



M435

Instruction Manual



14+

* Please be kindly noted that this manual will be updated regularly and please visit RadioLink official website https://www.radiolink.com/m435_manual to download the latest version.

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Disclaimer and Warning

Thank you for purchasing RadioLink M435. To fully enjoy the benefits of this product and ensure safety, please read the manual carefully and set up the device as instructed steps. This product is not a toy and is NOT suitable for children under the age of 14. Adults should keep the product out of the reach of children and exercise caution when operating this product in the presence of children.

Inappropriate operation may causes property loss or accidental threats to life. Once the RadioLink product is operated, it means the operator understands this limitation of liability and accepts to take responsibility of the operation.

Make sure to follow the local laws and agree to follow the principles that made by RadioLink.

Fully understand that RadioLink cannot analyze the product damage or accident reason and cannot offer after-sales service if no flight record is provided. To the maximum extent permitted by law, RadioLink won't take any responsibility about the loss caused by indirect/consequent/accidental/special/penal damages including the loss by purchase, operation and failure of operation in any instances. Even RadioLink is informed about the possible loss in advance.

Laws in certain countries may prohibit the exemption from the terms of the guarantee. Therefore consumer rights in different countries may vary.

In compliance with laws and regulations, RadioLink reserves the right to interpret the above terms and conditions. RadioLink reserves the right to update, change or terminate these terms without prior notice.

SAFETY PRECAUTIONS

1. Please do not fly in the rain! Rain or moisture may cause flight instability or even loss of control. Never fly if there is lightning. It is recommended to fly in conditions with good weather (No rain, fog, lightning, wind).
2. When flying, you must strictly abide by local laws and regulations and fly safely! Do not fly in no-fly areas such as airports, military bases, etc.
3. Please fly in an open field away from crowds and buildings.
4. Do not perform any operation under the condition of drinking, fatigue or other poor mental state. Please operate in strict accordance with the product manual.
5. Please be cautious when flying near electromagnetic interference sources, including but not limited to: high-voltage power lines, high-voltage transmission stations, mobile phone base stations and TV broadcast signal towers. When flying in the above-mentioned places, the wireless transmission performance of the remote control may be affected by interference. If there is too much interference, the signal transmission of the remote control and the receiver may be interrupted, resulting in a crash.
6. Please be sure to install the propeller according to the instructions in the manual to avoid installing the reverse propeller propellers and causing a crash.
7. When flying, please keep a certain distance from the aircraft and stay away from high-speed rotating parts (such as propellers, motors).
8. During flight or test-flight when the propeller is rotating, no matter what state the aircraft is in, never touch the aircraft with your hands or any part of your body. Please ensure your own personal safety.
9. After the flight, be sure the disarm is successful. Please unplug the battery until the propellers stops.
10. When connecting the flight controller to Mission Planner or calibrating the ESC, please make sure that the propellers are not installed on the aircraft.
11. When taking off, please turn on the transmitter first and then the aircraft; After finishing the flight, unplug the aircraft battery first and then power off the transmitter.
12. If you need to modify the aircraft parameters, please disassemble the propellers first and then adjust the parameters to ensure safety.
13. When arming with success, make sure to stay a certain distance away from the aircraft to ensure safety.

14. Gently push the throttle when start the flight: Under Alt-Hold mode, push the throttle a bit higher than the central point and M435 will slowly take off and keep rising if keep pushing the throttle. When M435 reaches a certain height, it will hover if stop pushing the throttle. Pilots can change directions by rolling, pitching and yawing.

15. It's advised to be accompanied with experienced pilot for the first flight.

Chapter 1 Introduction

1.1 Feature Highlights

M435, the 3KG Heavy Lift Drone with 120KM/H flight speed, can pre-set flight routes to perform tasks such as autonomous takeoff or landing, and automatic delivery packages.

It integrates high speed, strong signal, and portable load, which is efficient, intelligent, and can be reached anywhere. Equipped with the RadioLink flight controller CrossRace, even when 3KG equipment is loaded, it can still achieve a high-speed flight speed of 20 m/s, greatly shortening the task execution time and completing the delivery task intelligently and efficiently.

1.2 About M435

The motor, propellers, battery, and ESC may be different. Please confirm the detailed parameters with the salesperson before purchasing.

M435 PNP



M435*1



GPS TS100*1



FC(CrossRace)*1



SZ-SPEED
900KV Motor*1



Screwdriver
Socket Wrench*1



FLYCOLOR
60A 4in1 ESC*1



Hook*1



6S Battery*1



Hex Wrench
(2.0mm)*1



10*5*3 Propellers
(Spare)*2



Aluminum Case*1

M435 RTF



M435 PNP



AT9S Pro
Transmitter*1



PRM-03 Telemetry
Module*1



R9DS
Receiver*1



HO TA D6 Pro
Charger*1

M435 FPV RTF



M435 PNP



AT9S Pro
Transmitter*1



R12DSM
Receiver*1



HO TA
Charger*1



Walksnail Avatar
HD Goggles*1



Walksnail Avatar
HD Pro Kit*1

1.3 Specifications

Aircraft

Model Name: M435

Weight of Drone (Without Battery): 963.8g

Takeoff Weight Without Load: 1685.8g

Payload: 3000g

Dimension Frame: 355*355*131.5mm

Diagonal Length: 435mm

Flight Time: 10 minutes with 3KG Payload, 28 minutes without load

Flight Speed: 120(±20)km/h (Without load)

Frame Name: FlyFishRC Matador XL10 Frame

Material Frame: Carbon fiber

Max Ascent Speed: 2.6m/s (Alt-Hold Mode or Pos-Hold Mode), 11m/s (Stabilize Mode)

Max Descent Speed: 2.8m/s (Alt-Hold Mode)

Max Horizontal Speed (at sea level, no wind): 47km/h (30°)/63km/h (35°)

Max Takeoff Altitude: 4000 meters

Max Tilt Angle: 30°/35°

Operating Temperature: -30~85°

Flight Distance: 3400 meters/4000 meters (AT10II/AT9S Pro)/2000 meters (1.24 miles, T8S/T8FB), maximum range is tested in an unobstructed area free of interference

Max Service Ceiling Above Sea Level: Same as the flight distance, the flight distance and height can be set as you need in GeoFence of Mission Planner

Maximum Wind Resistance: Moderate breeze

Flight Modes: It is default with Stabilize Mode, Alt-Hold Mode, Pos-Hold Mode, and RTL, 13 modes can be set in the Mission Planner including Auto Mode, Guided Mode, flight follow the waypoint, etc.

Positional Accuracy: Up to 50 centimeters

Flight Control System: RadioLink CrossRace

Global Navigation Satellite System: TS100, BD1+GPS/L1+Galileo/E1+GLonass/G1, and quad satellite system operation at the same time are available.

Power System

Electronic Speed Control (ESC): FLYCOLOR 60A 4 in 1 ESC

Motor: SZ-SPEED 2810/2812 900KV Motor

Battery: FULLYMAX 6250mAh 22.2V 30C XT60 Battery/HPY 6S 5000mAh 35C XT60 Battery can be selected

Propeller: Gemfan 10*5*3 Propellers

Hook: 20kg metal digital servo with hardware hook

Remote Control System (Accessories Can Be Selected)

Transmitter: 12 channels transmitter AT9S Pro/AT10II, 8 channels transmitter T8FB/T8S can be selected

Receiver: R9DS/R12DSM (AT9S Pro/AT10II), R8FM, R8SM, R8XM(T8FB/T8S)

Frequencies Band: 2.4GHz ISM(2400MHz~2483.5MHz)

Transmission Power: <100mW(20dbm)

Operating Temperature: -30~85°

Control Distance: 3400 meters/4000 meters (AT10II/AT9S Pro)/2000 meters (T8S/T8FB), maximum range is tested in an unobstructed area free of interference

Charger System (Accessories Can Be Selected)

Charger: HOTA D6 Pro

More Accessories Select Option

Image Transmission: Caddx Walksnail Avatar HD Pro Kit

Goggles: Walksnail Avatar HD Goggles X

Ultrasonic Sensor: RadioLink SU04 to realize obstacle avoidance of maximum 2 directions (forward/backward/left/right/upward) and altitude hold downward

Telemetry: With telemetry module PRM-03, model voltage, speed, climb, throttle, longitude, latitude, altitude, GPS, RSSI, flight mode, yaw, roll, pitch, and distance are displayed on the transmitter screen.

SiK Radio Telemetry: 915Mhz/433Mhz

1.4 Prepare M435

Most of the assembly of the M435 has already been completed when leaving the factory. You only need to complete the installation of the tripod, load plate, and propellers according to the instructions before flying. If the aircraft is left unused for a long time, it is strongly advisable to uninstall the propellers with the professional tool packed in the set and to (dis)charge the batteries to best storage status, that is, 3.8V per cell to avoid unexpected damage and to extend the product life span.

1.5 Prepare Transmitter

M435 PNP version is not equipped with a transmitter. You can optionally purchase a RadioLink transmitter to control M435, such as AT9S Pro.

If RadioLink transmitter is not equipped, please first install the receiver on the aircraft and bind your own transmitter and receiver after receiving M435. The detailed transmitter settings and radio calibration in Mission Planner depend on your transmitter, which will not be explained in detail in this manual.

Take AT9S Pro as an example. Before starting the flight, we need to power on the transmitter first to ensure that the transmitter works properly. AT9S Pro works with Lithium 2S-4S battery or 8 pieces AA battery. To avoid batteries over discharged, alarm of low voltage can be set after connecting batteries in the transmitter. Press “MODE” to enter the BASIC MENU => Select “PARAMETER” and enter=> Set “TX-ALARM” according to the actual battery used. For example, if batteries used in the transmitter is 2S, then it’s $4.2V \times 2S = 8.4V$ when fully charged. As the voltage of a single cell is 3.7V, we usually set the low voltage alarm as $3.7V \times 2S = 7.4V$.

Chapter 2 Aircraft Setup

M435 consists of flight controller system, remote controller system, GPS system, power system, and image transmission system. This chapter is about the aircraft’s components and the feature of each function.

2.1 Setup for RTF and FPV M435

RadioLink M435 has three versions, including PNP, RTF and FPV version.

If the optional RadioLink transmitter is installed, you only need to power on the transmitter and the aircraft, and then arm the aircraft for flight.

2.1.1 Basic Operation of the Transmitter

As the aircraft is controlled to realize all movements by operating the remote controller, it’s important to know its basic operation.

Remote controller is also called transmitter and should work with a receiver. Transmitter in a pilot's hand and receiver in an aircraft to work as the flight controller system.

The 4 basic channels of all transmitters are always the same:

Channel (CH)	Movement
Channel 1	Roll (Control aircraft to move left/right horizontally)
Channel 2	Pitch (Control aircraft to move forward/backward)
Channel 3	Throttle (Control aircraft to lift and descend vertically)
Channel 4	Rudder (Control aircraft to turn clockwise and anticlockwise)

These four basic channels are operated by the two sticks on the transmitter. Most transmitters have not only these 4 channels but also other auxiliary channels such as switches for changing flight modes, controlling PTZ and camera. These commands will be passed to the receiver on aircraft via wireless signal by the emission system of transmitter. So we usually name the channels besides 4 basic ones auxiliary channels.

Here is a picture of transmitters with stick mode 2 (left throttle):



Left Stick



Lift

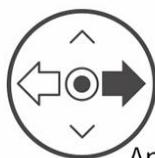
Descend

Right Stick

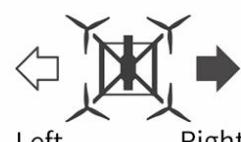


Forward

Backward



Anticlockwise Clockwise



Left Right

For M435 that comes with AT9S Pro, auxiliary channel mapping has already been set on AT9S Pro. The specific mapping table is as follows:

Auxiliary Channel	Function	Switch	Trigger Condition
Channel 5	Flight Mode Switch	SWC	Push Up/Down
Channel 6	Load Servo Release/Lock	SWB	Push Up/Down
Channel 7	Arm/Disarm	SWA	Push Up/Down
Channel 8	RTL Mode	SWD	Push Up
Channel 9 (Only for M435 FPV RTF)	Camera Tilt	VRD	Turn VRD
Channel 10	RSSI	None	None

More details about AT9S Pro, please download the manual via the below link:

https://www.radiolink.com/at9spro_manual

2.1.2 Arm and Disarm M435

Arm: Channel 7 of the transmitter is assigned to control motor lock by default. If RadioLink transmitter is not equipped, please assign a two-way switch for channel 7. If AT9S Pro transmitter is equipped with M435, you can unlock/lock the motor with SWA switch. Push SWA up. If the indicator light of the flight controller is solid blue or green (Solid blue means the flight controller has been unlocked, but GPS positioning has not been performed; solid green means the flight control has been unlocked, and the GPS has been Positioning), and the motor and propellers start to rotate slowly, the motor is unlocked.

Note:

1. If SWD is in the high position, it will automatically enter the RTL mode, which will result in the inability to arm.
2. When GPS positioning is not available, if the flight mode is Pos-Hold mode or loiter mode, which rely on GPS positioning, the arming will fail.
3. Please connect 6S lipo batteries to M435. Otherwise, the flight controller will issue a low-voltage alarm and fail to arm.
4. If the SWA is pushed up before the flight control self-test is completed, the aircraft will not be unlocked, but the motor lock will be removed. At this time, the flight controller indicator flashes blue. You can push SWA down and push it up again to unlock the motor.
5. Push SWA up. If the indicator light of the flight controller flashes yellow, there is some error when arming. Please connect the flight controller to Mission Planner and make corrections according to the error prompts.

For more details, please refer to the detailed manual of CrossRace:

https://www.radiolink.com/crossrace_manual

Disarm: Push down SWA, the motors and propellers will stop rotating immediately, and the flight controller indicator will turn yellow and flash, which means the motors are locked. This locking method can be used for emergency locking. In the event of an emergency, pushing down SWA can force the motor to stop rotating. If the aircraft is in the air, please use this function with caution to avoid property damage.

2.1.3 Flight Modes Introduction

M435 has four flight modes by default: Stabilize Mode, Alt-Hold Mode, Pos-Hold Mode and RTL Mode. In Chapter 2.1.1 Basic Operation of the Transmitter, the functions of auxiliary channels were mentioned. One of those is to switch the flight mode.

For AT9S Pro, the 3-way switch (SWC on the right) by default, UP is Stabilize Mode, MID is Alt-Hold Mode, DWN is Pos-Hold Mode. Push SWD from up to down to enable RTL Mode. Note: Please ensure that the SWD is in the low position by default.



RTL Mode Enabled:

Besides manually enabled by pilots (Switch on SWA of T8FB or SWD of AT9S Pro), RTL Mode of M435 can be automatically activated under the below two situations:

- 1) Signals lost.
- 2) Low voltage. M435 comes with a 6S lithium battery. RTL mode is enabled when the battery voltage is lower than 21V by default. You can modify it according to your own usage habits and flight plan. When the voltage is lower than 21V after a period of flight, the aircraft will automatically rise up to a certain height (15m by default) and then land on the point that it takes off. By the moment, M435 won't move even if pilots toggle the transmitter sticks. Please arm the aircraft once landed and disconnect the battery and get it charged. If you need to operate the aircraft during the RTL process, you only need to switch the flight mode to another mode and then switch back to the original mode to exit the RTL mode.

2.2 PNP Version Setup

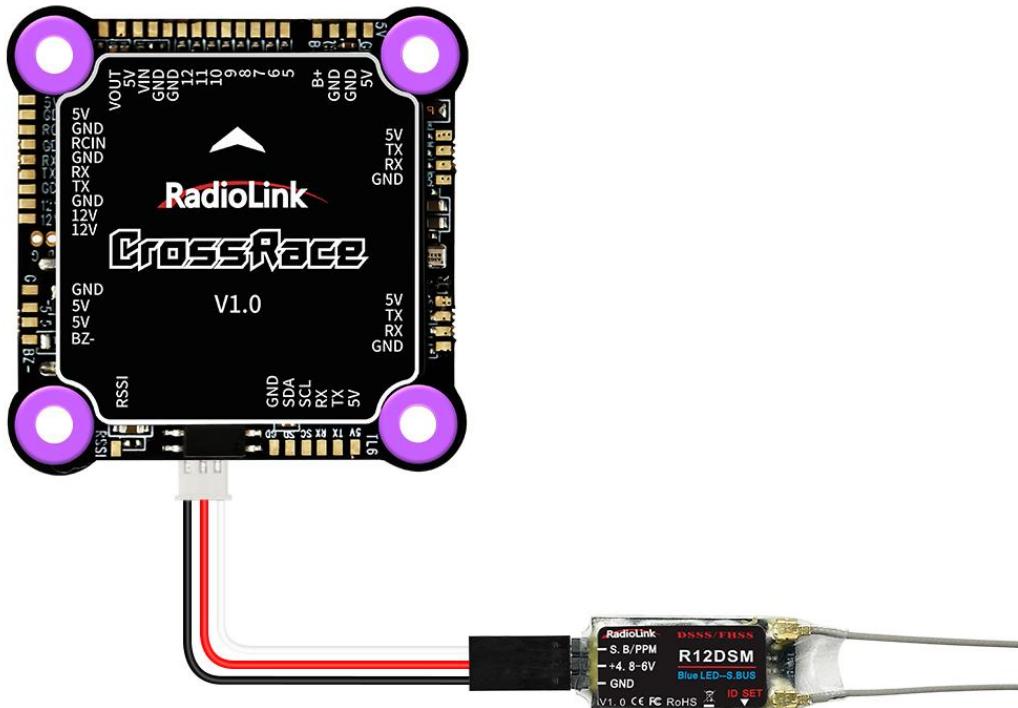
After receiving PNP version, the parameters of the aircraft have been set at the factory. PNP version does not come with a transmitter, so the pilot needs to set the transmitter.

Pilots who purchase PNP version of M435 need to: install Mission Planner to work with the flight controller, bind the transmitter and receiver and get the parameters set, and install the propellers.

Note: M435 PNP version is also compatible with the transmitter and receiver of the other brands. But please make sure that the receiver is SBUS/PPM/CRSF supported. When using a CRSF protocol receiver, please connect the receiver to TELEM1 or TELEM2 of CrossRace. Please see Chapter 5.2.3 of the CrossRace manual for details.

2.2.1 Binding Transmitter to M435

Every transmitter owns a unique ID code. Before using, binding transmitter to receiver on aircraft is a must. When done binding, ID code will be stored in the receiver, no need to rebind. If your transmitter has done binding with receiver, you only need to connect the receiver to the CrossRace flight controller after receiving the PNP version of M435.



Connect RadioLink R12DSM receiver to CrossRace

Binding the transmitter to the receiver is essential. Otherwise, the aircraft cannot take off.

Binding steps of all RadioLink transmitters and receivers are the same as follow:

- (1) Put the transmitter and the receiver together within 50 centimeters.
- (2) Power on the transmitter and the receiver. The receiver will bind to the closest transmitter.
- (3) Press the ID SET(binding button) on the side of the receiver for more than 1 second, the flashing LED means binding starts.
- (4) When LED stops flashing, binding is complete. A signal tower appears at the top of the home page of the AT9S Pro indicates successful binding. If there is no signal tower, please repeat the above binding steps.

When binding is done, please check if the receiver change to SBUS/PPM output . Generally we use SBUS signal. LED on all receivers from RadioLink is blue/purple means SBUS signal while red means PWM or PPM signal. Pilots can short press the binding button twice within 1 second to switch the signals output of the receiver.

2.2.2 Installation of Mission Planner

Before setting flight parameters, please install the Mission Planner for parameter adjustment of CrossRace.

To run the Mission Planner installation, NET. Framework from Microsoft is needed. Link is as below

<https://www.microsoft.com/net/download/thank-you/net462>

Download link of CrossRace Mission Planner:

https://www.radiolink.com/crossrace_missionplanner

Mission Planner installation tutorial:

<https://www.youtube.com/watch?v=twW9CaRlj-U> (Starting from 13:00)

2.2.3 Transmitter Parameters Setup

The flight controller of M435 has been set with all necessary parameters by default. For the PNP version, please calibrate the radio, set the flight modes and Fail Safe.

2.2.3.1 Transmitter Calibration

Before the radio calibration in Mission Planner, please make sure the model type selected in transmitter is multi-rotors. Below detailed steps take AT9S Pro as an example while T8FB can be directly calibrated with sticks. For the calibration of other brands' transmitter please kindly refer to its instruction manual.

Press "MODE" for more than 1 second to enter the BASIC MENU and choose "MODEL TYPE", rotate the dial to select "MULTIROTOR" and press "PUSH" to save, then "END" to exit.

[MODEL TYPE]

PUSH 1 Second

RESET: ▾

TYPE: MULTIROTOR



AILE-TR: ON

ATL: OFF

ELEV-TR: ON

[REVERSE]

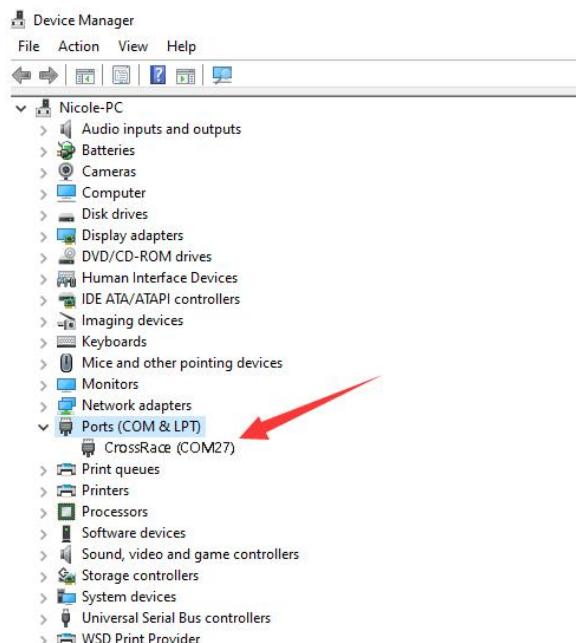
CH3:THRO	1:ROLL NOR
	2:PITCH NOR
<input type="button" value="REV"/> NOR	→ 3:THRO REV
CH9: NOR	4:YAW NOR
CH10: NOR	5:ATTI NOR
CH11: NOR	6:AUX1 NOR
CH12: NOR	7:AUX2 NOR
	8:AUX3 NOR

Note: For RadioLink transmitters, the throttle phase needs to be set REV. Throttle of AT9S Pro, T8FB and AT10II is set REV by default. Press "MODE" of AT9S Pro for 1 second to enter the BASIC MENU and choose "STEERING REVERSE" and select 3: THROTTLE. Then "PUSH" to select and rotate the dial to "REV" and "PUSH" to confirm then "END" to exit.

Make sure binding between the transmitter and the receiver is complete before connecting CrossRace with Mission Planner on computer via USB cable with the Baud Rate of 115200. The connection between CrossRace and Mission Planner can be also achieved by data transmission with the Baud Rate of 57600. Then power on the transmitter.

Open Mission Planner => select the corresponding Baud rate and port => click to connect

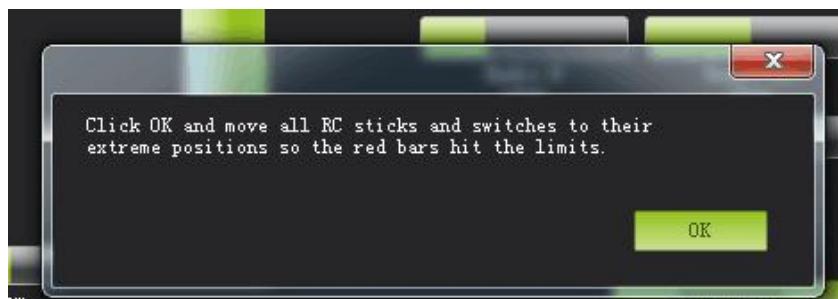
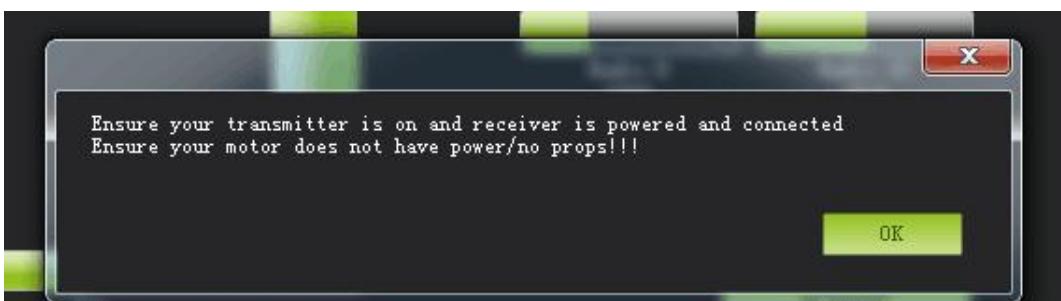
Note: Ports varies from different computers. Please select the correct port to connect. Connection may fail with several ports in use. Please remove the other connections, or enter Device Manager to view the port of CrossRace, just as below:



Click INITIAL SETUP =>MANDATORY HARDWARE => RADIO CALIBRATION =>CALIBRATE RADIO



There are two tool pop-ups after you click “OK” , one for make sure both your transmitter and receiver are powered on and connected, and the motor of your drone does not have power and without propellers.



And then click “OK” and move all RC sticks and switches to their extreme positions so the red bars hit the limits.

Joysticks can be calibrated as following , both (CH1 to CH4) are pushed to the limits(up/down/left/right)



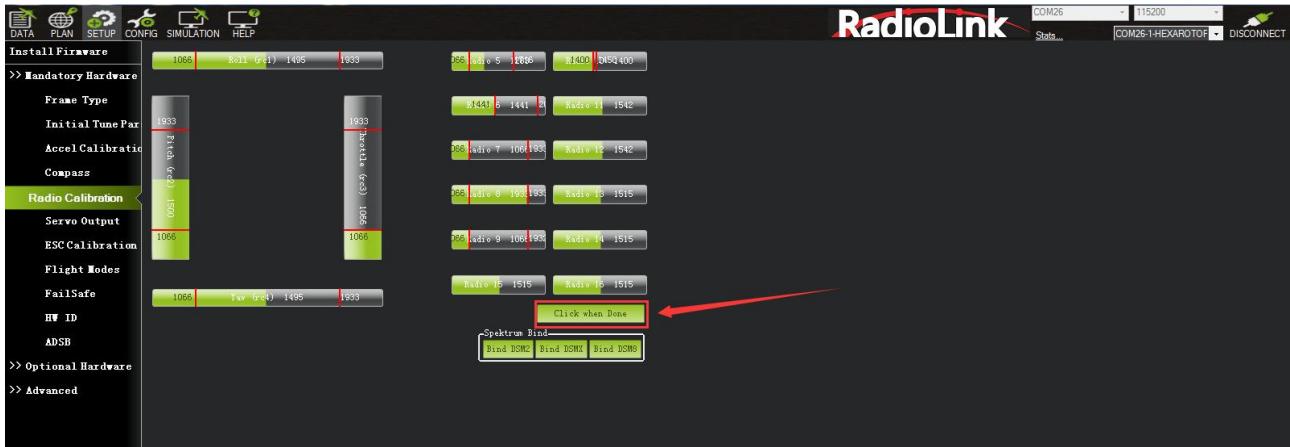
If the red bars have not any change when you move the sticks, please check the receiver have connect success or not, make sure the receiver (maybe R9DS) is output SBUS signal (the blue LED of R9DS means work as SBUS signal). You can check if every corresponding red bar for every channel is work as below:

CH1: low position = roll (towards the left), up position= roll (towards the right).

CH2: low position =pitch(forward), up position =pitch(backwards).

CH3: low position =reduced speed, up position =speed up.

CH4: low position = yaw (towards the left), up position = yaw (towards the right).



2.2.3.2 Flight Modes Setup

Set flight modes in the transmitter (Refer to the following steps for RadioLink transmitter. When using transmitters from other brands, select channel 5 to set flight modes, and select the SBUS signal for the receiver. The settings of the flight controller in Mission Planner is the same as the following steps)

CrossRace has many flight modes, and you usually choose six. If the six are not enough, you can also add the assistance of CH7 and CH8, up to eight flight modes. But M435 is with four flight modes as factory setting by default including Stabilize Mode, Alt-Hold Mode, Pos-Hold Mode and RTL Mode (See picture below). Therefore, if no other flight modes needed, pilots just set the flight modes in transmitter corresponding to those in flight controller.



Flight modes setting steps(Take AT9S Pro as an example):

1. Connect CrossRace and receiver (connect the RC port of CrossRace, and make sure receiver work as SBUS signal).
2. Make sure transmitter bind to receiver success.
3. Make sure CrossRace connect to Mission Planner success and click INITIAL SETUP—Mandatory Hardware—Flight modes, you can setup the flight modes you want in this menu.

In flight modes menu, it's very clear that the flight modes, the PWM numerical interval of six flight modes you have set and choose Simple Mode/Super Simple Mode or not.

Most of the RC fans setup the Flight Mode 1 is Stabilize, the other five flight mode will be setup according to users' flight habit.

First, you have to setup flight mode in transmitter. The setting steps as below:

1. Power on and turn on your transmitter.
2. Press Mode button twice to into ADVANCE MENU, press Push button into ATTITUDE setting menu, CH5 is default to the attitude control channel and please choose a 3 Posi-SW and a 2 Posi-SW to control the attitude. (For the flight mode settings of CH7 and CH8, open Mission Planner--- configuration/debugging ---extended parameters---Channel 7 opt/Channel 8 opt, and then assign 2 control switches for the two channels in the transmitter.) The attitude settings on AT9S Pro are as following:

[ATTITUDE]		
CH:CH5	SW3:SwC	SW2:SwD
-rate-	-posi-	-swt-
F/S : 25%	(UP-UP)	(OFF)
F/S : 25%	(CT-UP)	(OFF)
F/S : 25%	(DN-UP)	(OFF)
STABL. : 0%	(UP-DN)	(ON)
ATTI. : 50%	(CT-DN)	(OFF)
P.HOLD : 100%	(DN-DN)	(OFF)

3. Setup Flight Mode 1 is Stabilize both in Mission Planner and transmitter.

Make sure the -swt- is ON (by press the 3 Posi-SW or 2 Posi-SW to make it ON or OFF) and then you can setup the PWM data.

Setup the PWM value according to the default numerical interval (change the value by turn the dial, press the Push button when you choose the right value.)

4. Mode 4 needs a two-way switch. Turn the switch to the corresponding mode. Set it in the same way as step 3.

5. When using other transmitters to set flight modes, please first set the mixing control of channel 5. Mix a two-way switch and a three-way to channel 5, and set the value range according to the following chart:

Flight mode	Value range (us)
Flight mode 1	0-1230
Flight mode 2	1231-1360
Flight mode 3	1361-1490
Flight mode 4	1491-1620
Flight mode 5	1621-1749
Flight mode 6	1749+

For example, M435 has 3 flight modes by factory default. A three-way switch is assigned to control Channel 5. In Stabilize mode, We set the value range to 987 for Stabilize mode, between 0-1230, so Stabilize mode is flight mode 1; The value range is 1500 for Alt-Hold mode, between 1491-1620, so Alt-Hold mode is flight mode 4; The value range is 2000 for Pos-Hold mode, flight mode 6. The order of flight modes can be modified according to your own flying habits.

Flight mode	Value range (us)
Stabilize mode	987
Alt-Hold mode	1500
Pos-Hold mode	2000

2.2.3.3 Failsafe Setup

CrossRace supports Return-To-Launch in cases where contact between the Pilot’s RC transmitter and the flight controller’s receiver is lost. This page explains this failsafe’s setup and testing. Note the “Radio failsafe” was previously called “Throttle failsafe” because of the way in which some receivers use the throttle channel to signal the loss of contact.

Make sure transmitter and receiver connect success and work with SBUS signal.

F/S setting steps:

Receiver and flight controller CrossRace setup:

By default, a newly purchased receiver will be set-up to simply hold all channels at their last known position when the receiver and transmitter lose contact. This is not good because the flight controller has no way to know that the Pilot has lost control of the vehicle. Instead the receiver must be set-up to signal to the flight controller it has lost contact and there are two ways that it can do this (the method depends upon the receiver):

“Low-Throttle” method - the receiver pulls the throttle channel (normally channel 3) to a value below the bottom of its normal range (normally below 975).

With the LiPo battery disconnected:

1. Connect your flight controller to the mission planner and select Initial Setup >> Mandatory Hardware >> Failsafe.

2. Set the Failsafe Options to one of the three options:

- (1) “Enabled always RTL” to force the vehicle to always RTL even if flying a mission in AUTO mode.
- (2) “Enabled Continue with Mission in AUTO” to allow the vehicle to continue with missions even if it takes the vehicle outside of RC range (not recommended). In all other cases the vehicle will RTL.
- (3) “Enable always LAND” to force the vehicle to Land immediately if it loses RC contact.

Set the “FS PWM” value to be:

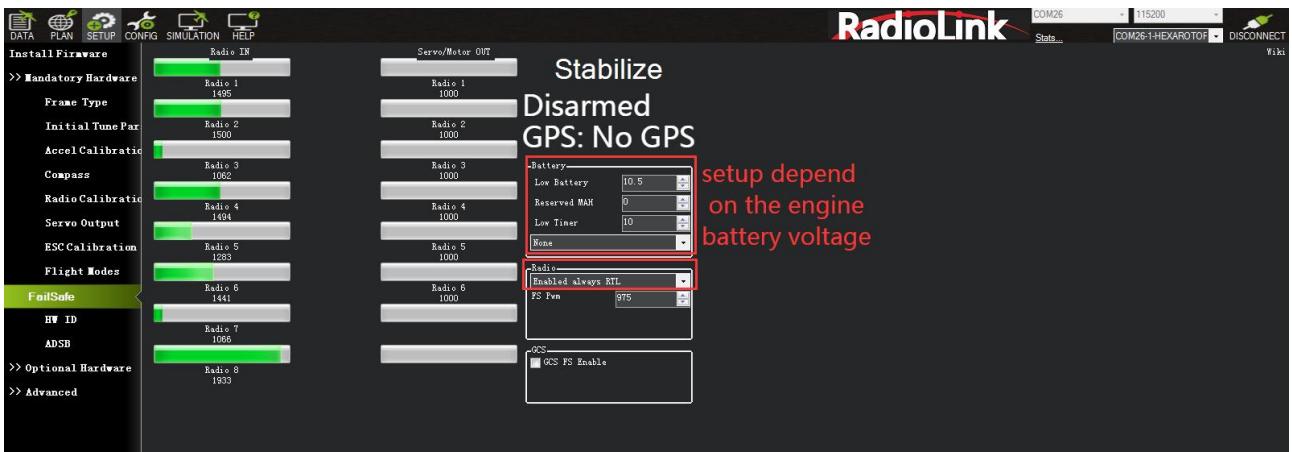
(1) at least 10 PWM higher than your Channel 3’s PWM value when the throttle stick is fully down and the transmitter is off.

(2) at least 10 lower than your channel 3’s PWM value when the throttle stick is fully down and the transmitter is on.

(3) above 910.



Click OK to into the failsafe setting menu.



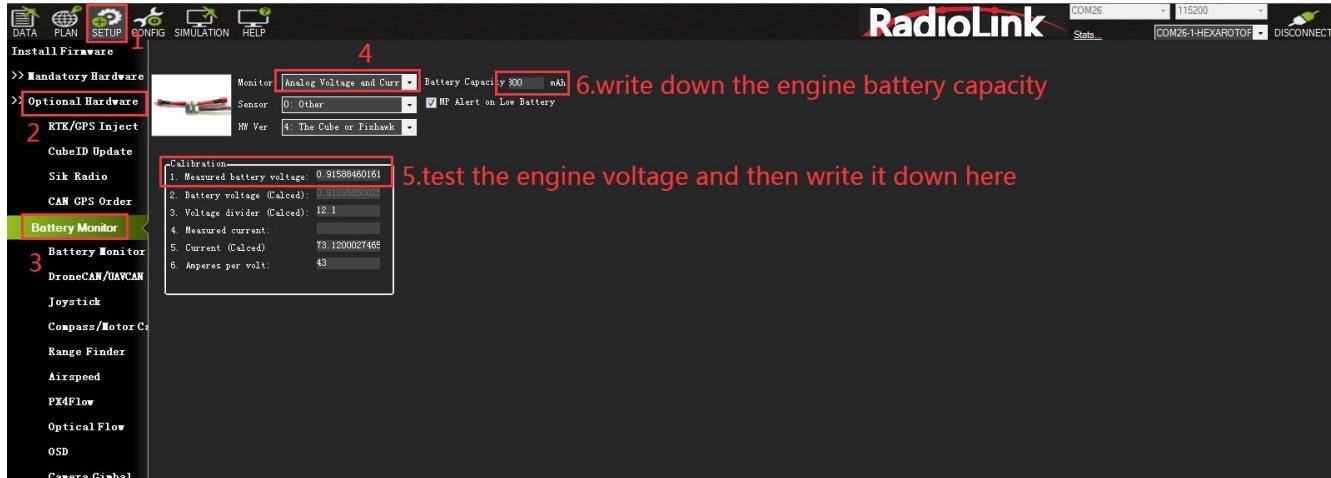
You can turn off transmitter to check if the Failsafe setup success(the PWM of CH3 is smaller than 975) If enabled and set-up correctly the radio Failsafe will trigger if:

- (1) The pilot turns off the RC transmitter.
- (2) The vehicle travels outside of RC range.
- (3) The receiver loses power (unlikely).
- (4) The wires connecting the receiver to the flight controller are broken (unlikely).

1. Set battery fail safe

Set battery fail safe according to the aircraft power consumption, battery voltage, and flight distance. When the battery voltage is lower than this value, there will be enough battery voltage to return the aircraft. Set the low battery value (This value is set according to the battery voltage. When you fly long distances, Please set the single cell to 3.8V, the voltage value is $3.8V \times S$, the 3S battery is $3.8 \times 3 = 11.4V$; when at a close distance, you can set 3.6V for each cell), and set the action to RTL (return to home). RTL mode is enabled when the battery voltage is lower than 21V by default. You can modify it according to your needs.

The battery monitor has been calibrated at the factory. If the voltage measurement is inaccurate, please follow the steps below to re-calibrate it.



2. Set the radio fail safe (throttle fail safe). Set the action to RTL , and set the fail safe PWM (generally no need to change). Set the fail-safe setting in the transmitter, because we set the fail safe to start after the throttle is lower than 975, so we need to set the throttle fail safe value. Push the throttle trim button in the transmitter and check the input value of channel 3 in the transmitter in fail safe, so that the value is less than 10 or more than 975. Take RadioLink AT9S Pro as an example. Press the Mode button to enter the basic menu and select FAIL SAFE. Press Push to select Channel 3: Throttle. Turn the dial to select F/S and press Push button. When a value appears, the setting is successful. Remember to turn trim button to restore.

When a radio Failsafe is triggered one of the following will happen:

- Nothing if the vehicle is already disarmed.
- Motors will be immediately disarmed if the vehicle is landed OR in stabilize or acro mode and the pilot's throttle is at zero.
- Return-to-Launch (RTL) if the vehicle has a GPS lock and is more than 2 meters from the home position.
- LAND if the vehicle has no GPS lock OR is within 2 meters of home OR the FS_THR_ENABLE parameter is set to "Enabled Always Land"
- Continue the task if in automatic mode and the failsafe option is Enabled_continue_in_auto_mode.
- If the failsafe is cleared (the throttle is above 975), the aircraft will continue to fly in the flight mode corresponding to the previously set failsafe, and will not automatically return to the previous flight mode of normal flight.

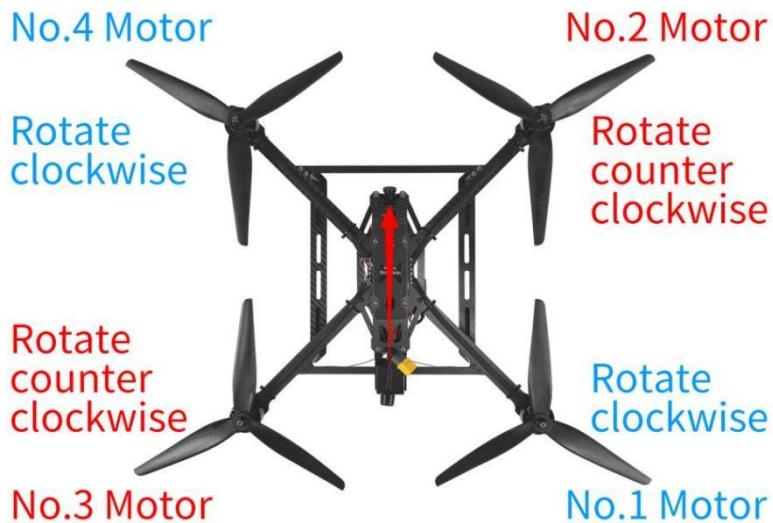
For example: the RTL mode is set for the fail safe, and the aircraft is flying normally in stabilize mode. Suddenly the fail safe is triggered due to signal loss, causing the aircraft's flight mode to automatically change from the stabilize mode to the previously set RTL mode. Even if the transmitter and receiver signals are reconnected during the return journey and the fail safe is released, the aircraft will still fly in the RTL mode. If you need to fly in stabilize mode again, you need to move the flight mode switch to another position and then back to the position of stabilize mode.

3. Set attitude fail safe in the transmitter. **The prerequisite for setting attitude fail safe is that there is a fail safe mode in the flight mode settings.** Taking RadioLink AT9S Pro as an example. Turn on the transmitter, flip the setting switch to RTL mode or the fail-safe mode you want to set, press Mode to enter the basic menu, select fail-safe, press Push to select 5: Attitude, Toggle to select F/S, hold Push, and the numbers below will change. Open Mission Planner to verify it. Turn off the transmitter and check that it is RTL in Mission Planner.

2.2.4 Propellers Installation

M435 PNP version is NO propellers installed for the package reason. So when the above steps are done setting(parameters set, ESC calibrated, arm successfully after powering on), propellers are ready to be installed. Make sure the correct installation of each positive/counter propeller. otherwise the aircraft may fail to take off.

As the image shown below, put the head with camera forward when installing propellers and make sure propellers on Motor 2 and 3 rotate counter clockwise while that on Motor 1 and 4 rotate clockwise.



Note: Never install the propellers before finishing setting parameters of aircraft to ensure the safety.

M435 is equipped with RadioLink MINI GPS TS100 as factory setting. If the Pos-Hold Mode and RTL Mode needed, please go to an open space and wait till the satellites searched to enjoy the flight.

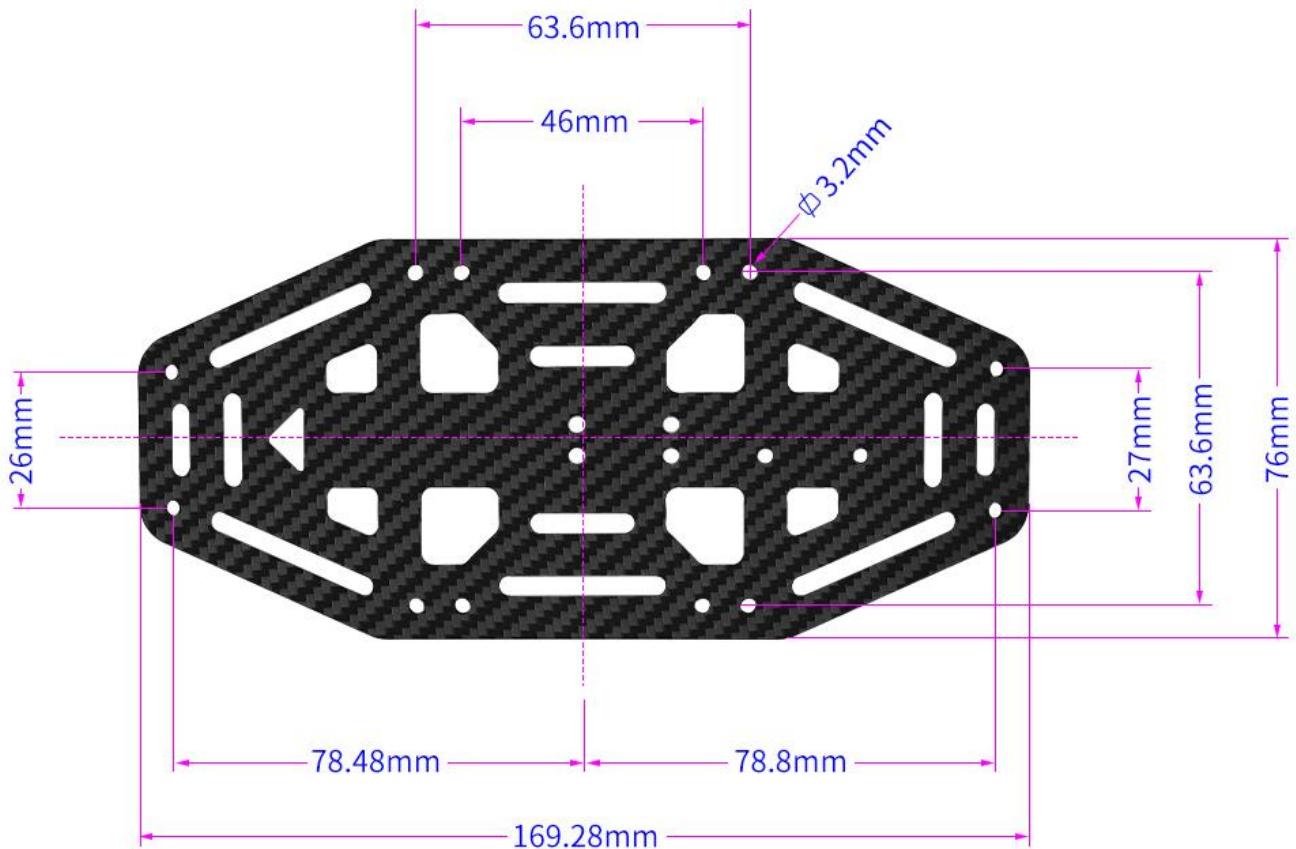
Green indicator on GPS TS100 flashes means satellites searched. It's advised to wait some time (about 1.5-2 minutes) for searching satellites at the first flight. And it will be a bit longer in cloudy weather. The quantity of the satellites searched reaches 18 or above will ensure the pos-hold and RTL accuracy.

2.2.5 Load System of M435

M435 has a load system specifically designed for carrying heavy loads. The load can be connected to M435 through both soft and hard connection methods. Please choose the connection method according to your needs.

M435 is equipped with a load plate when shipped from the factory. The load plate is locked to the aluminum pillar at the bottom of the M435 with 7 screws. The load board is equipped with a 20KG digital metal servo, which can control the release and closing of the hook through the metal servo. The control port of the servo is channel 6. Please assign a two way switch to channel 6 to control the load servo. If AT9S Pro transmitter is selected at the factory, SWB is used to control the hook. Pull it up to close the hook and pull it down to release the hook. The soft connection of the load can be achieved through hooks. Please note that when the load is softly connected, the load will shake during the movement of the aircraft, causing the attitude of the aircraft to be affected. Please do not make large flight movements (such as rapid acceleration/ deceleration, large-angle sharp turns, etc.) when softly connecting the load.

After removing the 7 screws of the M435 load plate, you can use the 8 aluminum pillars at the bottom of the M435 to hard connect the load. The dimensional drawing of the aluminum pillars is as follows. The load plate can be designed according to the dimensional drawing.

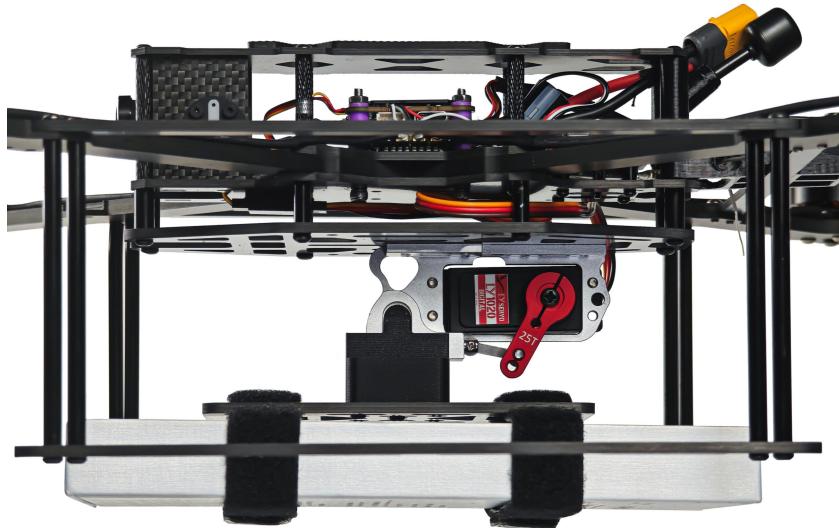


You can also choose to remove the 6 screws fixing the servo on the load plate, disconnect the servo connect cable, and then install the load plate to the studs at the bottom of the M435. The load can be fixed to the load plate through the holes reserved on the load plate using fixed cable ties, battery cable ties, etc.

In addition, for irregular objects that need to be thrown, M435 is also equipped with an additional throwing plate. Use a tie to fix the load to the throwing plate, and then connect it to the load servo for throwing.



Throwing plate with ties



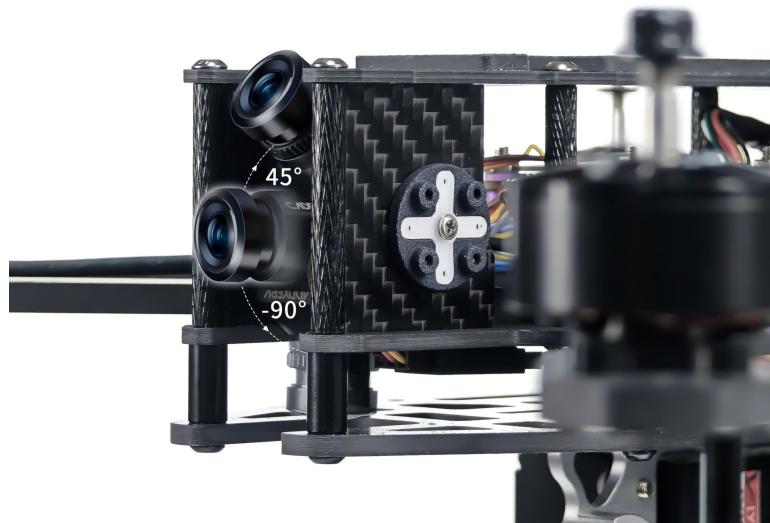
Use the throwing plate to carry loads

The load plate and throwing plate need to be assembled. For assembly details, please refer to RadioLink official website: https://www.radiolink.com/m435_video

2.2.6 Camera Tilt Servo (Only for M435 FPV Version)

In order to easily observe the situation below when throwing the load, M435 FPV version adds a camera tilt function, which is controlled by channel 9. For AT9S Pro transmitter which comes with M435, VRD is assigned to control the tilt of the camera by default. The camera can rotate downward up to 90 degrees and upward about 45 degrees. If you are not using RadioLink transmitters, please assign a knob to channel 9 to control the camera tilt. If you assign a 2-position switch or 3-position switch to control the camera tilt servo, you can only rotate the servo to three or two fixed positions.

Note: Before assigning the switch for channel 9, please set the travel of channel 9 within ± 50 . Place the knob or switch at both ends, and then slowly increase the travel value and observe the servo. When the servo rotates to the appropriate position (i.e.: The camera no longer moves as the travel of channel 9 increases), just save the travel value to prevent the travel amount from exceeding the limit of the camera and causing damage to the camera or the servo.



Camera tilt

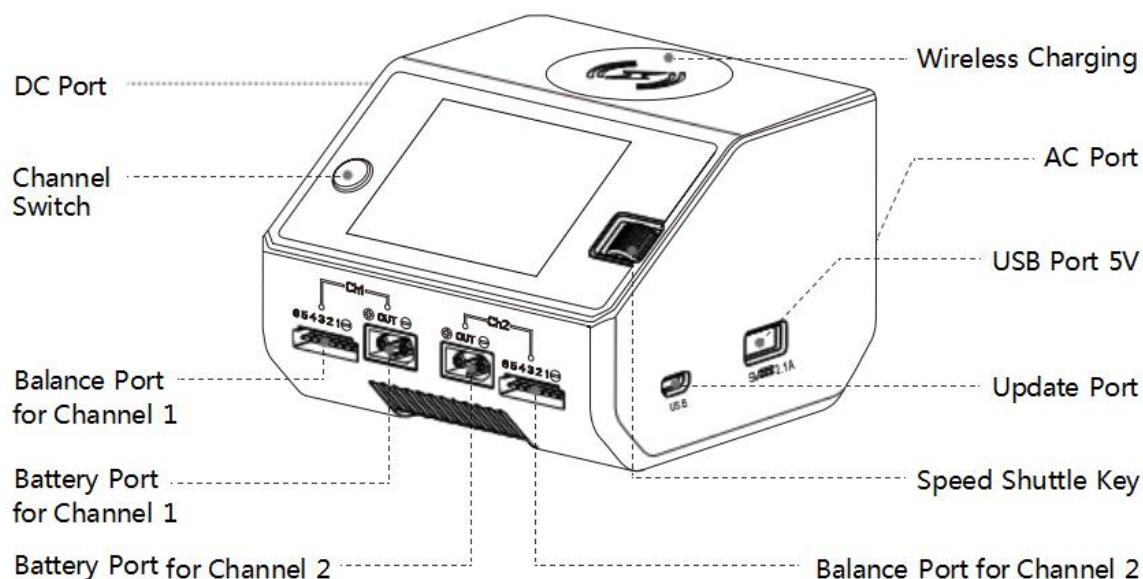
2.3 Charger

M435 can be equipped with HOTA D6 Pro AC/DC dual channel smart charger.

Specifications

Input Voltage	AC 100~240V / DC 6.5~30V	Balance Current	1600mA x 2
Charge Current	0.1~15A x 2	Discharge Current	0.1~3A x 2
Charge Power	DC 325Wx 2 @ input voltage > 24V	External Discharge Current	1~15A x 2
	AC 200W (Support power distribution)	USB Output	5V / 2.1A
Discharge Power	Internal Discharge: 15W × 2 (balance port 10W x 2)	Storage Temperature	-20~60°C
	External Discharge: 325W × 2 (650W)	Operating Temperature	0~40°C
Battery Type	LiHV/LiPo/LiFe/Lilon/Lixx : 1~6S NiZn/NiCd/NiMH : 1~16S Smart Battery : 1~6S Lead Acid(Pb) : 1~12S(2~24V) Eneloop : 1~16S	Screen Size	2.8" 320×240 260000 colors
		Dimensions	108mm×105mm×76mm
		Net Weight	575g
		Color	white, black, gray
Protection Function	Temperature protection, time protection, capacity protection, input reverse protection, Output protection, short circuit protection, output overcurrent protection, Output overvoltage protection, overcharge protection		

Introduction



Warnings and Safety Notes

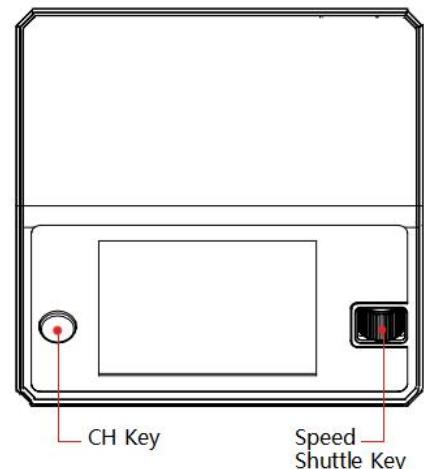
1. Do not use the charger in an unattended manner, in case of any functional abnormality, please stop using it and refer to the manual.
2. Keep the charger away from dust, humidity, rain and high temperature, as well as avoid direct exposure to sun and intense vibration.
3. Input voltage of the charger is 6.5-30V DC. When connecting the power supply, make sure that the input voltage match the operating voltage range of the charger.
4. Please place the charger on a heat-resisting, non-flammable and insulating surface. Do not use it by placing it on the car's seats, carpet or other similar place. Keep inflammable and explosive objects away from operation areas of the charger.
5. Make sure the heat emission hole at the bottom of the charger is uncovered while in use, and ensure the cooling fan smoothly extracts heat.
6. Please fully understand the charging and discharging characteristics as well as the battery's specifications. Additionally, set up proper charging parameters in the charger. Incorrect setting of parameters can cause damage to the charger and battery and/or result to disastrous consequences such as fire or explosion.
7. When charging or discharging is completed, please press the speed shuttle key to terminate current task, and remove the battery when charger shows the standby screen.

Recommended Connected Way

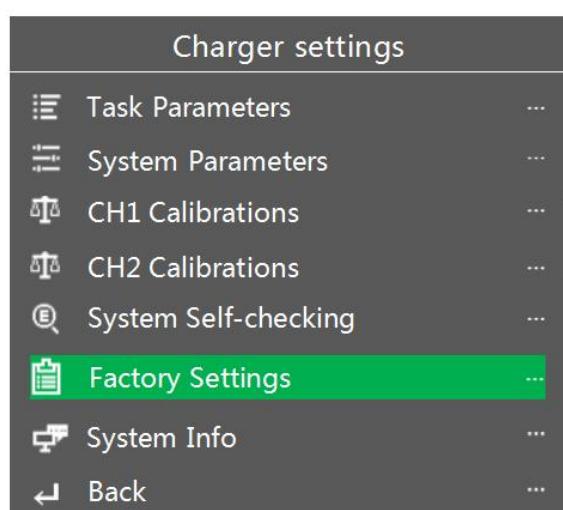
1. Connect the power supply, wait for self-checking to be completed;
2. Select the channel you wanna use then connect your battery to the chosen channel;
3. Set up task parameters applicable to your battery through the display and speed shuttle key;
4. Enjoy.

Operative Skills

1. Connect power supply to the charger's AC or DC port, wait for the system to complete the self-checking. Connect the battery to the charger under standby interface, and short press the speed shuttle key to select the switching channel freely, after select the corresponding channel, short press the speed shuttle key to make the "Task Setting" menu to pop up.
2. When the task is being executed, you can short press the speed shuttle key to pop up the "Adjust Task" menu to adjust the task's current.
3. Long press CH key to quick stop current operation or to enter the "Task Settings" menu for corresponding channel.



Charger Settings



In the standby interface, Long press the speed shuttle key to pop up the “Charger Settings” menu. The menu items are as follows:

Task Parameters	Adjust Safety Timer, Max Capacity, End Current and other parameters
System Parameters	Adjust Language, input power, Volume and other parameters
CH1 Calibrations	Used for channel 1 data calibration
CH2 Calibrations	Used for channel 2 data calibration
System Self-checking	Start self-checking of the charger
Factory Settings	Restore all parameters to factory settings(User calibration data cleanup)
System Info	Display system information, serial number
Back	Exit “Charger Settings”

For more details of the detailed operating instruction of HOTA D6 Pro AC/DC dual channel smart charger, please download it from the link: https://www.radiolink.com/manuals_download

Chapter 3 Flight

3.1 Visual Flight

At the beginning, it's advised to flight visually by practicing basic movements like flying forward/backward/leftward/rightward and hovering.

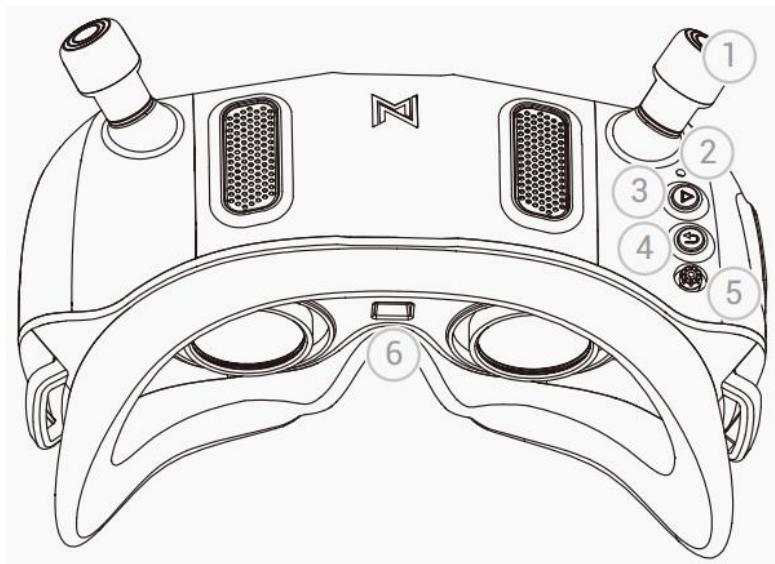
For example, beginners can try hovering under the stabilize mode by toggling the joysticks to adjust the aircraft to remain the same position. Then the horizontal 8 training for the next step.

3.2 FPV Flight

Different from visual flight, FPV is first person view with the help of a goggle or a screen. Theoretically, FPV flight is easier than visual flight because pilots can clearly judge the moment to turn or forward with goggle or screen.

3.2.1 Walksnail AVATAR HD Goggles Quick Start Guide

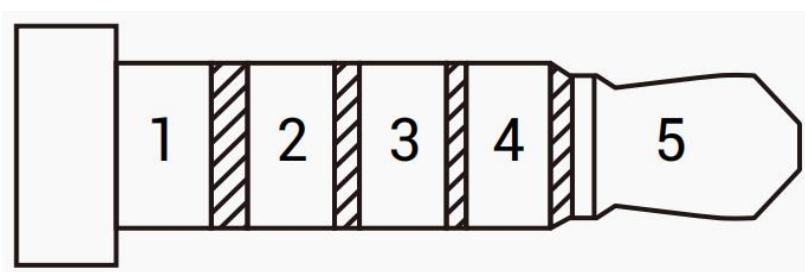
Introduction





- ① Antenna
- ② Link Button (Short press to enter the linking state, long press for 8 seconds to enter the upgrade state)
- ③ Record Button (Press to start or stop video recording)
- ④ Back Button (Press to return to the previous menu or exit the current mode. Press and hold for 3 seconds to switch to CVBS and HDMI input mode, It can be switched cyclically)
- ⑤ 5D Button (Toggle the button to scroll through the menu. Press the button to confirm)
- ⑥ Proximity Sensor (Detects whether the user is wearing the goggles and automatically turns the screen on or off)
- ⑦ AV-IN Port (5 Pin 3.5mm Audio Port)
- ⑧ HDMI Input
- ⑨ Micro SD Card Slot
- ⑩ HDMI Output
- ⑪ IPD Adjusters (Adjust pupil distance and diopter)
- ⑫ Power Port (Voltage range 7V-26V, DC 5.5*2.1)

AV-IN Port Definition



- 1. GND
- 2. VCC (Goggles Battery Voltage)
- 3. RX
- 4. TX
- 5. CVBS (Connect to Analog Receiver Video Signal)

*When using the AV-IN port function, please connect the cable first, and then turn on the goggles.

Linking

Note: The VTX and Goggles have been linked by default for M435 FPV version. If the link fails, please refer to the following instructions to link them.

1. Connect the VTX and the power of the Goggles.
2. Press the link button of the VTX and Goggles respectively (as shown in the picture), when the VTX enters the pairing state, the indicator light turns red, and the Goggles end is a DI... DI... DI...
3. After the link is successful, the indicator light on the VTX turns solid green, the beeping sound on the Goggles stops and the screen is displayed.

Upgrade

Please go to the official website to download the upgrade firmware, AvatarX_Gnd_X.X.X.img is the Goggles file, copy it to the SD card, be careful not to change the file name.

1. Copy the upgrade file to the root directory of the SD card, connect to the power supply and wait for the device to initialize (delete the old firmware file first if there is one).
2. Press and hold the link button on the Goggles for 8 seconds, and the Goggles automatically restart and emit a beep...beep...beeper sound.
(Do not power off during the upgrade process, the upgrade time on the goggle is about 6 minutes)
3. After the upgrade is successful, and the beeping sound stops after the Goggles beeps for 5 seconds.

Status indication

Goggles Buzzer Status	
Link state	DI.... DI.... DI.... DI....
Upgrade firmware	DI..... DI..... DI..... DI—
Upgrade failed (No SD card or firmware detected)	DI.. DI.. DI.. DI..
Boot failure (Reboot or re-upgrade)	DI.. DI..... DI.. DI.....

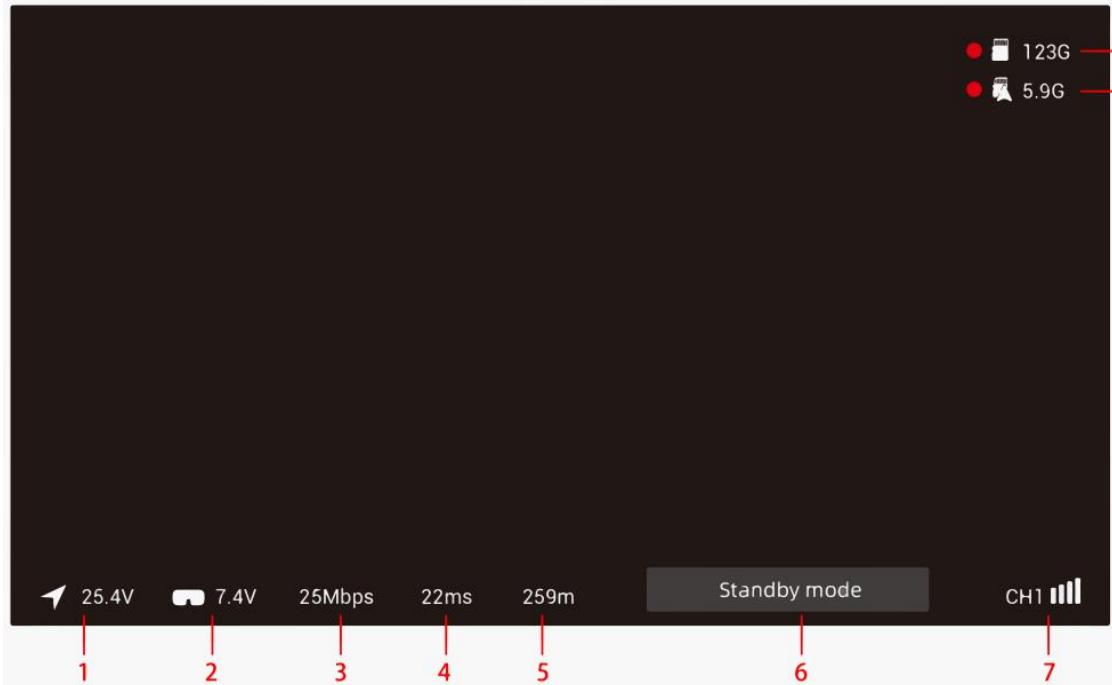
Operating channel

Central frequency(MHz)	Channel1	Channel2	Channel3	Channel4	Channel5	Channel6	Channel7	Channel8
FCC	5660	5695	5735	5770	5805	5878	5914	5839
CE/SRRC	5735	5770	5805	-	-	-	-	5839
MIC	5660	5700	-	-	-	-	-	5745

Make sure you fully understand and abide by local laws and regulations before using this product. An amateur radio license may be needed in FCC regions when using channels 1, 2, 6 or 7, as they are amateur frequency bands. Users who use the amateur frequency bands with a modified or cracked version or without a license may be punished for breaking local laws or regulations.

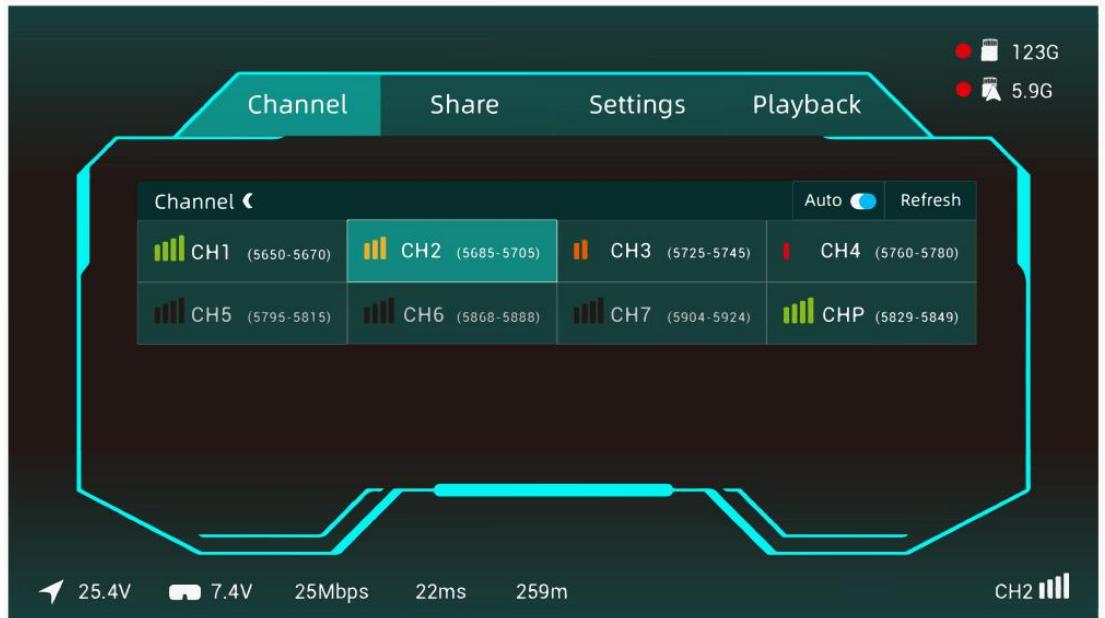
Software interface

Main interface-1



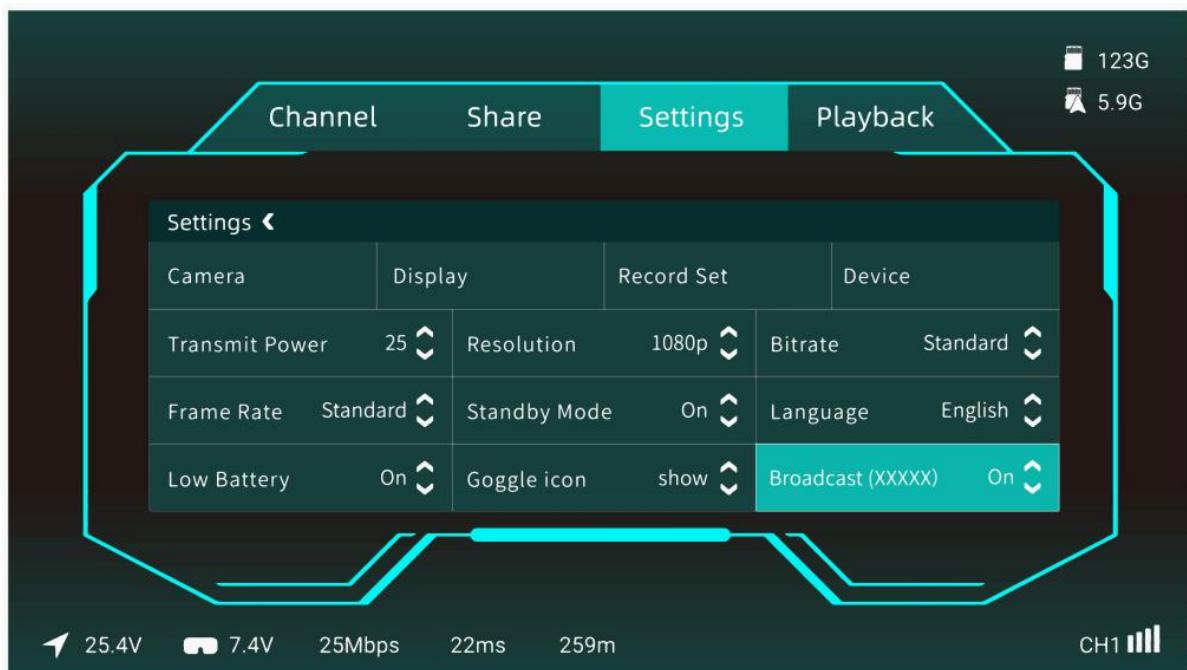
1. VTX input voltage: Detect VTX voltage, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, and alarm in red font when the voltage is too low.
2. Goggles input voltage: Detect Goggles low battery alarm, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, red font and buzzer alarm when the voltage is too low.
3. Real-time bit rate: Display real-time transmission code rate, two display modes of 25.0Mbps and 50.0Mbps.
4. Time delay: Displays the total delay from the transmission of images captured by the VTX camera to the ground end.
5. Ranging mode: The function of calculating the transmission distance from Goggles to VTX according to the wireless transmission delay, the signal is interfered will lead to error amplification.
6. Status prompt: The text prompts information that needs attention in the current state.
7. Current channel: Display the current setting channel, the signal grid has 5 states, 4 grids, 3 grids, 2 grids, 1 grid, and blank.
8. Goggles SD card status: Display the status and remaining capacity of the Goggles SD card. When recording, the red circle flashes to prompt, the status of the SD card not detected is displayed as NO SD, and the status of the memory is full is displayed as -.
9. VTX storage status: Display the status and remaining capacity of the VTX storage. When recording, the red circle flashes to prompt, the status of the storage not detected is displayed as NO SD, and the status of the memory is full is displayed as -.

Menu Channel-2



1. Display the interference situation of each channel. The signal strength is divided into 4 grids, 3 grids, 2 grids, 1 grid, and a space. The signal display space is occupied and cannot be selected. The white stroke is the selection box. Press the middle button to confirm the current channel and highlight it.
2. Channel working logic: When switching between standard bit rate and high bit rate, the current channel will be set to CHP, and the channel needs to be reselected. CHP is a public channel, which is easy to be interfered and is not recommended for flight work; Auto is a channel that automatically refreshes the signal interference situation of all channels; Refresh is the channel of manual refresh.
3. Channel display of each country: FCC standard displays 8 channels (CH1/2/3/4/5/6/7/P), CE/SRRC standard displays 4 channels (CH1/2/3/P), MIC standard displays 3 channels (CH1/2/P). Only in FCC mode, the high bit rate mode can be turned on, and the 8 channels become 4 channels CH1, CH2, CH3, CHP.

Menu Settings-3



1-Camera:

The adjustable contents of the camera are scene preset, EV value, saturation, sharpness, white balance, rotate, ratio, 3D DNR, Shutter, and Max ISO settings.

2-Display:

Display adjustable content is zoom out, brightness, focalization mode, custom OSD, OSD position, font upgrade, custom font, viewfinder, viewfinder edit settings.

3-Record set:

The recording can be adjusted as VTX REC resolution, REC device, take off REC, REC loop, format SD card, format VTX, Built-in EIS, REC Time, REC Format, Color, Saturation, Sharpness.

4-Device:

The adjustable contents of the device are buzzer volume, Ranging mode, Weak signal, Reset all, Device information, Instruction, and Switch mode.

5-Transmit Power:

The default transmit power can be 25mW, 200mW, 500mW, 700mW.

6-Resolution:

The resolution can choose 720P and 1080P.

7-Bitrate:

Standard bit rate and high bit rate can be selected to obtain different image quality, and high bit rate can only be enabled in FCC mode.

8-Frame Rate:

Standard frame rate and high frame rate can be selected to obtain different time-lapse experiences.

9-Standby Mode:

When in standby mode, the transmission power of VTX terminal and Goggles terminal is 10dbm, and the current set transmission power will be output only after exiting standby mode or turning off the standby mode switch. Turning on the standby mode requires the air unit serial port to be correctly connected to the flight controller. When the goggles receive the drone's unlock signal, it will automatically exit the standby mode. If there is no flight controller support, you can choose to turn off this function.

10-Language: Language switching English/中文.

11-Low Battery:

Detect Goggles low battery alarm, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, red font and buzzer alarm when the voltage is too low.

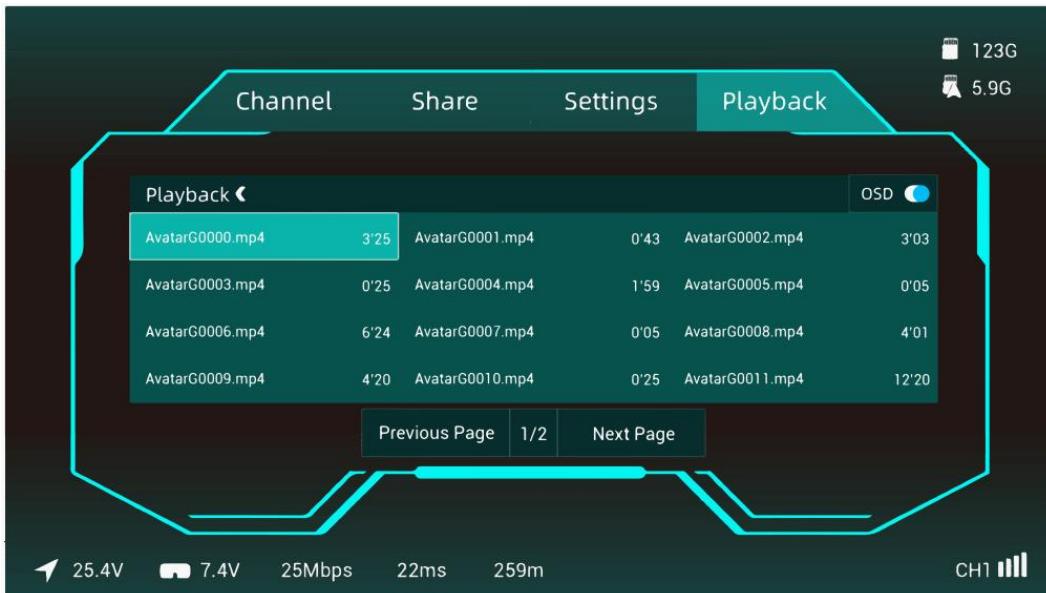
12-Goggle icon:

You can choose to display or hide the icons on the main menu interface.

13-Broadcast:

After turning on the broadcast switch, others can receive your video transmission through the Avatar system, The 6 characters in brackets are the unique identification number of VTX.

Menu Playback-4



1. The OSD switch can be turned on or off. When it is turned on, the flight control OSD information (if any) and the flight information of the main interface will be superimposed on the playing video interface. When the selection box stays in the video list, press and hold the VRX confirmation key to open the multi-selection function, and the menu box will display function settings (delete, select all, cancel), press the return key again to exit the multi-selection mode.
2. On the playback interface, click the middle button to pause/play, and the left and right arrow keys to adjust rewind/fast forward.

Precautions

1. This is a sophisticated product. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. It must be operated with caution and common sense and requires some basic mechanical knowledge.
2. Before powering on, please install all antennas to avoid damage to components.
3. When using HDMI output, Please make sure the monitor supports the set resolution and frame rate, otherwise it will cause abnormal display.
4. The transmit power of VTX and Goggles is only 10mW when the standby mode is on.
5. There are up to eight channels for the goggles depending on the region (FCC: eight, CE/SRRC: four, MIC: three). Each channel has a bandwidth of 20 MHz. The public channel is 8, which is the default channel when the equipment is powered on. The channel can be changed manually to avoid interference from other devices.
6. It is recommended to upgrade VTX and Goggles to the latest firmware before first use.

Specifications

Model	Avatar HD Goggles X
Communication Frequency	5.725-5.850GHz
Transmitter Power(EIRP)	FCC:<30dBm; CE:<14dBm; SRRC:<20dBm; MIC:<25dBm
I/O Interface	HDMI Out, HDMI Input, 5Pin 3.5mm Audio Port, DC5.5*2.1mm Port, Micro SD Card Slot
Transmission Resolution	1080p 100fps, 1080p 60fps, 720p 100fps, 720p 60fps
Code Rate	Max 50 Mbps
Min. Latency	Average 22ms

Average Gain	2dBi
Polarization	LHCP
Transmission Distance	>4km
Channel	8
Screen Resolution	1920*1080/100Hz
Screen Material	OLED
IPD Mechanical Range	54mm-74mm
Adjustable Focus Range	+2.0 to -6.0 Diopter
FOV	48°
Power Input	7-26V (2S-6S)
SD card	Support 256G
System	Avatar HD system

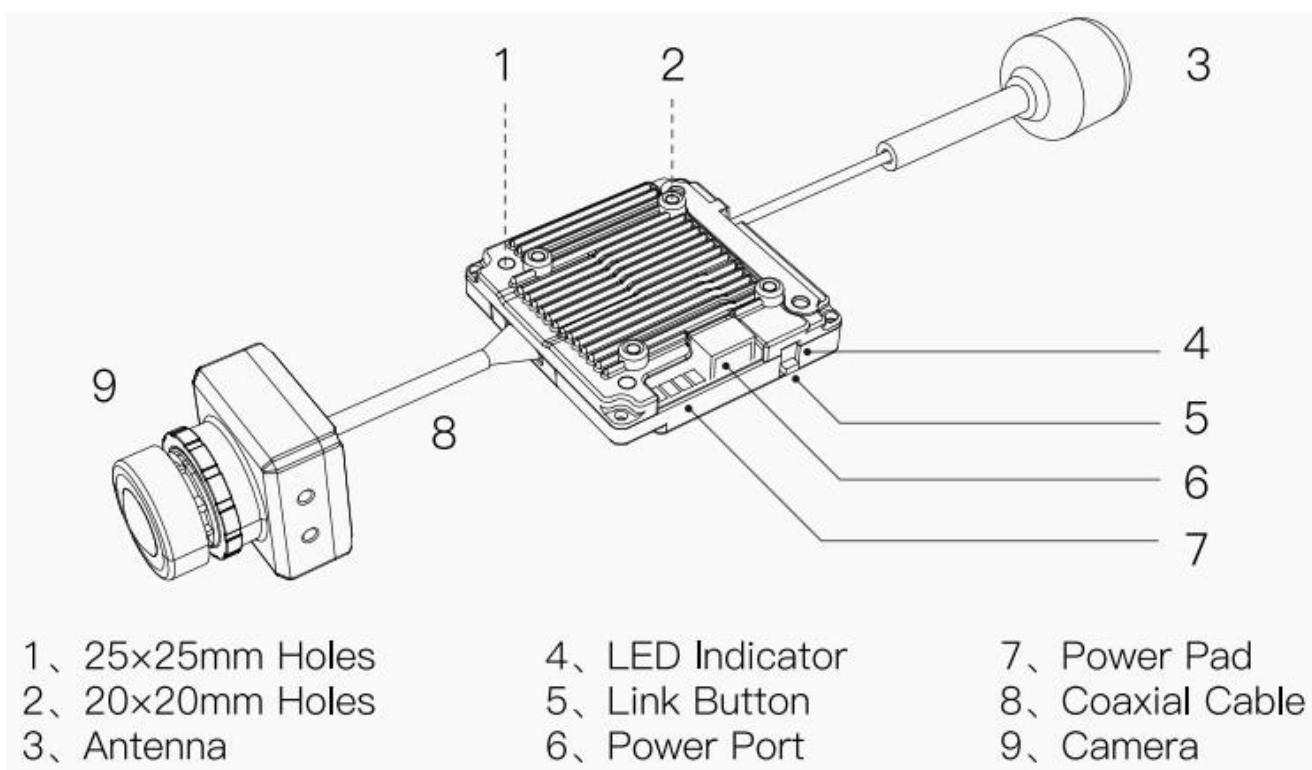
WIFI	
Protocol	IEEE 802.11b/g/n/ax
Communication Frequency	2.4GHz
Transmitter Power (EIRP)	<20dBm

Bluetooth	
Protocol	BLE 5.2
Transmitter Power (EIRP)	<8dBm

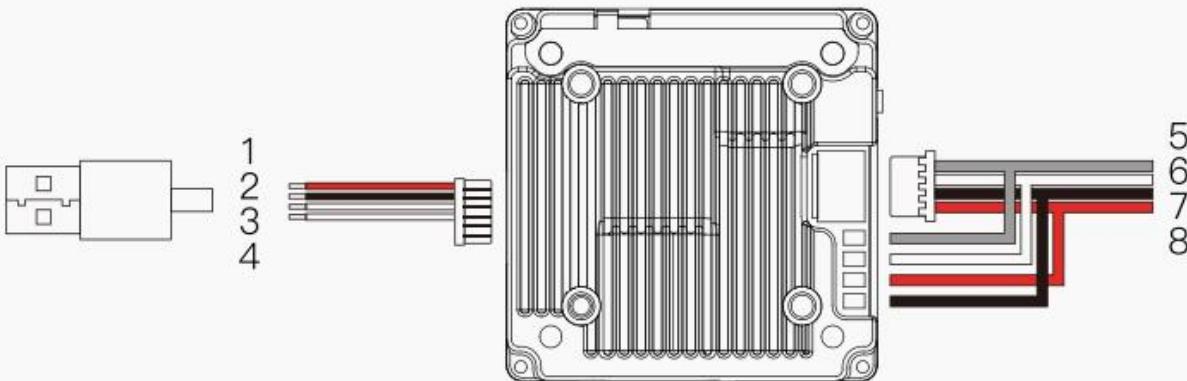
3.2.2 Walksnail Avatar HD Pro Kit Quick Start Guide

M435 can be equipped with Walksnail Avatar HD Pro Kit.

Introduction



Connection

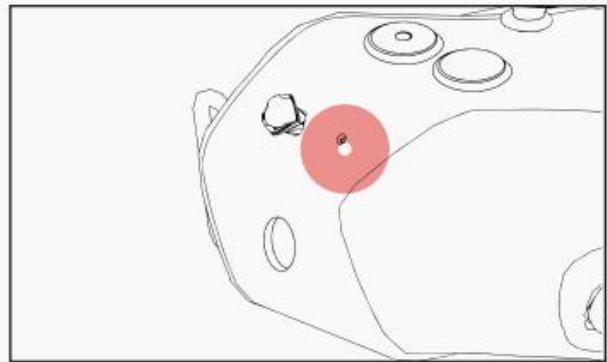
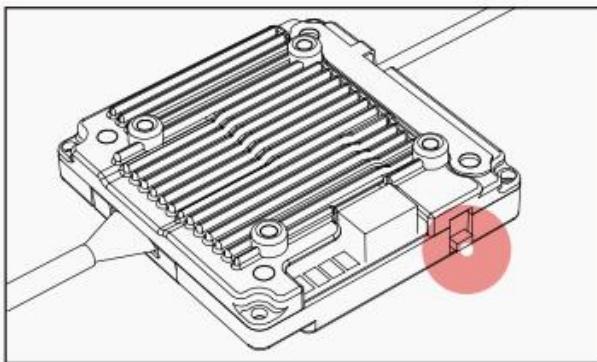


- 1、USB-5V
- 2、USB-GND
- 3、USB-DM
- 4、USB-DP

- 5、Uart TX (Connects to Flight Controller RX)
- 6、Uart RX (Connects to Flight Controller TX)
- 7、GND
- 8、Power Input 6V~25.2V*

* When use 6s batteries,
it is recommended to solder capacitors at the power input.

Linking



1. Connect the VTX and the power of the goggles.
2. Short press the VTX and goggles linking buttons respectively (as shown in the picture). When the VTX enters the pairing state, the indicator light turns red, and the goggles end is a DI…DI…DI …
3. After the link is successful, the indicator light on the VTX turns solid green, the beeping sound on the goggles stops and the screen is displayed.

Upgrade

Please go to the official website to download the upgrade firmware. Avatar_Sky_X.X.X.img is the VTX file. Copy to VTX U disk (VTX needs power supply), be careful not to change the file name.

1. Copy the upgrade file to the root directory of the VTX U disk, connect the power supply and wait for the device to start up (If there are old firmware files, please delete them).
2. Press and hold the VTX linking button for 8 seconds, and release the button after the indicator light goes out. At this time, the VTX will automatically restart and enter the upgrade state, and the indicator light will change from blinking red to solid red and then turn off. The upgrade time is about 20 seconds, please do not power off during the upgrade process! (If the VTX continues to light up red, it means that the firmware cannot be detected or the firmware is wrong, please check the firmware file).
3. After the upgrade is successful, the VTX indicator turns green and blinks.

Status indication

Goggles Buzzer Status	
Link state	DI.···DI.···DI.···
upgrade firmware	D ·····D ·····DI·····DI—
Upgrade failed	DI..DI..DI..
VTX Indicator Status	
Link state	Steady red light
Upgrade firmware	Red light rapidly flashes
Wireless connection, image output is normal	Steady green light
Wireless not connected	Green light rapidly flashes
Wireless connection is normal, but the image is abnormal	Green light slowly flashes

Operating channel

Central frequency(MHz)	Channel1	Channel2	Channel3	Channel4	Channel5	Channel6	Channel7	Channel8
FCC	5660	5695	5735	5770	5805	5878	5914	5839
CE/SRRC	5735	5770	5805	-	-	-	-	5839
MIC	5660	5700	-	-	-	-	-	5745

Make sure you fully understand and abide by local laws and regulations before using this product. An amateur radio license may be needed in FCC regions when using channels 1, 2, 6 or 7, as they are amateur frequency bands. Users who use the amateur frequency bands with a modified or cracked version or without a license may be punished for breaking local laws or regulations.

Precautions

1. Before powering on, please install all antennas to avoid damage to components.
2. When the standby mode is turned on, the power is limited to 10mW. Before taking off, you need to unlock the flight control or turn off the standby mode.
3. If you use it with other 5.8GHz devices at the same time, please choose a different channel.
4. If you use the Gyroflow function of the camera, please provide shock absorption for the fixed deck of the camera to avoid the failure of the anti-shake.

VTX Specification

Model	Avatar V2 module
Communication Frequency	5.725-5.850 GHz
Transmitter Power (EIRP)	FCC:<30dBm; CE:<14dBm; SRRC:<20dBm; MIC:<25dBm
I/O Interface	JST1.0*4(power cable) JST0.8*6(USB)
Mounting Holes	25.5*25.5mm; 20*20mm

Dimensions	33*33*10.5mm
Storage	8G/32G
Recording	1080p/720p
Weight	17.6g
Operating Temperature	-20-40°C
Channels	8
Wide Power Input	6V-25.2V
Supported FC System	Betaflight; Inav; Fettec; Kiss; ArduPilot
OSD	Canvas mode
Latency	Average delay 22ms
Antenna	1(IPEX)

Camera parameters

Model	Avatar HD pro camera
Image Sensor	1/1.8-Inch sony starvis2 sensor
Resolution	1080P/60fps; 720P/100fps; 720P/60fps
Ratio	4/3 16/9
lens	8Mp
FOV	160°
Aperture	F1.6
Shutter	Rolling shutter
Weight	9.5g
Dimensions	19*19*24mm
Min. Illumination	0.0001Lux
Coaxial Cable	140mm

VTX Antenna

Model	Avatar V2 antenna
Polarization	LHCP
Frequency range	5600MHz-6000MHz
Average Gain	1.9dBi
VSWR	≤1.5
Interface	IPEX-1
Dimension	R15X45mm (without cable)
Weight	2g

Thank you again for choosing RadioLink product.