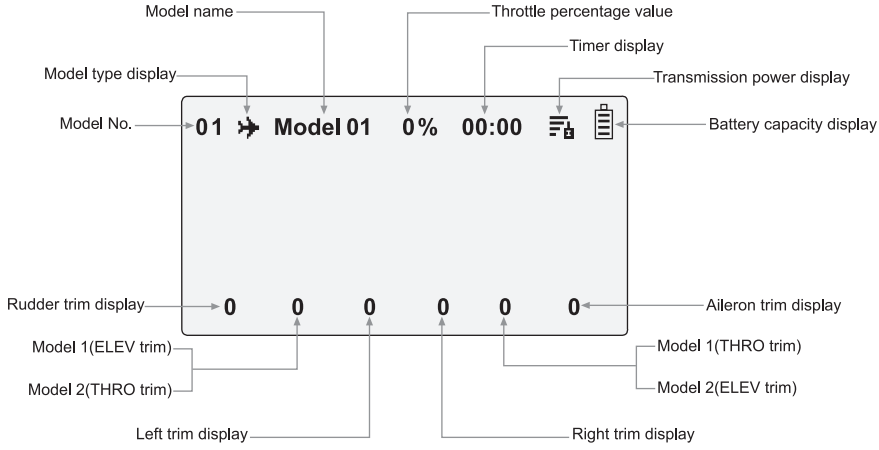
② Turn off the aircraft power(turn the power switch to “OFF”), then turn off the power of the remote controller.

③ Take the battery from the aircraft (pull the red cable out from the aircraft, then pull the black cable out.)

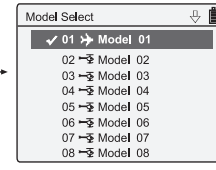
11.0 Additional remark

11.1 DEVO F12E (Black version) settings

● Boot Screen(Main interface)

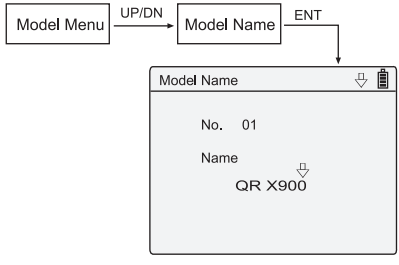


● Model Select



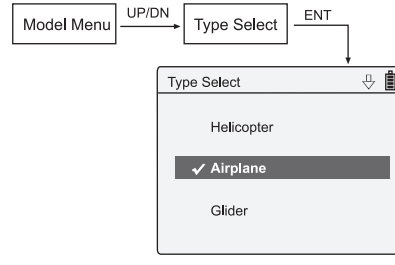
Press the UP or DN button to select the stored model number. For example “Model 01”, press EXT to return to the “Model Menu” after finished.

● Model Name



Press UP or DN button to select the characters which need to be changed, Named model “QR X900”. Press EXT to return to the “Model Menu”.

● Type Select

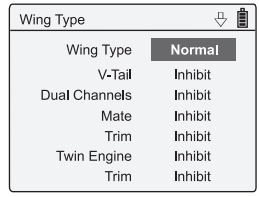


Select the model type with the R or L button, and ENT to confirm and return to the "Model Menu".

● Wing Type

Model Menu → UP/DN → Wing Type → ENT

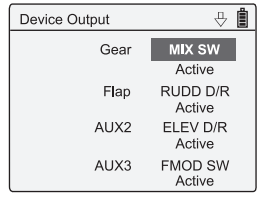
Press R or L to select “Normal”, then press EXT to return to the “Model Menu”.

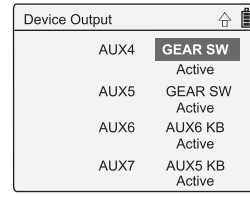


● Device Output

Model Menu → UP/DN → Device Output → ENT

Press EXT to return to the “Model Menu” after finished.

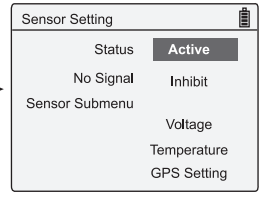




● Sensor Setting

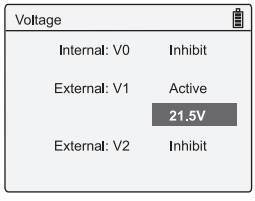
Model Menu → UP/DN → Sensor Setting → ENT

Press R or L to select “Active”.



(1) Voltage Setting

Press UP or DN to select Voltage on the Sensor Setting interface. Press ENT to enter the Voltage interface.



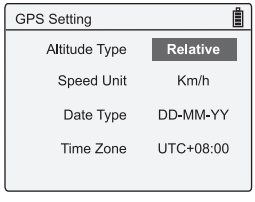
Internal shows the Radio battery voltage.

External shows the aircraft battery voltage.

VOYAGER 3 default setting is 21.5V,
Fly the copter back ASAP if you get a warning!

(2) GPS Receive Setting

Press UP or DN to select the GPS setting on the Sensor Setting interface, then press ENT to enter the GPS Setting interface.



(2.1) Altitude Type setting:
Press R or L to select Absolute or Relative.

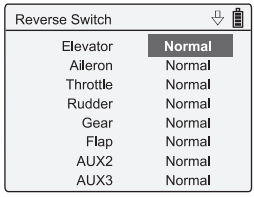
(2.2) Speed Unit setting:
Press R or L to select Km/h or Knote.

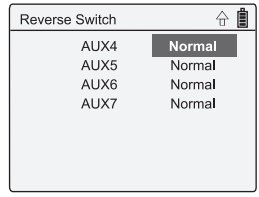
(2.3) Date Type setting:
Press R or L to select DD-MM-YY\ MM-DD-YY\ YY-MM-DD.

(2.4) Time Zone:
Press R or L to select Time Zone, then press EXT to return to the “Main Menu”.

● Reverse Switch

Main Menu → (UP/DN / ENT) → Function Menu → (UP/DN / ENT) → Reverse Switch → (ENT) → Factory default Settings interface.

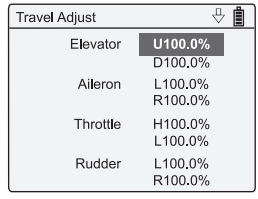


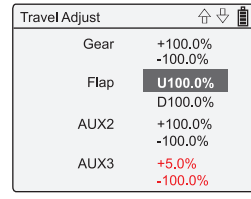


Press EXT to return back to the "Function Menu" after finished.

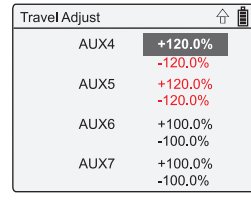
● Servo Travel Adjust

Function Menu → (UP/DN) → Travel Adjust → (ENT)





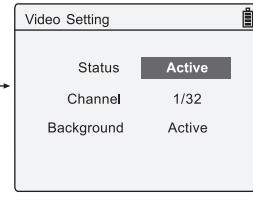
Press UP or DN to select AUX3 channel, press R or L to set **+5.0%(5 means Roundfly radius is 5 meters) and -100.0%**.



Press UP or DN to select **AUX4 and AUX5, press R or L to set the value as +120.0% and -120.0%,** then according to the actual situation to decrease or increase(Servo arm and linkage should be right touch to skid landing base), after setting, press EXT to return function menu.

● Video Setting

Main Menu → (UP/DN / ENT) → System Menu → (UP/DN) → Video Setting → (ENT)



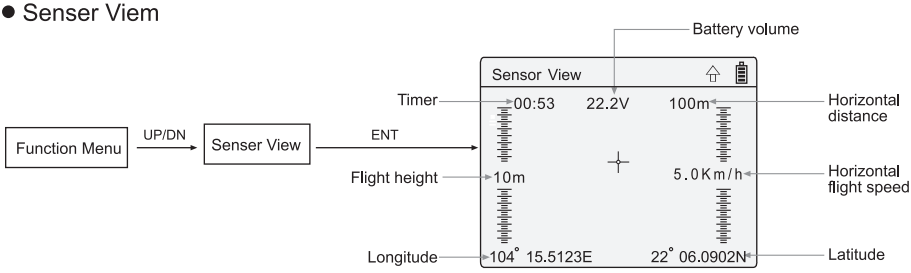
Status: Press R or L to select "Active".

Channel: Press R or L to choose the video channel corresponding to the camera.

Background: Press R or L to select Active, Real-time image will be set as background in Main Menu.

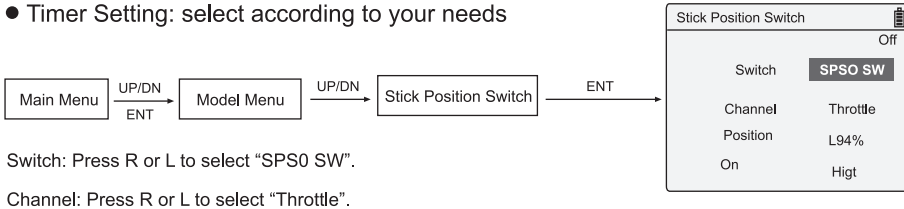
Press EXT to switch full screen or half screen to display image when in the main interface.

● Senser Viem



Press R or L to select viewport display. When the image is set as the background, Information will be displayed on the image.

● Timer Setting: select according to your needs



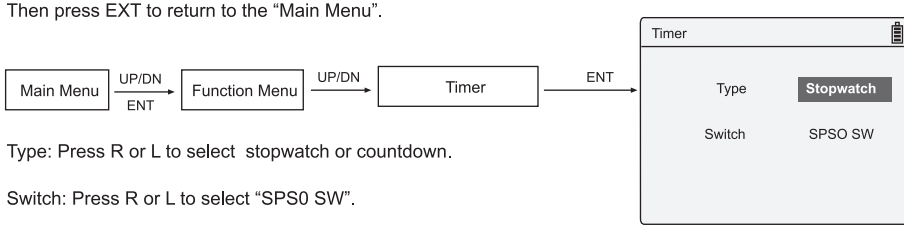
Switch: Press R or L to select “SPS0 SW”.

Channel: Press R or L to select “Throttle”.

Position: Press L to set percentage(Suggested setting is L94%).

On setting: Press R or L to select “High” as rocker direction for on.

Move up and down of the throttle to check if the direction of the switch is set correctly.
Then press EXT to return to the “Main Menu”.

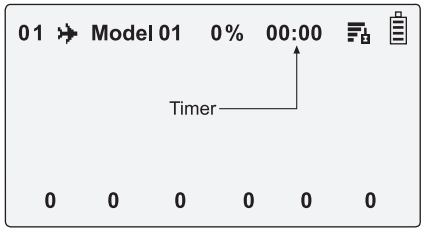


Type: Press R or L to select stopwatch or countdown.

Switch: Press R or L to select “SPS0 SW”.

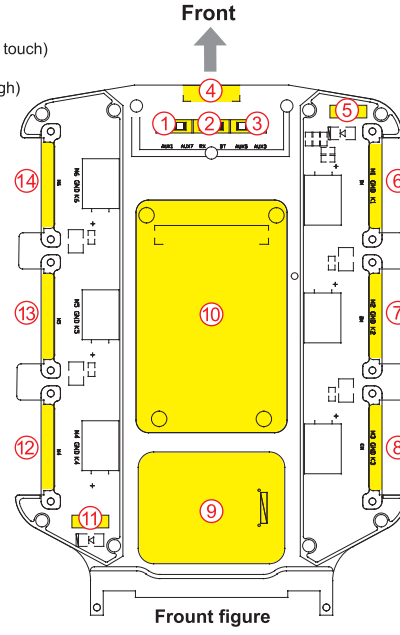
Press EXT to return back to the main interface when finished.

Usage: Toggle the throttle up to L94% to start the time, toggle the throttle down to L94% to stop the time, press DN to reset.

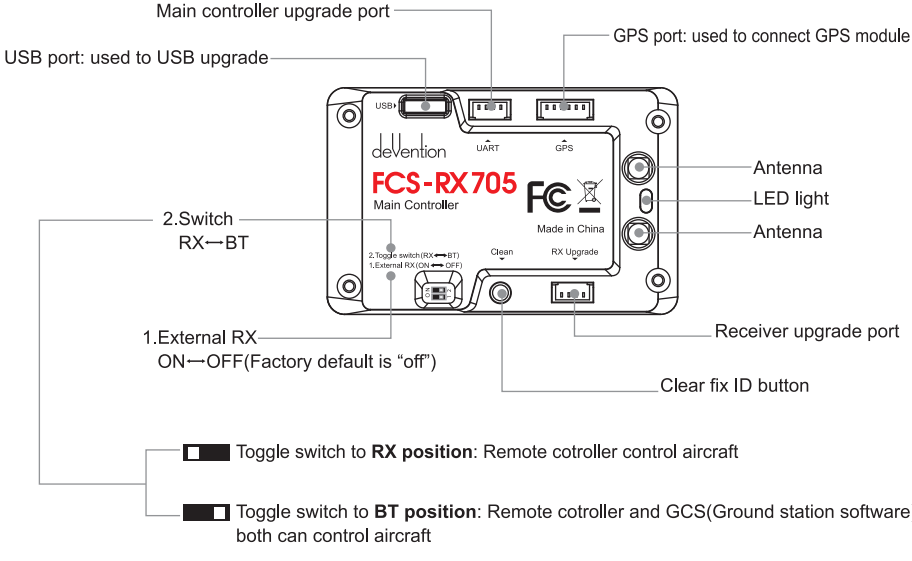


11.2 Power board instruction

1. the camera switch(the factory default state is on AUX7, do not touch)
2. the gimbal switch (the factory default state is on BT, do not tough)
3. the remote controller switch (the factory default state is on AUX5, do not tough)
4. Gimbal connecting port
5. DC 22V power output port
6. M1 brushless motor and brushless ESC connection port
7. M2 brushless motor and brushless ESC connection port
8. M3 brushless motor and brushless ESC connection port
9. Bluetooth installation position
10. Main controller installation position
11. DC 12V power output port
12. M4 brushless motor and brushless ESC connection port
13. M5 brushless motor and brushless ESC connection port
14. M6 brushless motor and brushless ESC connection port



11.3 FCS-RX705 Main Controller Guideline

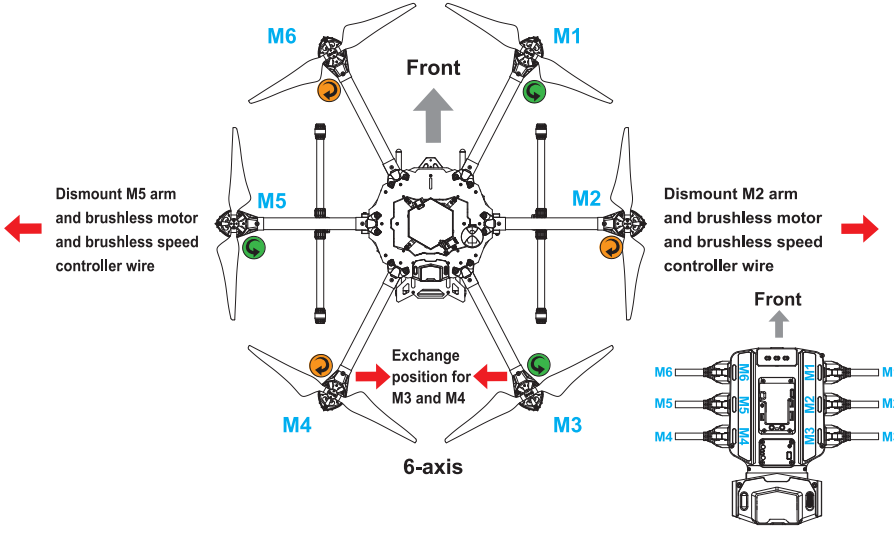


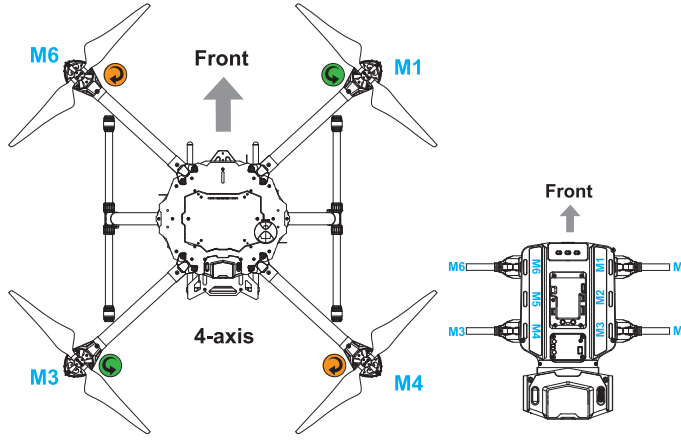
11.4 Methods for transferring QR X900 from 6-axis to 4-axis (as needed)

① Dismount M2 and M5 arms in the reverse order of arm installation, and disconnect the brushless motor and brushless speed controller connection wires of M2 and M5. (Please refer to page 6-7)

② Dismount M3 and M4 arms in the reverse order of arm installation, and disconnect the brushless motor and brushless speed controller connection wires of M3 and M4. (Please refer to page 6-7)
Then exchange the installation position and connection port and start the new installation.
(that is to say, match M2 at M4, match M4 at M3)

③ Please download the main controller program for 4-axis on Walkera official website.
Connection method: use the USB cable to connect the computer and the USB port on the main controller.





User manual is subject to change without prior notice.

Please go to Walkera official website to get the latest version.

Web: www.walkera.com