



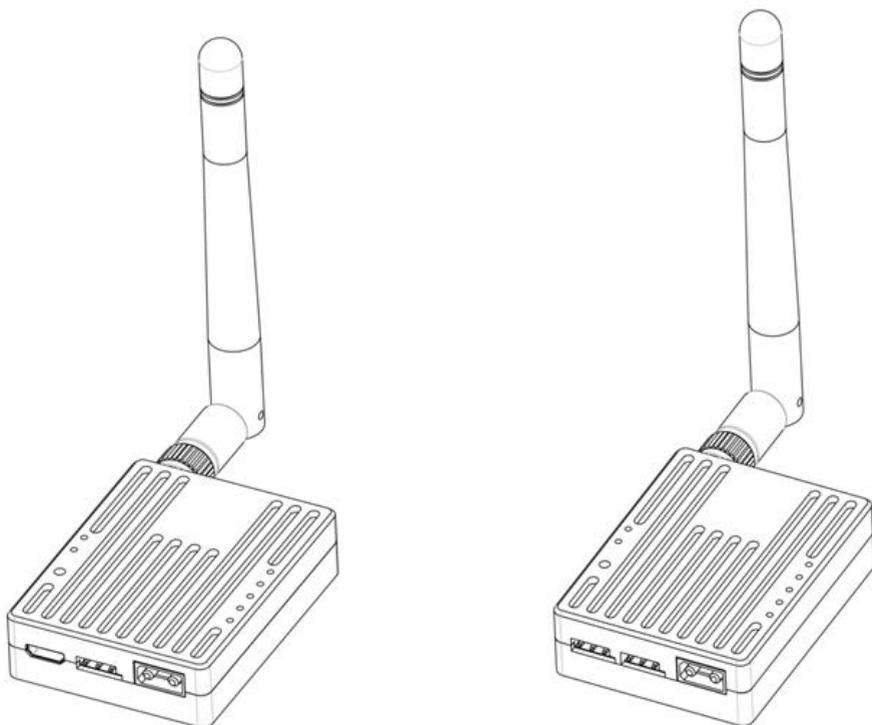
RB20

Signal Relay

user manual

V2.1

2019.1



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Disclaimer

Thanks for purchasing the RB20 signal relay. Please use RB20 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 TRADE CO., LTD will not bear any legal responsibility for any consequences and losses caused by improper use, installation, assembly and modification of customers.

Product Notes

1. Input voltage of RB20 ground and air unit is DC7.4 - 12V(lipo 2s - 3s) , please strictly follow this parameter to power the module.
2. Be sure to install the antenna before powering up to avoid damage to the circuit.
3. Make sure that the antenna is free from obstructions in using process, and try to keep away from large metal objects to avoid communication obstruction.
4. Do not disassemble or reassemble RB20 module, If you encounter problems that cannot be solved during installation or use, please contact FOXTECH or your agent.
5. Keep the proper distance between the electronic devices during installation to minimize electromagnetic interference between devices.
6. Make sure all connections are securely fastened and all parts are working properly before use.
7. Please check the surrounding environment before use to ensure that there is no interference from other 840MHZ-930MHZ equipment, otherwise the RB20 data transmission may be seriously affected.

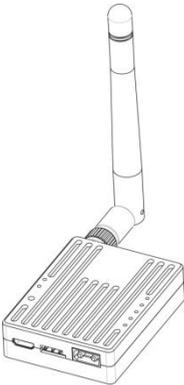
Brief Introduction

RB20 Signal Relay is designed to work with radio controller to achieve the long range requirements. The RB20 ground unit could be connected to PC through a TTL-USB cable, to realize data transmission between PC and RB20 air unit, also could realize parameter tuning. The max communicate range is 30km.

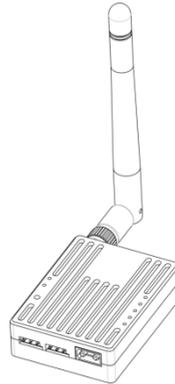
Product List

Main Module

Ground Unit



Air unit



Accessories

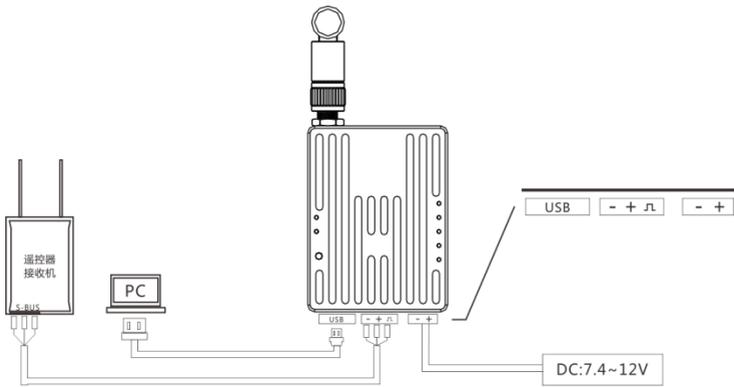
Power cable x2 (DC:7.4-12V)	usb cable For ground unit parameter tuning or serial connection	Data cable For air unit parameter tuning
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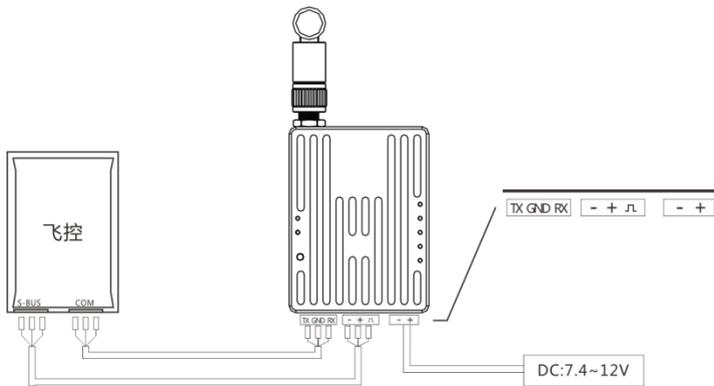
Using Instructions

RB20 has 2 signal outputs: S-BUS and Serial port.if your remote controller or receiver not support S-BUS, so you need to buy a PWM to S-BUS module.

Ground Unit Diagram

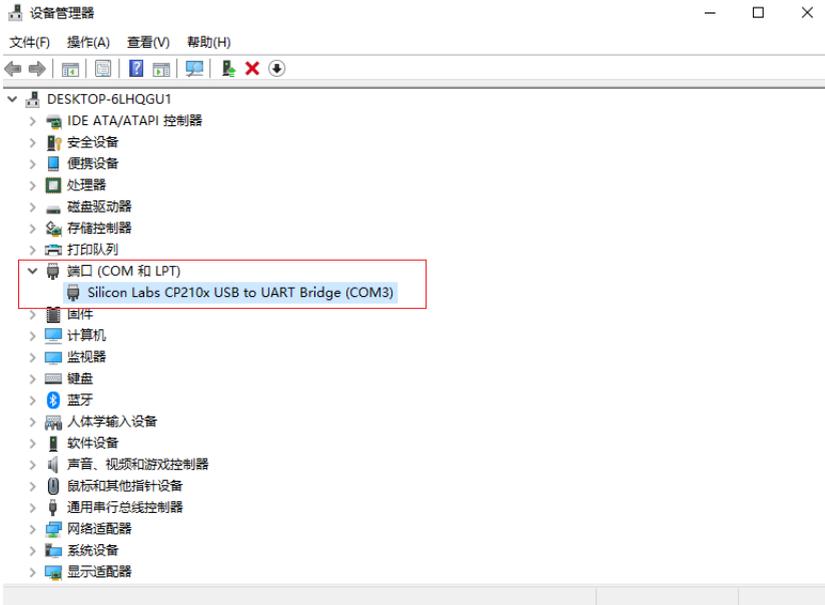


RC Receiver



Please check the connection status by following steps after the connection is completed.(This step will have some differences because of different flight controls.)

1. Open the PC device manager and you can see that the ground unit is correctly recognized, the driver is installed correctly, and there is no yellow exclamation mark.

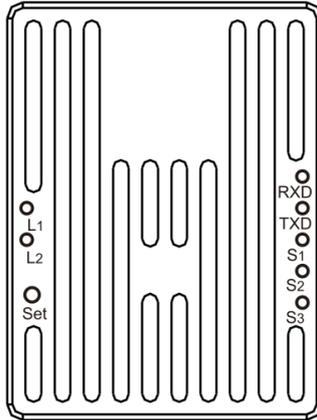


2. Open the FC ground station software,select the corresponding COM port, and connect to the flight controller.The flight control is connected normally,indicating that the RB20 digital transmission link is connected. If the connection fails, please check the following points.

- 1.The baud rate of the flight controller is same as the baud rate of RB20.
- 2.Ensure that the RB20 ground unit driver is installed successfully.
- 3.Use the RB20 parameter setting software to ensure that all parameter settings for RB20 air and ground unit are consistent.
- 4.Ensure that RX of FC to TX RB20,TX of FC to RX RB20.

3. Open the rc setting interface of the ground station to check whether the remote control data is normal. If the remote control data changes normally along with the joystick. The remote control link is connected. If the remote control connection fails, please check if the “-, +, signal” of the S-BUS is reversed.

RB20 Indicators



① S-BUS data indicator L1

L1 flashes means that the remote control has data transmission, and no flashing means that the remote control has no data transmission.

② Configuration mode indicator L2

L2 steady light- in the configuration mode

③ SET Button

Used to enter the configuration mode or set the runaway protection output value or upgrade firmware.

④ Data transmission indicator

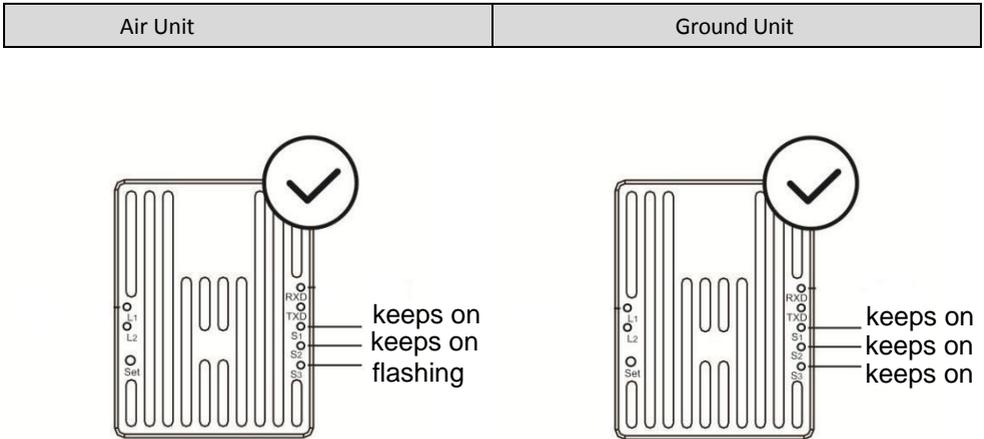
RXD light is on-receiver has data reception; TXD light is on-receiver has data transmission.

⑤ Signal Strength

S1 S2 S3 - signal strength indicator, all these three indicators are on- strongest signal quality; only S2, S3 on-middle-level signal quality; only S3 on-general signal quality.

RB20 Connection Diagram

Power on the ground unit and air unit, if the light is illuminated as shown below, it means the two modules are connected normally.



Parameter Configuration

The parameters have been set at the factory and you should be able to use RB20 directly. In the following situations, you may need to modify the RB20 parameters:

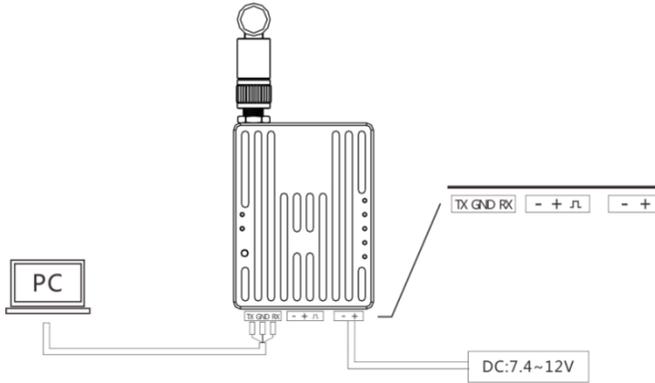
- 1.The flight control baud rate is inconsistent with the RB20 preset baud rate.
- 2.Multiple Rb20 occupy the same communication channel, causing communication blocking.
- 3.Have special communication bandwidth and communication power requirements.

Please follow the steps below to modify the parameters:

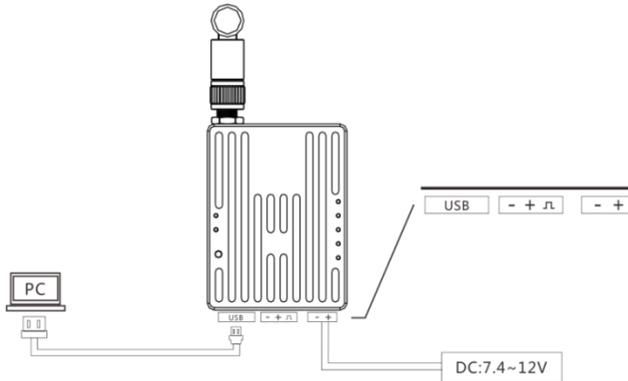
The parameter modification method of ground unit and air unit is basically the same, only the connection cable is different.

- 1、 Press and hold the set button, then power up until the L2 light is on, release the button.

2. According to Pic.1 and Pic.2 , connect ground unit to PC or connect air unit to PC. Data cable for air unit: white cable connect to TX, black cable-GND, green cable-RX.



Pic.1 Air unit connected to Configuration Software

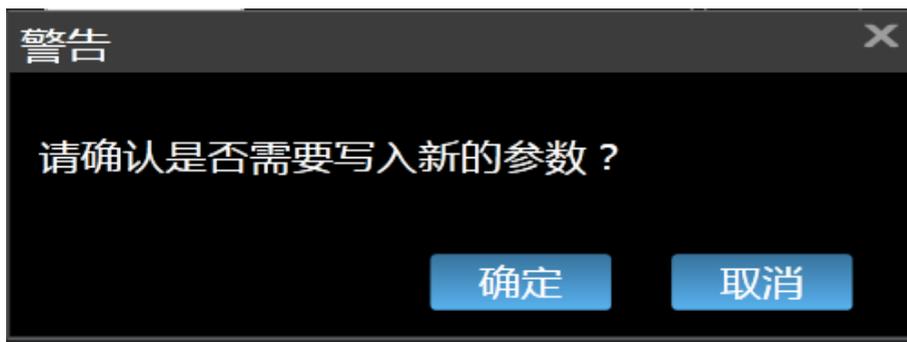


Pic.2 Ground unit connected to Configuration Software

3、Use the matching assistant software, select the corresponding port and click the connection to read the parameters, as shown in the figure below.



4、If you want to modify the parameters, just change the corresponding value in the software, click on the Write, and then Confirm, as shown below.



5、After the modification is completed, press the Set button again or power up again to exit the configuration mode.

Note: 1. Please ensure that the parameters of the ground unit and air unit are exactly the same, otherwise the two modules cannot communicate.

2. 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.

3. After entering the configuration mode to complete the parameter configuration, be sure to exit the configuration mode.

RC Out-of-Control Protection Setting

If you need to set the using protection of the remote control, please follow the steps below:

1. Write the runaway protection data

When the air end is properly connected to the ground end and there is remote control data transmission, short press the set button of the air end (about 0.5S), the value of the current remote controller can be stored as an out-of-control protection value on the air end, and will not be lost after power failure. Please use the FC ground station or servo to test whether the runaway protection data is successfully written.

2. Trigger out-of-control protection value

When the air unit does not receive the S-BUS data from the ground unit for 3s the air end will always output the previously written out-of-control protection value until the S-BUS data from the ground end is received.

3. Turn off out-of-control protection

When the air end is properly connected to the ground end and there is remote control data transmission, press and hold the Set button($\geq 3S$) on the air unit to turn off the out-of-control protection. Please use the FC ground station or servo to test whether the out-of-control protection is successfully turned off.

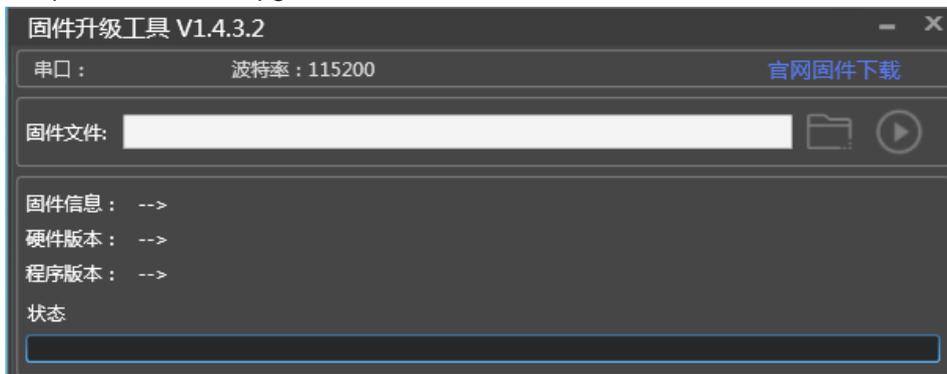
Note:

By default, the RB20 has no out-of-control protection value output.

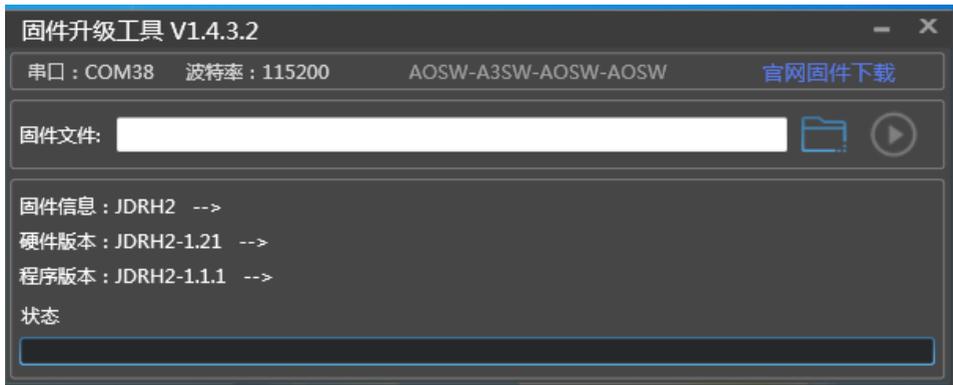
While using RB20, please select the GCS Protection function, so when the aircraft does not receive the S-BUS signal from the ground, the aircraft will automatically trigger and return home.

Firmware Upgrade

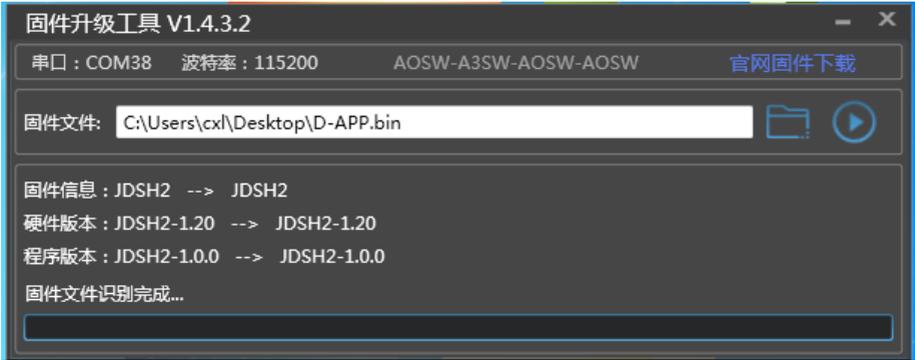
1. Open Bootloader upgrade software



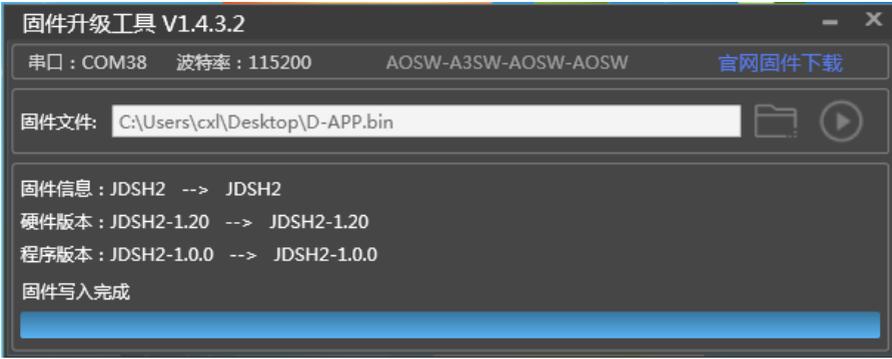
2. connect to USB port or TTL port through a USB cable or data cable, Press and hold the Set button and power on, then the L2 light is always on. Then press and hold the Set button again until L1 and L2 are always on, and the software displays the port number at the same time, it indicates that the upgrade mode is entered.



3. Open the correct firmware you downloaded. If it is correct, will display "firmware file identification is completed."



4. Click the Start button, until it prompts that the firmware writing operation is completed, that means the upgrade is successful.



FAQ

1 : receiver S-BUS has signal output , but can not connect the serial port, or transmission signal garbled.

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

2 : Two or more devices have interference powered on at the same time.

The ID of each set must be different, and the channel should also be set to a different value to avoid co-channel interference.