MK58Pro

Long-range Dual-link Wireless

Transmission System

User's Manual V1.0 2023.04

Introduction / Installation Guide / Instruction

Disclaimer

- Please read the user's manual carefully before use. Be sure to pay attention to the warnings and understand all points completely.
- Please strictly abide by the local radio frequency management regulations.
- Please follow the installation steps in the manual to use this product. Our company and agent will not take legal responsibility for the damage of equipment or personnel caused by the installation and modification of users.
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Caution

Attention to installation

1. Before power on, make sure the antenna connection is reliably . Otherwise, it will cause damage to the device.

2. Make sure that the voltage is within the range of use.

3. Please pay attention to the EMC of all the electronic equipments on your drone.

4. It is recommended that the antenna should be installed downward and keep the antenna away from the metal on the drone.

5. Make sure to use the matching antenna.

Before use

1. Make sure that all cables are connected correctly and firmly.

2. No foreign objects (e.g. liquids, sand, etc.) can be entered inside the device.

3. It takes 15 seconds for the device to start. Video and data cannot be transferred until the device has finished booting.

4. Please ensure that the environment in which the equipment is used is free of other electromagnetic interference.

5. When the signal weakens, you can improve the effect by changing the heading direction of the antenna.

CONTENTS

Packing list

Device　X 2

Ground

Air

Accessories

2Pin　XT60 cable　×1	**2Pin　XT30**　×2
For Power	For pairing and reset

2Pin cable　×1	**3Pin cable**　×4
For pairing and resetting	For UART and SBUS

4Pin cable　×1	**Short Air Antenna**　×2
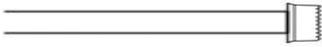
For Ethernet	For air unit
Fiber-glass antenna ×1	**Long Air Antenna** ×2
For Ground unit	For air unit
450M Air Antenna ×1	**Navigation cable** ×1
For air unit	For Ethernet and Power_Out

Overview

Industry drone market is developing very fast in recent years. with the diversification of UAV systems, fixed-wing and vertical takeoff and landing UAV are becoming more and more mature, and the demand of long-distance wireless video systems for drones with high reliability, long distance, light weight and low power consumption is growing. M58Pro ultra-long distance UAV data link products continue the design and use style of Maestro series video transmission, set a model of UAV wireless data link with advanced radio frequency technology, and with ultra-high cost performance it is used more widely and   promote   the ultra-long distance UAV inspection industry develop rapidly.

M58Pro adopts advanced RF channel technology, strong anti-interference ability, with encryption function, can ensure the safety of long-distance wireless video and output transmission, transmission distance up to 80km*1. The integrated link makes the UAV operation more concise, and the ground does not need to set up a special antenna which is shortening the operation preparation time. Good industrial thermal design can meet the needs of industry applications.

M58Pro uses a dual backup link design, the main link uses 1.4GHz communication frequency segment (800MHz and 2.4GHz frequency points can be customized), the backup link uses 400MHz. When using, please comply with local radio control regulations.

M58Pro can control radio silence, radio backup link communication, radio timing communication and other functions with one click, which greatly improves the environmental adaptability of the product, and can easily meet the user's complex radio interference, radio countermeasures and other special application scenarios. The function of M58Pro main link is the same as that of M58, which can realize real-time transmission of video and flight control data transmission. The backup link only transmits flight control data and control commands.

[*1]Test under LOS and no interference conditions。

Features

Long distance

 -M58pro   Up to 80km @ LOS

Video interface

 - Ethernet *3

Hopping/Fixed Frequency

 -Fixed: user defined

 -Hopping: automatic

BW

 -5/10/20 MHz

 Work temperature

 - 40℃ ~ +70℃

Modulation

 - OFDM

Data interface

 - UART*2，Supports multi-channel data transmission

Frequency Band

- 1.4GHz（800MHz and 2.4GHz customizable）

 Working mode

- Air unit can be ： Point to point mode

                        Repeater mode

Power range

- DC   9~28V   Battery 3S~6S

M58Pro Interface Description

Air unit

side view

1. Power indicator

This indicator is solid green when air unit is booting.

2. Link indicator

LED Pattern	Description
solid green	Wireless link is established
light off	Wireless link is lost

3.Status Indicator

LED Pattern	Description
Three green lights are steady on	Strongest strength signal
Two green lights are steady on	Medium strength signal

One green lights are steady on	Weak signal strength
All green lights go out	No wireless signal received or unable to build a link

4.Ethernet

Number	Character	Description	Input/Output
1	T+	TX+	O
2	T-	TX-	O
3	R+	RX+	I
4	R-	RX-	I

5. UART1

Number	Character	Description	Input/Output
1	G	GND	I/O
2	R	RS232 RXD	I
3	T	RS232 TXD	O

6. UART2

Number	Character	Description	Input/Output
1	G	GND	I/O
2	R	RS232 RXD	I
3	T	RS232 TXD	O

7. XT30 Power

Number	Character	Description	Input/Output
1	G	GND	I/O
2	V	+Vcc (9v~28v)	I

8. 2Pin Key interface

Number	Character	Description	Input/Output
1	G	GND	I/O
2	S	Key Input	I

9. 450MHz radio antenna SMA connector

10. XT30 Power

Number	Character	Description	Input/Output
1	G	GND	I/O
2	V	+Vcc (9v~28v)	I

11. 450MHz radio

12. Main link SMA antenna connector

Ground unit

1. Fiber glass antenna interface

Please connect the standard fiber-glass antenna to this connector.

2. 450MHz antenna interface

Please connect the antenna feeder of the backup radio to this connector.

3. 1.4GHz plate antenna interface

Please connect the primary antenna feeder of the primary link to this connector.

4. 1.4GHz omnidirectional antenna interface

Please connect the auxiliary antenna feeder of the primary link to this connector.

5. The plate antenna mounting bracket

Install and secure the plate antenna.

6. XT60 power port

The device power supply port is connected to battery power supply.

7. Operate keys

The operation button of the information display is used to switch the display.

8. LCD display of video transmission

Display the working status information of the device.

9. Power indicator

After the device is powered on, the power indicator is steady on.

10. Chain building indicator

When the chain is built, the indicator light is steady on and it often turns off when the chain is not built.

11. Signal strength indicator

To indicate wireless signal strength, refer to the sky signal strength indicator.

12. Navigation data interface

The device navigation data port is used to connect the factory standard data cable, which contains one network port, two RS232 serial ports, and one power supply port. The network port is a standard RJ45 crystal head, the two RS232 serial port is a DuPont cable connector, and the power port is an XT60 male head.

13. PTZ LCD display

Display PTZ status information and menu.

14. Operate keys

Menu operation for PTZ LCD.

Installation

Air

1.Installing the air unit on your drone

Fixed the device and RF cable on your drone. Install the antenna. Pay attention to the connection of the antenna to tighten. Make the antenna downward. There is no metal or shielding within 20cm of the antenna.

2. Connecting the gimbal

Connect the gimbal to 4pin ethernet of M58Pro. Connect UART2 to flight control.

⚠️ Attention: When wiring, avoid placing all signal lines too close to the motor and the electrical wiring, otherwise the equipment may be interfered with.

Ground

1.Connect the antenna

The ground of M58Pro integrates the video transmission, tracking head and flat plate directional antenna, and the user only needs to connect the network port of the tracking head with the network port of the ground station computer through the factory standard 2-meter navigation cable. In addition, the M58Pro can also be connected via WIFI.

The ground supports two power supply ports, one is the XT60 port on the tracking PTZ, which is often used in battery powered scenarios. The other power supply port is the XT60 port on the standard 2-meter cable. Note Only one of the two power supply ports can supply power. Do not supply power to the two ports at the same time，otherwise, the device may be damaged.

2. Connect to the Ground Station

The M58Pro ground unit can be connected to the Ground Station with ethernet or UART. And put the video and data transmission from air to the ground station display.

Get Video

The ground outputs the video to the host computer's video decoding software (such as VLC) or to the ground station (such as Mission Planner) through a network port (network cable connection).

Get data

The data of ground can be output to the host computer through the data transmission serial port, and the data needs to be transmitted to the host computer through the UART (RS232) to USB module. The ground can also transmit flight control data to the ground station through UDP/TCP network ports.

M58Pro Instruction

Quick start

1. Preparing

According to the installation guide, make sure that the power cables, antennas, Ethernet cables, and serial data cables of the air and ground devices are properly connected.

2. Power on

The DC voltage is 9~28V. After power on, the POWER LED will be solid green.

It takes 30 seconds to start up. After the system starts, the wireless transmission can be established.

After the chain is built, the current wireless signal strength, wireless signal-to-noise ratio, communication distance and real-time data can be viewed on the LCD screen of ground.

3. Set the IP address of the computer.

Open "Network and Internet"setting.

Select "Internet Protocol version 4 (TCP / IPv4) properties".

Change IP address to "192.168.1.xxx" (xxx is in 0～255 , you cann't use IP 192.168.1.200 and 192.168.1.236, because these IP were set in M58Pro).

Attention：The IP "192.168.1.XXX" is just an example. You need to set up your PC the same IP section as your gimbal.
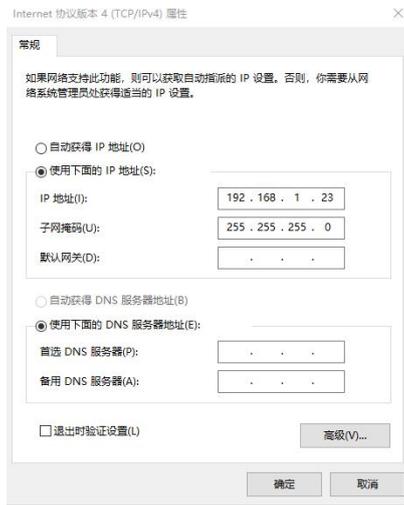
4.Dual link control

The ground of M58Pro supports receiving control commands over network protocols. The computer sends control commands to 14551 (default port) at the ground of M58Pro through UDP. The control protocol can be integrated into the ground station, and the related link control can be performed through the interface operation on the ground station. Refer to the following interface:

图传链路通信设置   ×

主备链路通信

链 路 静 默   取 消 静 默

主链通信   备链通信

主链开启   备链开启

主链关闭   备链关闭

备链间歇通信

间歇30s   间歇60s

间歇180s   间歇300s
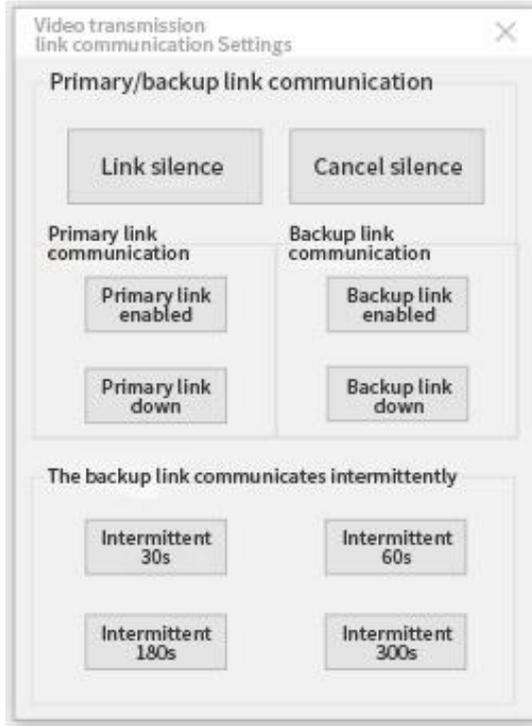
Function specification:

1. Link silence:

When clicking the button, the M58Pro will turn off the wireless signal transmission of the main and backup links to achieve radio silence.

Radio silence means all data transmission will cease.

2. Cancel silence

After clicking this button, the M58Pro will resume the wireless signal transmission of the main and backup links, and the main and backup links will resume normal communication.

After silence is canceled, sending and receiving all data will resume.

3. Primary link enabled

Separately control the M58Pro main link to open and restore the wireless signal

transmission of the main link. When the main chain is on, the video and flight control data will be transmitted normally.

4. Primary link down

Separately control M58Pro main link shutdown and turn off the wireless signal transmission of the main link. After closing the main chain, the video and flight control will be closed.

5. Backup link enabled

Separately control the M58Probackup link to open. After the backup link is opened, the M58Pro will transmit the flight control data and uplink control commands of the ground station at a frequency of 1Hz through the backup link.

6. Backup link down

Separately control M58Pro backup link shutdown and turn off the wireless signal transmission of the backup link. After closing the backup chain, the video and flight control will be closed.

7. The backup link communicates intermittently

Triggers the backup link to intermittently communicate with each other in the specified period of 30s, 60s, 180s, and 300s. When the intermittent cycle time reaches the point, the air will open the wireless signal transmission of the backup link, and continuously send three packets of flight control data transmission data to the ground station, and continue to close the wireless transmission of the backup link after the completion of the transmission.

Maestro Assistant

Interface of Maestro Assistant
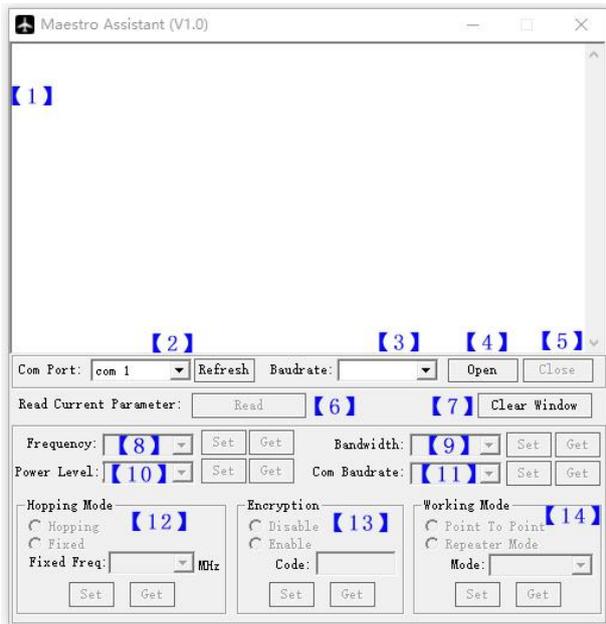
Function description：

【1】Information display：display status information for the M58Pro。

【2】UART(COM) select：Select the right COM number of the computer to connect M58Pro. If you want to change to another COM , please click the 'Refresh' button.

【3】Baud rate select：Select the right baud rate for the COM. Make it the same as M58 UART2.

【4】Open COM button.

【5】Close COM button.

【6】Read current parameter button：click this button to get the current parameter of device。

【7】Clear window button: to clear the information display.

【8】Select frequency：The M58Pro frequency band has been set. User cann't change. You can click 'Get' button to get current frequency band.

【9】Select BW：There are four BW to be selected——3MHz/5MHz/10MHz/20MHz. Choose the BW you needed，and click 'Set' button to complete setup. Click the 'Get' button to get current BW.

【10】Select Power Level：There are three power level to be selected——High/Mid/Low Choose the power level you needed，and click 'Set' button to complete setup. Click the 'Get' button to get current power level.

【11】Select baud rate：You can select the right baud rate for M58Pro Uart1 in this box. Choose the baud rate you needed，and click 'Set' button to complete setup. Click the 'Get' button to get current baud rate.

【12】Select hopping mode: There are two mode to be selected——Hopping/Fixed. Choose the mode you needed，and click 'Set' button to complete setup. Click the 'Get' button to get mode. When you select Fixed mode, you need to choose a fixed frequency below. The fixed frequency is related to frequency band and BW.

【13】Select Encryption: You can disable/enable the encryption. When enable this function, you can set your private password. The password should in the range of 100000~999999. Devices with different password do not link.

【14】Select Working mode: There are two working mode of M58Pro——Point to Point mode and Repeater mode. Choose the working mode you needed，and click 'Set' button to complete setup. Click the 'Get' button to get current working mode. This function only needs to be set up on the M51 air unit. The ground unit can synchronize automatically. If you select Repeater mode, you need to select the air unit whether it is TX or repeater.

How to use Maestro Assistant

1. Connect M58 with Maestro Assistant.

Maestro Assistant is a Windows software that configures M58Pro. Before configuration,

please connect the UART2 to computer via UART(RS232) to USB converter.

Select the right COM and baud rate. Click 'open' button.

2. Read current parameter。
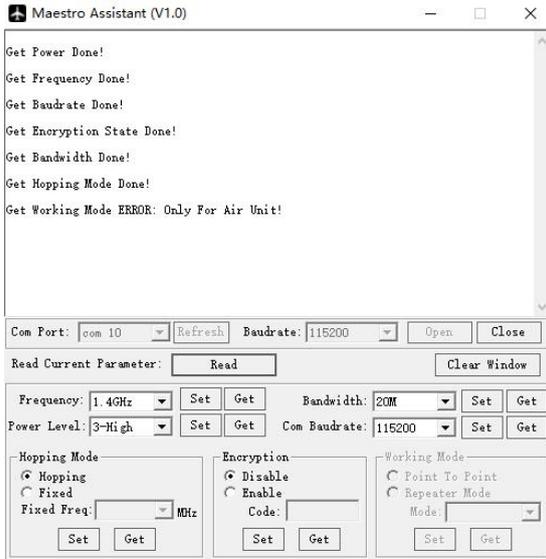
After step1, click 'Read' button. All current parameter will print on the information display. Because the Working mode is only for air unit. The Working mode box will turn grey on ground unit configuration.

3. Configurations

3.1 Frequency Band

The M58Pro frequency band has been set. User can not change. You can click 'Get' button to get current frequency band.

3.2 Bandwidth

There are four BW to be selected——3MHz/
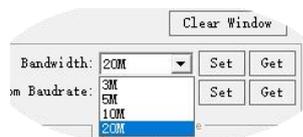
5MHz/10MHz/20MHz. The greater the BW, the more data can be transmitted, but the weaker the anti-interference. In Fixed frequency mode, M58Pro will have more frequency to fix with small BW.

3.3 RF Power

M58Pro has three levels of power to choose. In order to avoid affecting other devices, please select the appropriate transmission power. The specific RF power values are as follow

1-Low：20dBm；

2-Mid：27dBm；

3-High：32dBm。

3.4 Hopping/Fixed Mode

There are two mode to be selected——Hopping /Fixed. In Hopping mode, M51 can automatically adjust frequency when there is interference. In fixed mode, the device is fixed to a special frequency . So in one frequency band, up to four sets of devices can be used.

3.5 Encryption

The wireless signal can be encrypted during transmission. When enable this function, you can set your private password. The password should in the range of 100000~999999. Devices with different password do not link. When disable this function, different M58 air and ground can link each other.。

3.6 Working Mode

M58Pro can work in Point to Point Mode and Repeater Mode. Only the air unit of M58 need to be set. The ground unit can synchronize automatically. In Repeater mode, the air unit can be set to TX (transmitter) or Repeater.

Air   **Point to Point**   Ground

TX   Repeater   Ground
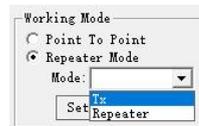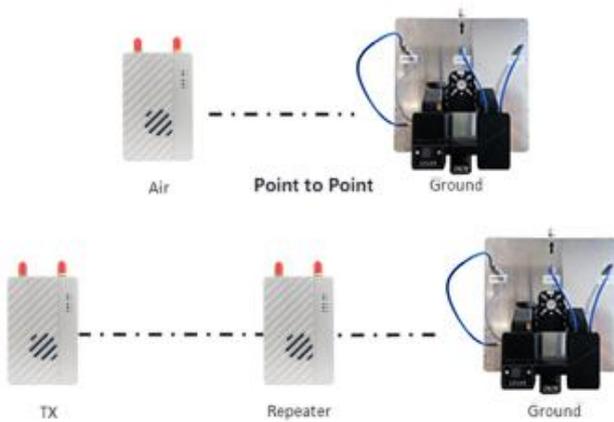
Repeater Mode

With Repeater mode, M58Pro can be easily used under NLOS situation. You only need to buy one more air unit and then can establish a repeater system easily.

M58Pro Web UI Configuration Description

Parameter of M58Pro can also be set through web UI. User can enter IP address through the browser to access the web UI. The air unit default IP is 192.168.1.200. The ground is 192.168.1.236.　In Repeater mode. TX is 192.168.1.200. Repeater is 192.168.1.201.

If you change the device to another IP address, please access the web UI through the new IP. If you forget the IP you changed, press the button on the device for 10 seconds when the device is power on to restore to factory settings.

You need to change your computer IP to 192.168.1.X so as to access the device web UI. As shown in the following figure：

Login

After you enter IP address in the browser, you will see the 'Welcome' page. Default username is: admin, password is: 123456. Then you can login.

The system configuration page of Air includes four Settings menus, such as Settings, upgrades, wireless pairing and language Settings. Click on any menu on the left, you can switch the Settings page.

Setting

The Settings page includes network Settings, data Settings, wireless Settings, system restore and system reboot, as shown in the picture below. Click on anyone to switch.

Air Network Setting can set the Air IP address and gateway address. The following table describes the parameter values. The Device IP address and Gateway must be on the same network segment.

Parameter	Value	Description
Device IP	Default address Air ： 192.168.1.200 Relay ： 192.168.1.201 Ground： 192.168.1.236	User can change
Gateway	Default 192.168.1.1	User can change

If you change the device parameter, it will be in effect after rebooting. If you change IP address, please enter the new address in your browser after rebooting.

Ground Network Setting

Device IP	192	168	1	236
Gateway	192	168	1	1
Remote Air IP	192	168	1	200

Save

⑦ 小贴士：

Device IP、Gateway、Remoute Air IP
必需要设置在同一个网段

Remoute Air IP: 集群模式下当有多个天
空端同时连接地面端时,

通过该IP地址指定对应天空端的UART2数
据从本地UART2输出

The Ground Network Setting can set the ground IP address, device gateway address, and remote air IP address in cluster mode. As the following table describes, the Device IP, Gateway, and Remote Air IP must be on the same network segment. In cluster mode, when multiple airs are connected to the ground at the same time, the UART2 data of the corresponding air is output from the local UART2 through the Remote Air IP address.

The Air Data setting can set the baud rate of the serial port on the air, the packet protocol for data transfer from serial port 2 to network forwarding, the TCP/UDP port number for network forwarding, and the output timeout period after SBUS data lost. The following table describes the parameter values.

Parameter	Values	Description
Uart1 Baud rate	9600/19200/38400 57600/115200	User can change，Default 115200
Uart2 Baud rate	9600/19200/38400 57600/115200	User can change，Default 115200
Data Protocol	Transparent/Mavlink	User can change，Default Transparent
TCP Port	1~65535	User can change，Default 5760
UDP Port	1~65535	User can change，Default 14550

SBUS1 Timeout (After SBUS1 data loss, the time of outputting the last frame of data)	0~10s	User can change, Default 1s
SBUS2 Timeout (After SBUS2 data loss, the time of outputting the last frame of data)	0~10s	User can change, Default 1s
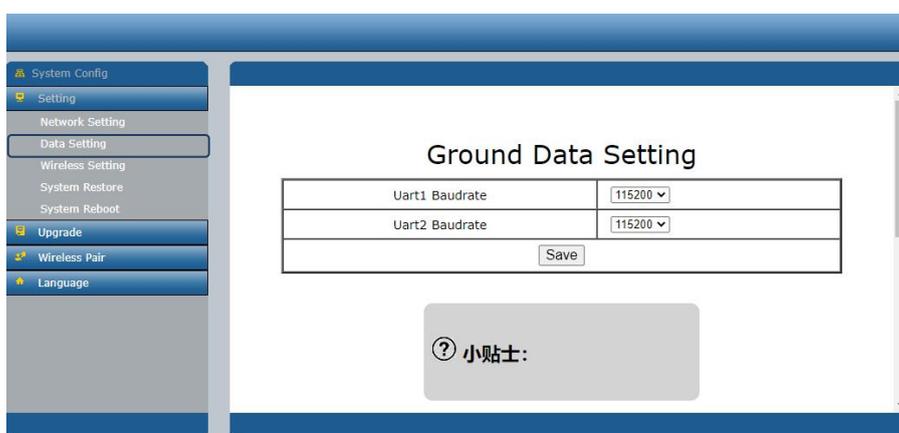
The Ground Data setting can set the baud rate of the serial port on the ground. The values of the parameters are described in the above table: Uart1 baud rate and Uart2 baud rate.
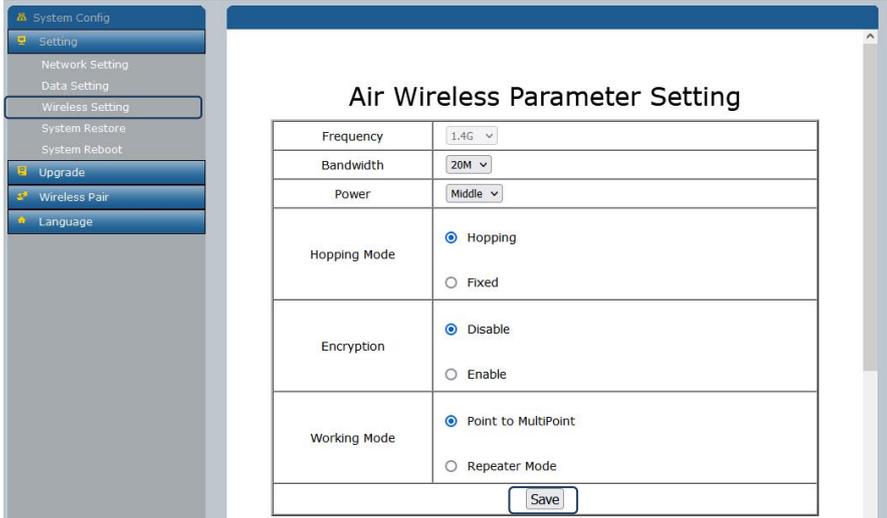
The Air Wireless Parameter Setting can set the wireless transmission data of device, the parameter values and function descriptions shows at the following table.

Parameter	Value	Description
Frequency	800M/1.4G	User can query
Bandwidth	3/5/10/20M	Optional
Power	High/Middle/low	Optional
Hopping Mode	Hopping/Fixed	Optional
Encryption	Disable/Enable	Optional
Working Mode	Point to Point Repeater Mode	Only the air unit of M58 need to be set. The ground unit can synchronize automatically

Web UI configuration is the same as Maestro Assistant. User can check it in 'How to use Maestro Assistant' part 3 for more details.

When you configure parameter through Web UI, It will be in effect after rebooting.

The Ground Wireless Parameter Setting can set the wireless transmission data of device, the parameter values is the same as the air. As showed in above table.

The Air System Restore can make air of M58Pro to factory settings. Please click on the "Restore"button to confirm if you need "Restore to factory settings?".

Please click on the "Sure" button to set the parameter to factory default value.

The Ground System Restore can make ground of M58Pro to factory settings, the detail operation is the same as air.

The Air System Reboot can make air of M58Pro to restart. Please click on the "Reboot"button to confirm if you need "Reboot device now?".Please click on the "Sure" button and enter the IP address in the browser and log in again.

The Ground System Reboot can make ground of M58Pro to restart, the detail operation is the same as air.

System update

The Air System Update function is used for firmware upgrade. Before the upgrade, please download the required firmware from our official website to your computer. Please click "Browse..." to select the upgrade file and click "send" to confirm. The system sends the upgrade file and displays the upgrade progress on the web page. After the upgrade is complete, the system automatically restarts. Log in to the IP address again to check whether the firmware version is updated.

The operation of the Ground System Update function is the same as that of air.

Wireless pair

System Config
Setting
Upgrade
Wireless Pair
Language

Wireless Pair?

[Pair]

⑦ 小贴士：

通过该按钮触发设备配对，操作流程如下：

1.上电待配对设备，进入本操作页面

2.点击配对按钮启动配对，这里页面会有进度条显示配对进度

3.配对过程最长会持续2分钟

4.配对完成后，页面会提示配对成功或者失败

注意：两个天空端配对使用或者两个地面端配对使用时，SBUS接口不可用

The Wireless Pair function is used to pair the air and the ground. The operation process is as follows: Power on the device. Click " Pair "button to start pairing, and there will be a progress bar to show the pairing progress; The pairing process lasts up to 2 minutes; When the pairing is complete, the page will display a message indicating that the pairing succeeded or failed. The signal strength indicator light will indicate the current pairing state in the form of a water lamp.

Language

The Air Language Setting is used to set the page language, it supports "English" and "Simplified Chinese". Please click " Save " button to save the setting, it will take effect immediately.

Advanced User Display

After enter the IP address of air, please input user name as "root" and the password as "root123" at the login interface. Click login, then enter the advanced user configuration page of air. As shown in the following picture.

Air Baseband Information

Frequency	14379	Distance	0
Air ANT1 RSSI	0	Air ANT2 RSSI	0
Air ANT1 SNR	0	Air ANT2 SNR	0
Air ANT1 PathLoss	0	Air ANT2 PathLoss	0
Ground ANT1 RSSI	0	Ground ANT2 RSSI	0
Ground ANT1 SNR	0	Ground ANT2 SNR	0
Ground ANT1 PathLoss	0	Ground ANT2 PathLoss	0
Air Netlink Udp Send	0	Air Netlink Udp Recv	0
Air Netlink Tcp Send	0	Air Netlink Tcp Recv	0
Uart2 Local Submit	0	Uart2 Remote Recv	0
Uart2 Remote Submit	0	Uart2 Local Recv	0
SBUS1 Local Submit	0	SBUS1 Remote Recv	0
SBUS1 Remote Submit	0	SBUS1 Local Recv	0
SBUS2 Local Submit	0	SBUS2 Remote Recv	0
SBUS2 Remote Submit	0	SBUS2 Local Recv	0

System Config — Setting — Upgrade — Wireless Pair — Language — Band Infor

The advanced user configuration page has an extra "Air Baseband Information" than the common user page. You can dynamically refresh and observe the wireless communication quality, antenna connection, and wireless data transmission of air in real time. The following table describes the parameter values.

Parameter	Values	Description
Frequency	14279~14479MHz	Communication Frequency
Distance	0~50000m	Distance of Air to Ground
Air ANT1 RSSI	-141 ~ -44	RSSI of Main Antenna of Air
Air ANT2 RSSI	-141 ~ -44	RSSI of Auxiliary Antenna of Air
Air ANT1 SNR	-50 ~ 50	SNR of Main Antenna of Air
Air ANT2 SNR	-50 ~ 50	SNR of Auxiliary Antenna of Air
Air ANT1 PathLoss	0~191	Path loss of Main Antenna of Air
Air ANT2 PathLoss	0~191	Path loss of Auxiliary Antenna of Air
Ground ANT1 RSSI	-141 ~ -44	RSSI of Main Antenna of Ground

Ground ANT2 RSSI	-141 ~ -44	RSSI of Auxiliary Antenna of Ground
Ground ANT1 SNR	-50 ~ 50	SNR of Main Antenna of Ground
Ground ANT2 SNR	-50 ~ 50	SNR of Auxiliary Antenna of Ground
Ground ANT1 PathLoss	0~191	Path loss of Main Antenna of Ground
Ground ANT2 PathLoss	0~191	Path loss of Auxiliary Antenna of Ground
Air Netlink Udp Send	0~4294967295	The total number of byte through UDP protocol which send from serial port 2 of Air
Air Netlink Udp Recv	0~4294967295	The total number of byte through UDP protocol which receive from serial port 2 of Air
Air Netlink Tcp Send	0~4294967295	The total number of byte through TCP protocol which send from serial port 2 of Air
Air Netlink Tcp Recv	0~4294967295	The total number of byte through TCP protocol which receive from serial port 2 of Air
Uart2 Local Submit	0~4294967295	The total number of byte through network transparent transmission to opposite terminal which input from local serial port 2
Uart2 Remote Recv	0~4294967295	The total number of byte through network transparent transmission to serial port 2 which receive from opposite terminal
Uart2 Remote Submit	0~4294967295	The total number of byte through network transparent transmission to serial port 2 which input from opposite terminal
Uart2 Local Recv	0~4294967295	The total number of byte through network transparent transmission to opposite terminal which receive from local serial port 2
SBUS1 Local Submit	0~4294967295	The total number of byte through network transparent transmission to opposite terminal which input from local SBUS 1

SBUS1 Remote Recv	0~4294967295	The total number of byte through network transparent transmission to SBUS 1 which receive from opposite terminal
SBUS1 Remote Submit	0~4294967295	The total number of byte through network transparent transmission to SBUS 1 which input from opposite terminal
SBUS1 Local Recv	0~4294967295	The total number of byte through network transparent transmission to opposite terminal which receive from local SBUS 1
SBUS2 Local Submit	0~4294967295	The total number of byte through network transparent transmission to opposite terminal which input from local SBUS 2
SBUS2 Remote Recv	0~4294967295	The total number of byte through network transparent transmission to SBUS 2 which receive from opposite terminal
SBUS2 Remote Submit	0~4294967295	The total number of byte through network transparent transmission to SBUS 2 which input from opposite terminal
SBUS2 Local Recv	0~4294967295	The total number of byte through network transparent transmission to opposite terminal which receive from local SBUS 2

After enter the IP address of ground, please input user name as "root" and the password as "root123" at the login interface. Click login, then enter the advanced user configuration page of ground. The advanced user configuration page has an extra "Air Baseband Information" than the common user page. The operation of the Ground Baseband Information function is the same as that of air.

Specification

Main link specification		
Wireless perform -ance	Working frequency	1.4GHz
	Frequency range	1427MHz～1447MHz
	Channel bandwidth	5MHz/10MHz/20MHz
	Modulation Mode	OFDM
	Output power	33dBm±1dB
	Sensitivity	≤-89dBm
	Distance	80km[*2]
	Air speed	30Mbps@20MHz[*3]
supply	DC 9~28V	
Power consum- ption	Air	9W
	Ground	<20W （Average power consumption, including tracking head)
Interface	Antenna interface	2（SMA)
	Power supply	1 XT30
	Serial port	2 Port 1：RS232 Port 2：RS232 Serial port configuration: 1-bit start bit, 8-bit data bit, 1-bit stop bit, no check
		Baud rate 115200 (default), can be configured as 57600, 38400, 19200, 9600
	Network interface	GH1.25 4Pin
	Key	1 for restore factory setting

Antenna	Antenna Interface	Air：SMA Ground：N 头
	Antenna housing	Air：Black glue stick Ground：White fiberglass
	Antenna type	Air：glue stick antenna size 20cm Ground：1.4GHz+450MHzDual-frequency flat-plate directional antenna, size 39x39x5cm
	Polarization type	Vertical polarization
	Antenna gain	Air: 1.4G：2.5dBi 450MHz：2dBi Ground: 1.4G：12dBi 450MHz：6dBi
	Antenna standing wave ratio	≤2.0
Enironm-ental adaptati-on	Operating temperature	-40℃～+70℃
	Storage temperature	-40℃～+85℃
	Humidity	5~95%，No condensation

Backup link specification	
Specification name	**Specification requirements**
Frequency rang	410~470MHz
Working mode	Half-duplex
Channel spacing	25KHz

Modulation system	GMSK
Working voltage	DC 9-28V

Power consumption (typical value)	Transmitting	6.0W
	Receiving	0.5W

Frequency stability	≤±1.0ppm
Size	82.5×47×11mm
Weight	100g
Operating temperature	-40~+70℃
Storage temperature	-40~+85℃
Antenna interface	MMCX (with MMCX to SMA feeder line)
Antenna interface impedance	50ohm
data interface	3*2-2.54mm space and 4*2-2.54mm space

Transmitter performance specifications	
Specification name	**Specification requirements**
Rf output power	33±1dBm
Rf power stability	±1dB

Receiver performance specifications	
Specification name	**Specification requirements**
Sensitivity	Better than-115dBm@BER 10^{-3}, 9600bps
Co-channel suppression	>-12dB

Obstruct	>70dB
Modulator-demodulator	
Specification name	**Specification requirements**
Air speed	9600bps
Modulation system	GMSK

*1For example, in the 1.4GHz band, the operating bandwidth is set to 5MHz, which can support four sets of video transmission 100 meters apart at the same time.

*2 The distance measured in the absence of visual interference.

*3 The air rate is related to the communication conditions. When the signal to noise ratio of the wireless signal is reduced, the air rate will decrease.

Note: The data interpretation of the above product specifications belongs to Great Mainlink (Shenzhen) Technology Co., LTD.