D04

Multi-link Signal Relay

Contents

Disclaimer

Thank you for purchasing the D04 Dual Link Radio (hereafter referred to as "D04"). Please use D04 according to local radio regulations. Please read this statement carefully before using it. Once used, it is deemed to be an endorsement and acceptance of the entire contents of this statement. Please strictly follow the instructions to install and use the product. FOXTECH Co., Ltd. will not assume any legal responsibility for any result or loss caused by improper use, installation, assembly and modification of the user.

Product Note:

1. D04 is used as the ground end (hereinafter referred to as "ground end") in conjunction with the sky end R20 (hereinafter referred to as "sky end" or "airborne end").

2. Built-in 12V battery on the ground (18s battery for 3s), external power input DC7.4 - 12V (lithium battery 2s - 3s), please supply power to the radio in strict accordance with the specifications.

3. Be sure to install the antenna before powering up to avoid damage to the circuit.

4. Ensure that the antenna is obstructed during the use of the antenna, without bending, and as far as possible away from the large metal structural parts, to avoid communication obstruction due to the above reasons.

5. Do not disassemble or modify it without permission. If you encounter problems that cannot be solved during installation or use, please contact Huazhiyi or your agent.

6. Pay attention to keep the proper distance between the electronic devices during installation to minimize electromagnetic interference between devices.

7. Make sure all connections are securely fastened and all parts are working properly before use.

8. Please check the surrounding environment before use to ensure that there is no interference from other 840MHZ-930MHZ equipment, otherwise the radio data transmission may be seriously affected.

9. For better service customers, we have been optimizing the product upgrade. The matching software and firmware of the product will be updated and updated from time to time. There may be incompatibility between different firmware versions on the ground and onboard. So please pay attention to check the software firmware version when using. Please also pay attention to our website to get the latest software firmware and technical support.

10. The software, firmware, drivers, port conversion tools, etc. involved in this manual will be updated from time to time on our website. Please visit our website to download it yourself or contact customer service.
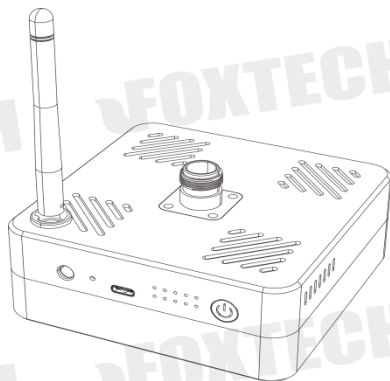
Product Introduction

The D04 is a multi-link signal relay system that can simultaneously transmit up to two independent S-BUS data and one serial port data. By using D04 signal relay The remote control signal can be enhanced and transmitted to the air unit together with the TTL signal.So D04 Multi-link Signal Relay solves the problem of short transmission distance of the remote controller and datalink. D04 features small size, good integration and high sensitivity. The ground unit is integrated with wireless network module (WIFI or BLE can be selected according to requirements), so users can connect to RB20W ground unit by wireless network or USB data cable.

The wireless network can reach a stable coverage of 30~50M without interference. D04 signal relay works in 840MHZ~915HZ frequency band and the maximum communication distance is up to 30KM.
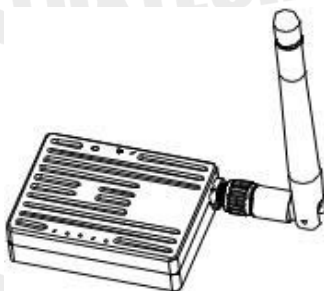
Packing List

Main Module

Ground Unit ×1

Air Unit x 1

Accessories

Cahrger×1	USB cable×1	Power cable×1	Parameter setting
For ground unit	For parameter setting	For air unit (DC:7.4-12V)	For air unit

Product instructions

D04 can simultaneously transmit up to two independent S-BUS data and one serial port data. There are two ways to access the serial port data on the ground. One is to input directly through the USB data line, and the other is to transmit through the WIFI or BLE wireless network. When D04 detects the USB data cable insertion, it uses USB to transmit the serial port data preferentially. When it is detected that the USB data cable is not inserted, D04 automatically switches to your preset wireless module (WIFI or BLE) to transmit the serial port data. If your remote control or receiver does not support S-BUS, you will need to purchase a separate PWM to S-BUS module.

Ground Unit
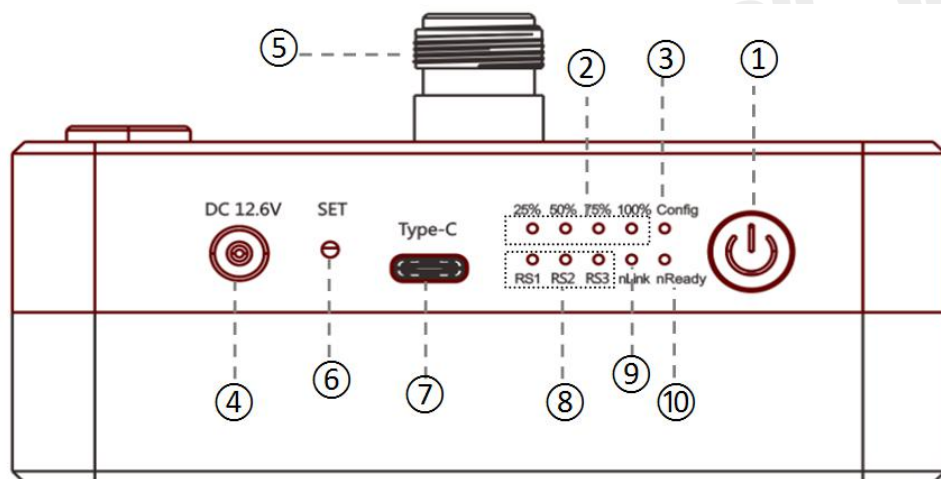
①   Power indicator and button PWR

②   4 power indicator 25% , 50% , 75% , 100%

③   Config indicator

    2 S-BUS signal input , or config type

④   Charge port

    Support only DC 12.6V input

⑤   Antenna interface

SMA

⑥ SET button

For parameter setting

⑦ USB port Type-C

For parameter setting or data transmission, **not** batter charge port

⑧ Data transmission module signal indicator

Indicator RS1 RS2 RS3 is the signal strength indicator. The number of lights indicates the strength of the signal quality of the high-frequency data transmission module. It can also be used to indicate the type of wireless network configuration in the configuration mode.

⑨ wireless network connection status indicator nLink

The indicator light indicates that the wireless network is connected or transmitting data, and the indicator is off indicating that the wireless network is not connected or is not transmitting data.

⑩ Working status indicator of wireless network   nReady

When the indicator is on, the wireless module is working properly and can connect and transfer data.

Ground unit connection
diagram
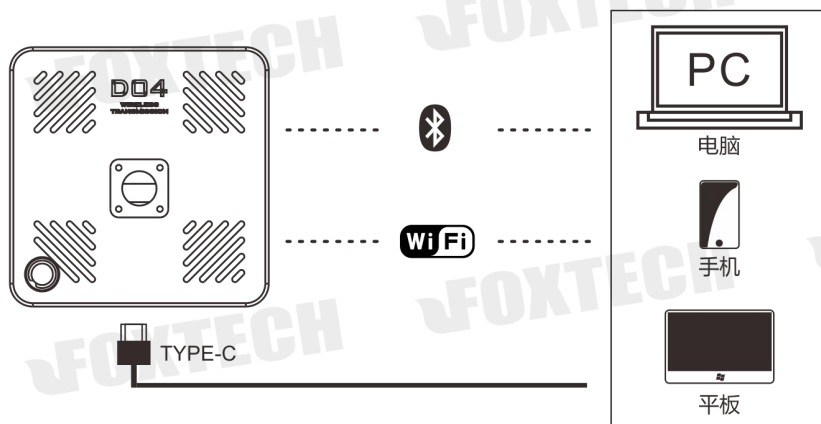
Radio Power On and Off

1. After pressing the power button PWR, the power indicator lights up and the four battery indicator lights start to flash simultaneously.

2. During the period when the battery indicator flashes (about 5S), release the power button and press and hold the power button again. At this time, the four battery indicators will light up in the way of the water lamp until the buzzer sounds long. Indicates that the boot action is complete.

3. The shutdown operation is the same as the startup operation. The flow direction indication is different from the startup only when the button is pressed for a long time.

Status Indicator Instructions

Ground Unit Indicator

Indicator	status	implication
RS1,RS2,RS3 Configuration mode	RS1 flash，RS2 和 RS3 go out	current wireless mode is WIFI
	RS 1and RS2 flash，RS3 go out	current wireless mode is BLE
RS1,RS2,RS3 status before turned on	RS1 is on，RS2and RS3 go out	current wireless mode is WIFI
	RS 1and RS2 are on，RS3 goes out	current wireless mode is BLE
RS1,RS2,RS3working status	RS1,RS2,RS3 are on	High frequency module signal is strong
	RS 1and RS2 is on，RS3 go out	High frequency module signal is general
	RS1 is on，RS2and RS3 goes out	High frequency module signal is weak
Config	Always being on	In high frequency module config. mode
	Go out	SBUS1 and SBUS2 no signal input
	One flash a time	SBUS1 has signal input
	Two flashes a time	SBUS2 has signal input
	Quich flashing	SBUS1 and SBUS2 has signal input
PWR power indicator	flash	Firmware upgrade status in configuration mode
	flash，with short continuous sound of buzzer	Low voltage alarm
	Always being on	Radio is powered on，in normal working status
	Go out	Radio is powered off
4 power capacity indicator	25% flash，other 3 go out	LOW BATTERY less than 25%
	25% flash，other 3 go out	Power during 25%～50%
	25% and 50% is on，other 2go out	Power during 50%～75%
	25%、50% and 75% on，100% goes out	during 75%～100%
	25%、50%、75%和 100% all are on	Fully charged 100%
	All 4 flash，with short continuous sound of buzzer	High temperature protection status

| indicator	status	implication
nReady	on	The wireless module works normally and forms a wireless network
	off	The wireless module does not work properly and does not form a wireless network
nLink	On	Wireless network data transmission is normal
	off	Wireless network data transmission is abnormal
4 battery indicator lights from full-on state to full-off. After 5S, the nReady indicator lights off first and then lights up.		The wireless module restored factory Settings successfully

Receiver Indicator

indicator	status	implication
L1 灯	off	SBUS1 and SBUS2 no signal transmission
	One flash a time	SBUS1 has signal transmission
	One flash a time	SBUS2 has signal transmission
	Quick flashing	SBUS1 and SBUS2 has signal transmission
L2 灯	Always being on	The receiver is in high frequency configuration mode with no power output
L1、L2 always being on at the same time		The receiver is in firmware upgrade mode
RXD 灯	flash	Receiver has data reception
TXD 灯	flash	Receiver has data re-transmit
S1、S2、S3all on		Strong signal quality
S1 off , S2 and S3 on		Middle level of signal quality
S1 and S2 off , S3 flashes		weak signal quality

Ground Unit and PC Communication

The communication between the ground terminal and the host computer uses the USB data cable by default. If the USB data cable is not connected, the radio station will automatically switch to the preset wireless module (WIFI or BLE) to transmit the serial port data.

Ground terminal USB port identification
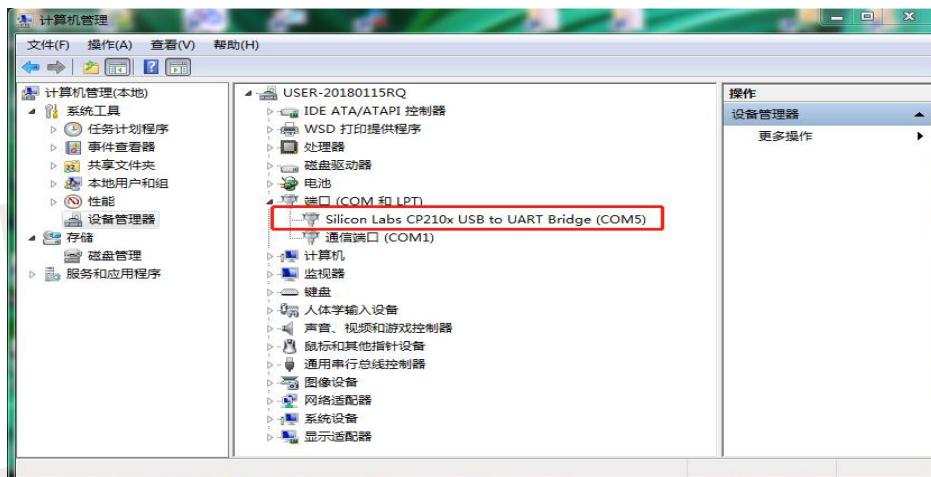
After the radio is turned on, connect the radio and PC with the USB cable. If the USB to serial port driver has been properly installed, the PC will display a port as shown. If a yellow exclamation mark is displayed, the driver is not installed correctly. Please go to our website to download the relevant driver.

Wireless network selection and setup

Press and hold the set button during the boot process until the RSSI indicator RS1 flashes or RS1 and RS2 flash simultaneously, indicating that the wireless network switching and configuration mode is entered. At this time, release the set button to set the wireless module parameters and switch the wireless network through the serial port AT command. For the WIFI module and Bluetooth module parameter settings, please check the WIFI and Bluetooth parameter configuration chapters. The following describes the switching of the wireless network, the specific method is as follows:

Short press the PWR button to switch the wireless network. The number of flashing RS1, RS2, and RS3 indicators indicates the wireless network type. The RS1 flashing indicates that the current switch is WIFI, and the WIFI parameter can be set through the USB data cable by using the serial AT command. RS1 and RS2 flash simultaneously to indicate that the current switch is BLE, and the BLE parameter can be set through the USB data line using the serial AT command. After the setting is completed, press the set button to exit the setting.
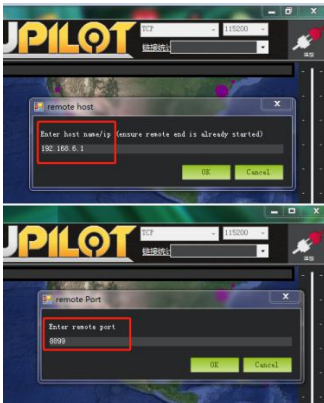
WIFI Wireless Network Connection

The PC and the radio are not connected by the USB data cable, if the wireless network selects the WIFI network, the WIFI network can be used for the serial port link data transmission. The first time connecting to the WIFI network, you need to connect manually. After selecting the automatic connection, as long as the PC is within the range of the radio WIFI network, it will automatically connect and can directly use the WiFi network communication.

(1) Open the PC wireless network connection. If the radio WIFI module works normally, it will scan the network named "D04_Radio". The factory default password is 88888888.


（2）After connecting to the WIFI network, the serial port link data transmission can be performed through the TCP protocol or the virtual port (requires WIFI virtual port tool).

① 1 If using TCP protocol for communication, open the Mission Planner ground station, select TCP communication mode, input the radio IP address 192.168.6.1, port number (default is 8899), establish connection (the baud rate is not selected),

② To use the port for communication, you need to use the WIFI virtual port tool to virtualize the WIFI network connection into a port.

Install WIFI virtual port toolkit, click "Add", then you will see the virtual serial interface , select an unused port, the network protocol selects the client, and input the datalink IP and port, click OK and you will see that a new port ELTIMA Virtural Serial Port has been added to the device manager. This port is the virtual serial port of the WIFI network.
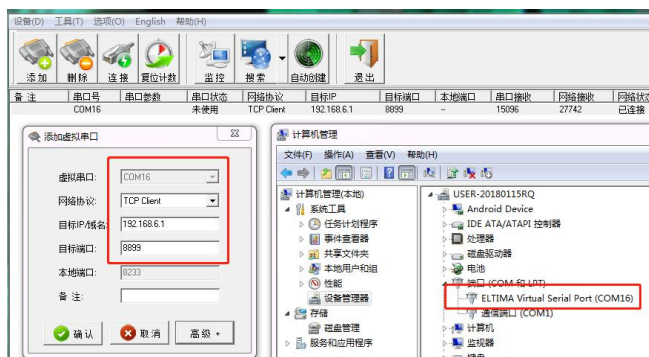
BLE Wireless Network Connection

In the case where the PC and the radio are not connected by the USB data cable, if the wireless network selects the BLE network, the BLE network can be used for the data transmission. The first time you connect to a BLE network, you need to add and identify devices. After the first connection of the radio BLE and the PC, as long as the PC is within the range of the radio network, it will automatically connect and can communicate directly using the BLE network port.

1. Select a PC with BLE function, open the network connection settings, and enable the Bluetooth network connection.
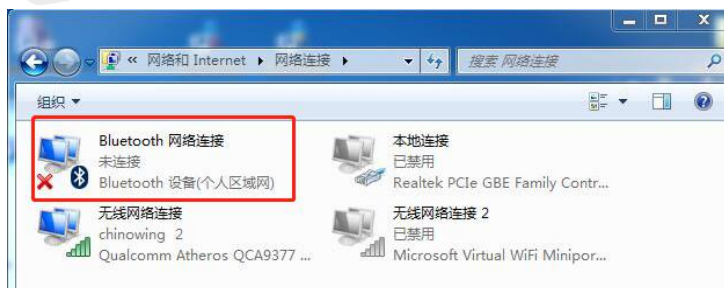
2.
   Open the device and printer options on the control panel and click Add Device. If the radio BLE module works normally, the device "D04_Radio" will be displayed in the device list, which is the Radio BLE device.
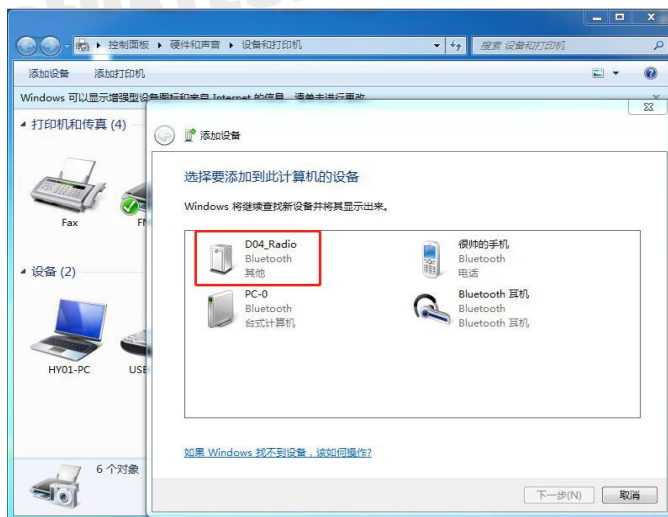
3. After the device is added, the PC will automatically install the BLE virtual port driver. When you open the device manager, you can see that there are two new Bluetooth link standard serial ports on the PC. In general, the first port is the port we want to use.
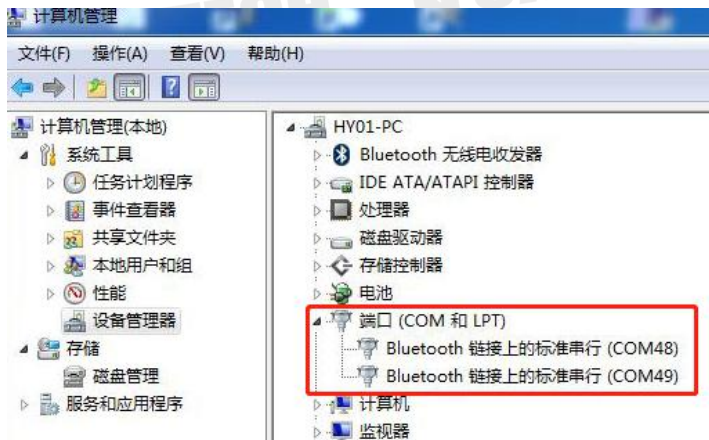
Air Unit
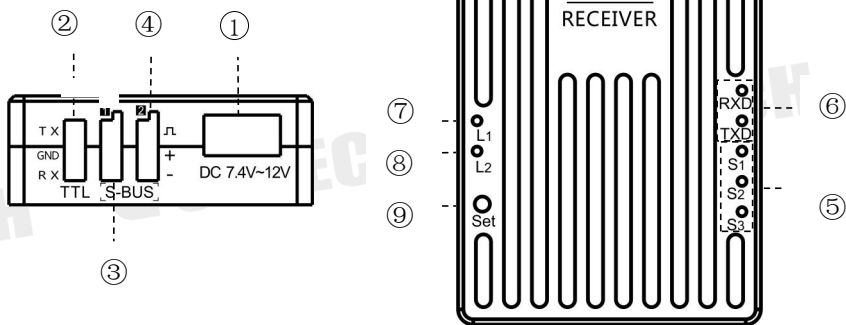
① Power port

support the XT30 connector , voltage : 7.4-12V

② COM port

TTL port , used to connect the FC COM port or API.

③ S-BUS1 port

Use the servo wire to connect the S-BUS interface of the flight controller or other equipment

④ S-BUS2 Port

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⑤   Use the servo wire to connect the S-BUS interface of the flight controller or other equipment

⑥   Signal strength

S1 S2 S3- signal strength indicator

⑦   High frequency module data transmission indicator

When RXD indicator is on, indicates that the receiver   receives the data ,TXD indicator is on means that the receiver transmits data.

⑧   S-BUS data indicator L1

used to indicate the communication status of S-bus signal between the ground and air unit, and also indicate the button response while setting the Failsafe.

⑨   Station configuration mode indicator L2

Used to indicate whether the receiver is in the configuration mode or the communication status of the serial port signal, and also indicates the button response while setting the failsafe.

⑩   SET Button

For firmware upgrade and parameter setting.

Air Unit Diagram
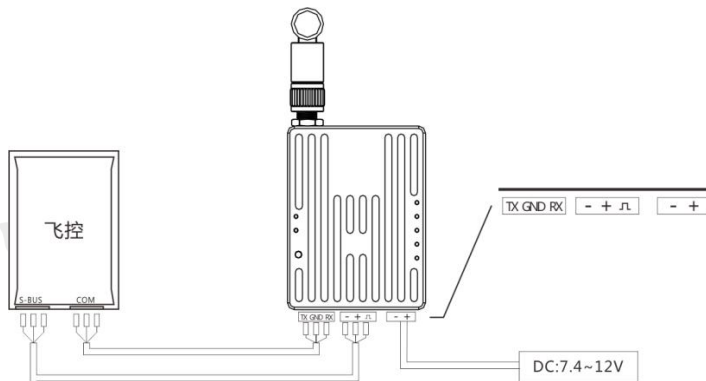
1. Tighten the antenna to the SMA connector.
2. Fixed the air unit on the drone.
3.   Connect the COM port and S-BUS on the air unit to your device using the servo cable as shown above.

RX ⟷ TX   S ⟷ S

receiver GND ⟷ GND FC   receiver + ⟷ + FC

TX ⟷ RX   - ⟷ -

4. input stable 7.4-12V DC power.

Datalink Link Communication Test

After the connection is completed, please check the connection status by following the steps below. (This step will be partially different due to the connection method of the ground unit or the flight control)

1. If the ground unit is connected to PC by USB data cable , open the device manager of the PC and check if the port is correctly identified. If you are using Bluetooth or WIFI wireless connection, please ignore this step.
2. Check whether the two-way S-BUS on the ground unit has signal input, check whether the air unit flight control serial port is normally connected, and whether the flight control enters a stable working state.

3. Open the flight control ground station software, select the corresponding COM port, and the baud rate to connect flight control (connect by using BLE or WIFI, the baud rate can be free, according to the specific situation). The flight control is normally connected, indicating that the datalink has been connected. If the connection fails, please check the following points:

    1)Whether the baud rate of the flight control, air unit and ground unit is the same. If the ground unit is connected by USB data cable, the ground station's baud rate should also be the same. If the ground unit is connected through WIFI, the baud rate of the wireless module must be the same.
    2)If the ground unit is connected by a USB cable, make sure that the driver of the ground unit is successfully installed.
    3)Use the parameter setting software to ensure that all parameter settings on the ground and sky are consistent.
    4)Make sure that the RX of the flight control is connected to the air unit TX port, and the TX of the flight control to the air unit RX port.

4. Open the remote control setting interface in the ground station to check whether the remote control data is normal. For example, the remote control data changes normally with the joystick, it means that the remote control link is connected. If the remote control is not normally connected, please check if the "-, +, signal" of the S-BUS is reversed.

5. After the ground and the air unit are activated, if the 3 signal strength indicator RS1 RS2 RS3 of ground unit and the signal strength indicator RS1 RS2 of the air unit are always on, and the air unit signal strength indicator S3 flashes, it means that the two modules have normally connected.

Radio Parameter Configuration

The radio parameters have been set at the factory. By default, you should be able to use the ground and air unit directly for data transmission. In the following situations, you may need to modify the radio parameters:

    1.The flight control baud rate is inconsistent with the preset baud rate

    2.Multiple radios occupy the same communication channel, and the communication is blocked.

    3.Have special communication bandwidth and communication power requirements.
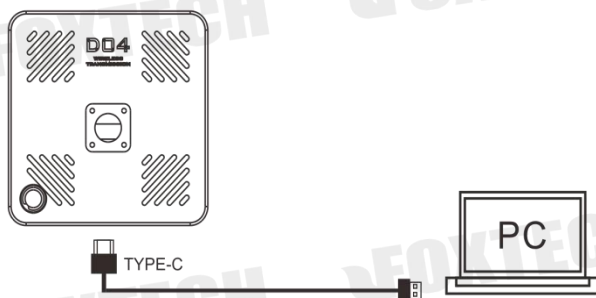
Ground unit connection and enter configuration mode:

Please follow the steps below to modify the parameters:

1. Follow the steps below to enter the parameter configuration mode. The parameter modification method of ground unit and air unit is basically the same., except that the connection cable is different.

Ground unit connection and access to configuration mode:

① Press and hold the SET button, then turn it on until RS1 or RS1 and RS2 flash, then enter the wireless network selection mode.

② In wireless network selection mode, release the SET button, then press the SET button again, until the config light is on, then release the button, and enter the high-frequency module configuration mode.

③ Connect the radio and PC with the USB cable according to the connection method shown below.

Air unit connection and enter configuration mode:

① Connect the air unit and PC, press and hold the SET button, power on until the L2 light is on, then release the button.

② Connect the air unit and PC , Note that the white configuration wire corresponds to the TX of the air unit, the black wire corresponds to GND,

and the green wire corresponds to RX.

1、 Please check your radio is H840 or P900, then use the matching assistant software to view and modify the parameters through the port. (If the corresponding port is not found, please check if the corresponding serial port driver is properly installed.)

① If your radio is H840, use the matching assistant software,select the corresponding port and click the connection to read the radio parameter, as shown below:

若想修改电台参数，只需在软件中改变相应的值，点击写入，并确定即可，如下图所示 If you want to modify the radio parameters, just change the

corresponding value in the software, click on "write", and then confirm, as shown below:

② If your radio is P900 version, please open the corresponding assistant software , Select the appropriate port and click Connect. The current baud rate of the serial port link will be displayed. Pull down to select the desired baud rate as the serial link baud rate.

If you want to modify the radio's ID (address) and output power, please follow the steps below:

a) Click , will read out the basic parameters of the high frequency module.

b) After filling in the address and selecting the output power , first click
    then click Disconnect. (Do not modify other values during this
   process, as this may cause the station to be unable to communicate

   Note: When configuring parameters, the air unit address and the
   corresponding position baud rate should be consistent with the ground
   unit, otherwise the radio may not communicate.

2、 After the modification is completed, short press the SET button or power on
   again to exit the configuration mode.

Note:

- If the high frequency parameters of the ground unit and the air unit are
  inconsistent, the two modules may cannot communicate.
- Communication bandwidth and communication power directly affect
  communication quality and communication distance. If you don't understand
  its meaning, please do not modify these two parameter values.
- After entering the configuration mode to complete the parameter
  configuration, then be sure to exit the configuration mode.

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High frequency module H800 pairing parameter instructions

Name	Modification	Range	Note
Address (ID)	random	0-65535	用于接收机和遥控器之间配对的 唯一 ID 码
Baud rate	manual	1200、2400、4800、9600、19200、3400、57600、115200	This baud rate needs to be set according to the baud rate required by FC（Default 115200）
Channel	manual	1-8	
Bandwidth	manual	100K、200K	Default 100K，The greater the bandwidth, the closer the communication distance
Power	manual	30DBM 1W 29DBM 0.8W 27DBM 0.5W 24DBM 0.25W 20DBM 0.1W	Default 1W，The greater the power, the farther the communication distance

High frequency module P900 pairing parameter instructions

名 称	修改方式	数值范围	备 注
address(ID)	random	0-65535	用于接收机和遥控器之间配对的 唯一 ID 码
Baud rate	Not allow	Fixed value 115200	This baud rate is the baud rate of communication between high frequency modules, not the serial link baud rate. Serial port baud rate need to be set separately
Working mode	Not allow	Master or Slave	Air unit-Master，ground unit-Slave
Bandwidth	mal	100K、200K	Default 100K，The greater the bandwidth, the closer the communication distance
power	manual	30DBM 1W 29DBM 0.8W 27DBM 0.5W 24DBM 0.25W 20DBM 0.1W	Default 1W，The greater the power, the farther the communication distance

Ground Unit Battery Charging

The D04 module is equipped with a 3000mAH lithium battery. Under normal working conditions, the battery can be used for about 15h. If the battery indicator shows a low voltage, please charge the battery in time.
Insert the standard adapter of the ground unit into the 220V socket, and connect the output port to the battery charging port. When the indicator light changes from red to green, the battery is fully charged.

Note :
Please charge with the factory-standard adapter, and do not charge with other types of chargers. The USB port Type-C can only be used for data transmission, can not be used for battery charging.

Radio Alarm

Radio low-voltage alarm: When the D04 radio voltage is too low (below 10.6V), the system will give an alarm. And the PWR indicator will flash, and with the buzzer sound continuously for a short time. If prompted, please charge the battery in time to avoid affecting the use

Radio low-voltage alarm recovery: Under the condition of radio low-voltage alarm, if the radio is charged in time to restore the power (10.9V), the radio low-voltage alarm indicator and buzzer will be automatically eliminated.

Radio low-voltage shutdown: When the radio low-voltage alarm, if the radio is not charged in time, the radio power will continue to decrease. When the power is reduced to a certain level (below 10.3V), in order to protect battery life and system data, the system will save data and then has a forced shutdown operation.

Radio cooling and high temperature alarm: The radio has integrated heat dissipation interface, which can be connected to the 5V fan to dissipate heat from the system. If your radio is equipped with a fan, the system will turn on the fan to dissipate heat when the temperature is greater than 50 °C. If the temperature is too high (up to 80 ° C), the system will prompt you. At this time, the four battery indicator lights flash at the same time, and the buzzer sounds continuously for a short time. If prompted, to avoid accidents, please stop using the radio immediately.

Failsafe Setting

The failsafe of the D04 radio is set on the Air unit. If you need to set the remote control's failsafe, please operate as follow:

1、 Write to failsafe data and open the failsafe function.

When the air unit is properly connected to the ground unit, short press the SET button on the air unit (the L1 and L2 indicators will be on for about 1 second after being released), the 1-way or 2-way S-BUS signal currently being transmitted can be stored as the failsafe value in the air unit, and the data will not be lost after power off.

Please test through the flight control ground station or the servo, to see whether the Failsafe data is successfully written or not.

Trigger Failsafe Value

When the air unit does not receive the S-BUS data from the ground unit for 3 seconds, the air unit will continue to output the previously set Failsafe value until received the S-BUS data from ground unit.

2、

Close Failsafe Function

When the air unit is properly connected to the ground unit, press and hold the SET button on the air unit (about 5s) until the L1 and L2 indicators are on at the same time (about 1 second) to close the failsafe function   of 1 or 2 way S-BUS signal which is being transmitted, and the data will not be lost after power-off. After the Failsafe function is closed, if the air unit does not receive the S-BUS signal from ground unit for a long time, it will keep outputting the last data. Please through the flight control ground station or the servo to test whether the setting is successful.

Note:
The default Failsafe function is closed.

WiFI Module Parameter Setting

If you need to set the serial port baud rate and WIFI network parameters, please operate as follows:

1、 Use PC to search and connect WIFI network generated by WIFI module
2、 Log in to the server, modify the parameters
   Open the browser, enter the module's IP address in the address bar (the factory default address is http://192.168.6.1), press Enter, enter the login user name and password in the pop-up interface (the default user name and password at the factory: admin), log in to the module configuration interface.
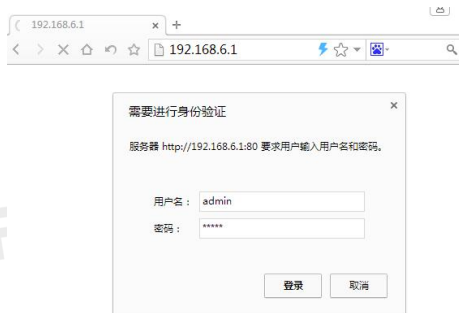
In the WIFI parameter field, you can modify the network name SSID and password when necessary.
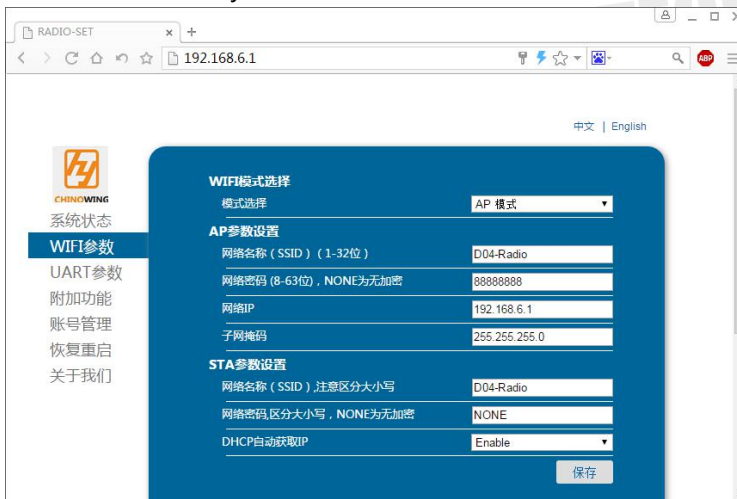
To change the baud rate of radio serial port , you can modify the parameters as needed in the UART parameter field.
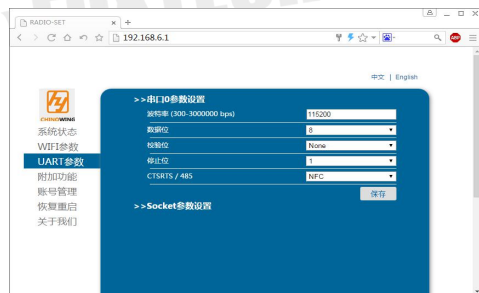
The Socket parameter setting is attached to the UART parameter bar, it can be used to change the server address and port number. This address and port number is what we used in TCP communication or virtual serial port.
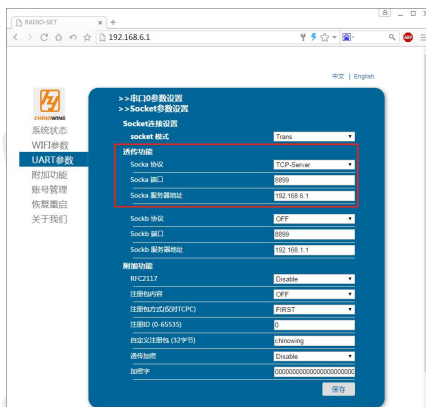
In the account management column, you can modify the webpage login information.

In the recovery restart bar, you can restore the WIFI module parameters to the factory default parameters.

Note: Click "Save" after the parameters in current column are changed, and the changed parameters will take effect after the page is restarted or the ground unit is turned off and restarted.

The WIFI module parameters can also be configured through the serial port AT command. The configuration process is as follow:

1、 Press and hold the SET button during the boot process until the RSSI indicator RS1 flashes or RS1 and RS2 flash simultaneously, indicating that the wireless network switching and configuration mode is entered. At this time, release the SET button to set the wireless module parameters and switch the wireless network. Short press the PWR button, switch wireless network to WIFI mode.

2、

Connect the radio and PC with USB data cable, open the serial debugging assistant, the baud rate is the actual value of the current WIFI serial port baud rate (if you forget the parameters, you can short press the SET button to exit the parameter configuration after the wireless network switches to WIFI mode,   In the normal working state of D04 module, you can restore the WIFI parameters to the factory default values and then modify the parameters. And then a series of operations are required to read and write parameters of the WIFI module.

   a)   Send "+++" to the module continuously (no carriage return line feed). After the module receives "+++", it will send back an 'a'.
   b)   After receiving 'a' (no carriage return), the module must be sent an 'a' within 3 seconds.
   c)   After receiving the 'a', the module will send "+ok", indicating that the AT command mode has entered successfully. Parameter reading and writing of   WIFI   module can be realized through AT command.
   d)   The table below lists some commonly used AT commands, all ending with a carriage return.   Restart after the parameter is set.

WIFI module AT Commands	Instruction	Note
AT+WEBU	Query web login username and password	
AT+WMODE	Query WiFi working mode	
AT+WAP	Query the AP's WiFi network name and password.	
AT+WSTA	Query the SSID and password of the associated AP.	
AT+UART	Query UART interface parameters	300~3Mbps
AT+SEARCH	Query LAN search port and keywords	
AT+MID	Query module MID	
AT+WEBU=admin,admin	Set web login username and password	
AT+WMODE=AP	Set WiFi working mode	AP mode, STA mode
AT+WAP=D04-Radio,88888888	Set the AP's WiFi network name and	

	password.	
AT+WSTA=D04-Radio, NONE	Set the SSID and password of the associated AP.	
AT+UART=115200, 8, 1, NONE, NFC	Query UART interface parameters	Buad rate 115200, Data bit 8, stop bit 1, no parity, no flow control
AT+SEARCH=48899, chinowing	Set LAN search port and keywords	
AT+MID=D04	Set module MID	Within 20 characters
AT+CFGTF	Store current usage parameters as user default parameters	
AT+RELD	Restore module parameters to user default parameters	Restore factory settings
AT+Z	Restart module	
AT+ENTM	Exit command mode	Return to transparent mode by default

3、 After configuring the parameters, shrot press the set button to exit the wireless network switching and configuration mode.

BLE Module Parameter Setting

Since the BLE module does not have a corresponding PC software for configuration, it can only be configured through the serial port AT command. Therefore, it is generally not recommended to change the BLE module parameters. If you really need to change the BLE module parameter settings, please do as following:

1. Press and hold the Set button during the boot process until the RSSI indicator RS1 flashes or RS1 and RS2 flash simultaneously, that indicates the wireless network switching and configuration mode is entered. At this time, release the Set button to set the Bluetooth parameters and switch the wireless network. Short press the PWR button and the Wireless network will be switched to BLE mode.

2. Connect the radio and PC with USB data cable, open the serial debugging assistant, the baud rate is the actual value of the current BLE serial baud rate (if you forget the parameters, you can restore the parameters to the factory default value and then modify the parameters) At this time, a series of operations are required to read and write parameters of the BLE module.

a) Send "+++" to the module continuously (no carriage return line feed). After the module receives "+++", it will send back an 'a'.
b) After receiving 'a' (no carriage return), the module must be sent an 'a' within 3 seconds.
c) After receiving the 'a', the module will send "+ok", indicating that the AT command mode has entered successfully. Parameter reading and writing of BLE module can be realized through AT command.
d) The table below lists some commonly used AT commands, all ending with a carriage return. Restart after the parameter is set.

BLE module AT commands	Instruction	Note
AT+BNAME?	Query module BLE network name	
AT+SNAME?	Query module SPP network name	
AT+UART?	Query the serial port baud rate	
AT+HELLO?	Query welcome languag	
AT+TPL?	Query module transmit power	
AT+MODE?	Query module working mode	

AT+BNAME=D04_Radio	Set the module BLE network name as D04_Radio	The name of the module (limit length 1~10 bytes)
AT+SNAME=D04_RADIO	Set the module SPP network name as D04_RADIO	The name of the module (limit length 1~10 bytes)
AT+UART=115200	Set the serial port baud rate to 115200	9600~3Mbp
AT+HELLO=D04_Radio	Set module welcome language D04_Radio	欢迎语(限制长度 0~10 字节)
AT+TPL=10	Set the module transmit power to 10dbm	transmit power (-25dBm~10dBm) Restart to take effect
AT+MODE=S	Set to slave mode (S: slave mode SLAVE; T: master mode SPP_MAST; B: master mode BLE_MAST)	
AT+CFGTF	Save the current parameter as the user default parameter	
AT+RELD	Restore current parameters to user default parameters (restore factory default)	The same effect as Hardware nReload pin is pulled low for more than 3s
AT+Z	Restart the module system	
AT+ENTM	Exit AT command mode and return to transparent mode	

3. After configuring the parameters, press the Set button to exit the wireless network switching and configuration mode.

BLE and WIFI Modules are Restored to Factory Settings

When the ground unit is in normal working condition,　press and hold the SET button for 5s until all the power indicator lights flash at the same time to force the current wireless network module to reset to the factory settings and restart. After restoring the factory settings, the configuration of all users of the WIFI module will be changed to the factory default parameters.

1. The default parameters of the WIFI module:
   Network name SSID: D04-Radio.
   Password:88888888.
   Network mode: AP mode.
   IP address: 192.168.6.1.
   Serial port 0 baud rate: 115200, 8N1.

2. Default parameters of the BLE module:
   Network name: D04-Radio.
   Serial port baud rate: 115200, 8N1.
   Module transmit power: +10dBm

Check the Radio System Firmware Version

In order to provide better service to our customers, our R&D team has never stopped testing the products. Once we found   the bug in software firmware, we will upgrade the software firmware optimize it in time, and the latest software firmware will be released to the website, so please note the software firmware version before using. Please pay attention to our website to get the latest software firmware and technical support.

The version of the assistant software can be seen directly when configuring the parameters on the PC. Please check the firmware version by the following steps:

1. Connect the radio to the PC via the USB cable, and a port will appear on the PC.
2. Install the serial debugging assistant on the PC and open this port.
Port configuration parameters: 115200, 8N1. String display mode
3.During the process of starting the radio, the serial port assistant will print the following firmware version information "JDSP4-0.5.1---JDSP4-1.20"
The JDSP4 indicates the P900 version of the D04 radio (JDSH4 indicates the H800 version of the D04 radio). The first version number indicates the soft version number of the firmware, and the second version number indicates the hard version number of the firmware. The version number above indicates that this radio is the P900 version of the D04 radio, where the soft version number is 0.5.1 and the hard version number is 1.20.

Firmware Upgrade Steps

Please use the firmware upgrade tool to upgrade the firmware of radio ground unit and air unit separately.

Ground unit Firmware upgrade

1. Click firmware download on the official website , select the appropriate version of the firmware and save the firmware locally.
2. Close other applications that use the port, open the firmware upgrade tool
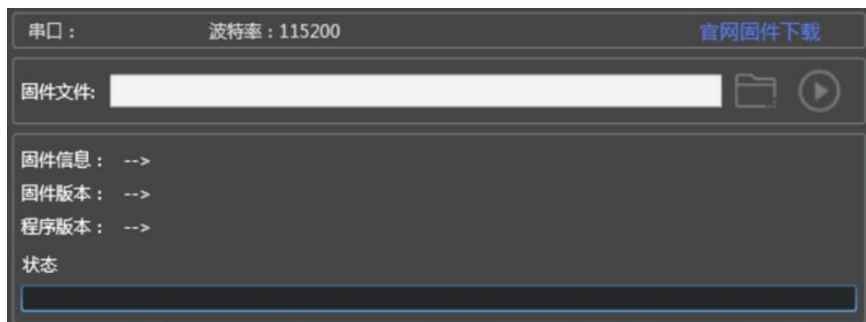
3. Connect the radio to the PC with a USB cable and a port number will be displayed in the device manager.
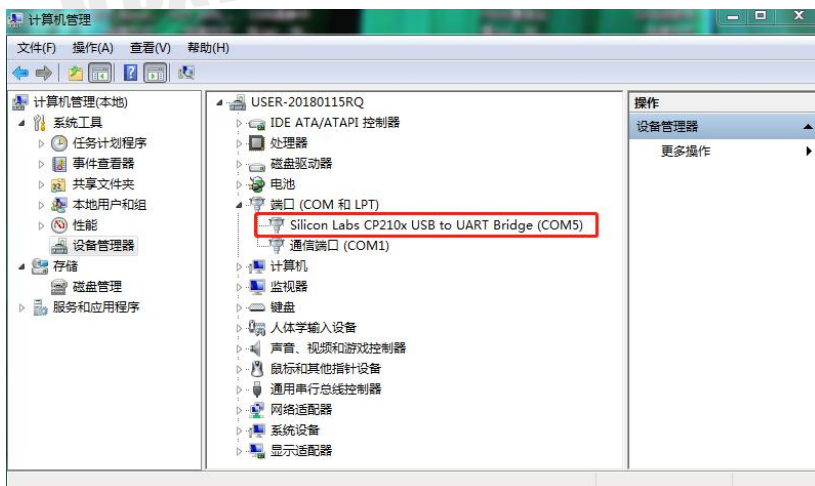
4. Press and hold the Set button and turn it on at the same time until RS1 flashes (or RS1 and RS2 flash simultaneously). Release the set button, indicating that the wireless network selection mode is entered. At this time, you can select the wireless communication method.

5. In the wireless network selection mode, press and hold the set button again until the config light is on, and release the set button, indicating that you have entered the high-frequency module configuration mode . At this point, you can configure the data transmission module parameters.

6. In the high-frequency module configuration mode, press and hold the set button again until the config light is off and the PWR light starts to flash. Release the set button and enter the firmware upgrade mode. At this point you can upgrade the firmware.

7. After entering the firmware upgrade mode, you can see that the firmware upgrade tool has been connected to the radio and display the current hardware, version and other information of the radio, as shown below:
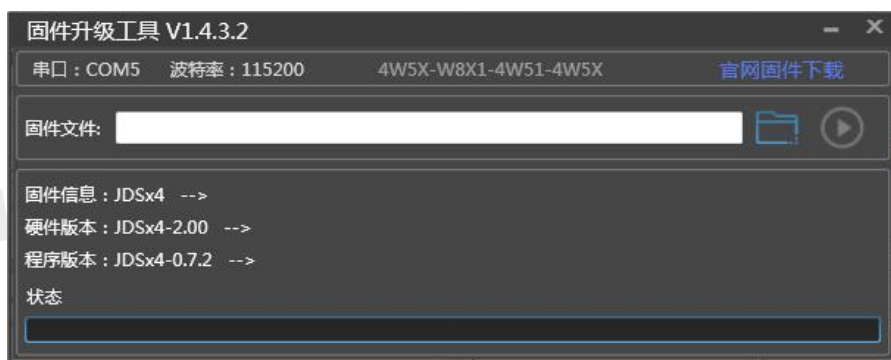
8. Open the path of the firmware file you just saved. The upgrade tool will display the hardware and version information of the selected firmware. If the selected firmware hardware version does not match the current radio hardware version, the upgrade tool will prompt an error, so please select the correct firmware. If the firmware information matches, the upgrade tool will display ' recognition completion' and wait for the upgrade.
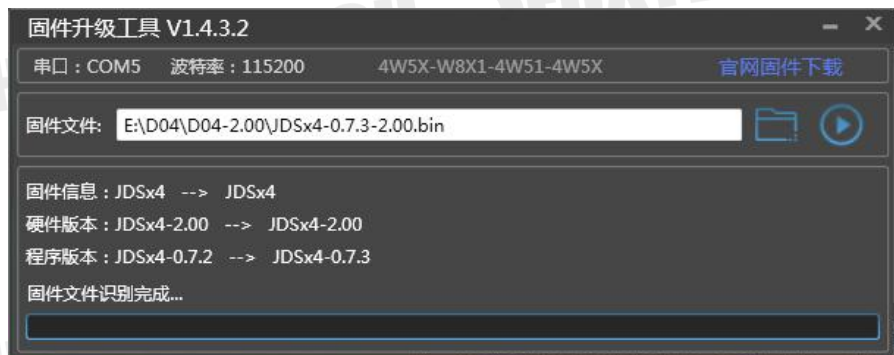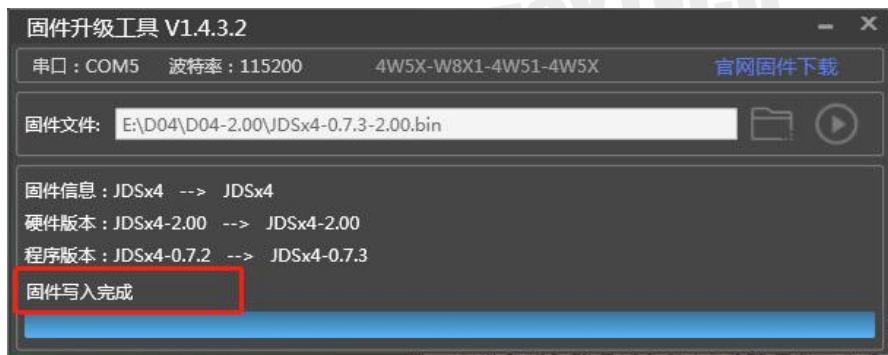
9. Click the "Start Upgrade" button after confirmation, and then firmware starts writing.
10. Firmware starts writing
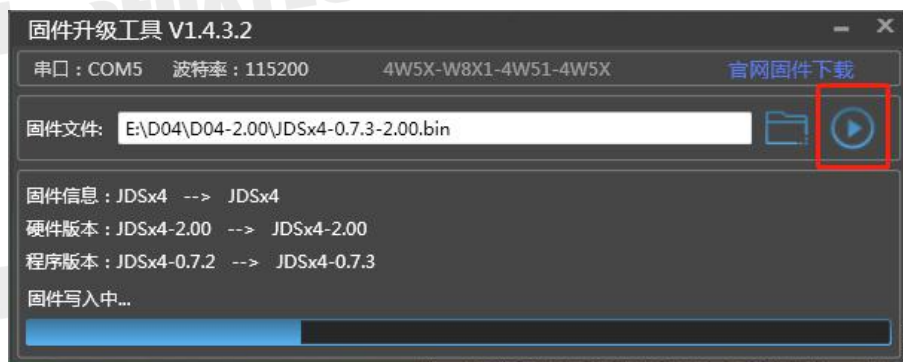
11. Wait for the firmware upgrade until the firmware upgrade completion prompt dialog box is displayed, then close the window of firmware upgrade tool. Firmware has been successfully upgraded.

固件升级工具 V1.4.3.2

串口：COM5　波特率：115200　　4W5X-W8X1-4W51-4W5X　　官网固件下载

固件文件：E:\D04\D04-2.00\JDSx4-0.7.3-2.00.bin

固件信息：JDSx4 --> JDSx4
硬件版本：JDSx4-2.00 --> JDSx4-2.00
程序版本：JDSx4-0.7.2 --> JDSx4-0.7.3
固件写入完成

Receiver firmware upgrade

The firmware upgrade method of the receiver is similar to the ground unit except the way to enter the firmware upgrade mode.

1. Click firmware download on the official website , select the appropriate version of the firmware and save the firmware locally.

2. The receiver is powered off and connect the COM port of the receiver to the computer via the receiver wire.

3. Make sure the assistant software is closed and open the firmware upgrade tool.

4. Press and hold the receiver set button and power on the receiver at the same time.

5. Release the button to see that the indicator L2 is on.

6. Press and hold the button again until the indicator L1 is on and then release the button. At this moment, you can see that the serial port of the firmware upgrade tool is connected, and the current version, firmware and other information of the

receiver are displayed.

7. Open the path of the firmware file you just saved and click the Start button after confirmation.

8. Wait for the firmware upgrade until the firmware upgrade completion prompt dialog box is displayed, then close the window of firmware upgrade tool. Firmware has been successfully upgraded.

- Please strictly follow the operation steps to ensure that other software that uses the port, such as the serial debugging assistant, is turned off to release the port. Otherwise, the upgrade may fail.
- Please select the corresponding firmware. If the firmware does not match, the upgrade will fail.

FAQ

1： The receiver S-BUS has a signal output, but the serial port cannot be connected, or the transmission signal is garbled.

　　Please check whether the serial port baud rate of the air unit and the ground unit is the same; and set the baud rate corresponding to the ground station software.

2： Two or more devices have interference turned on at the same time.
　　Please check that the ID of each set must be different, and the channel

　　should also be set to different values to avoid interference.