

900MHz wireless digital radio

User Manual

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Introduction to the function of ground station

Introduction

Product Introduction

900MHz wireless digital radio is ground terminal, wireless module working on frequency 902~928 MHz.



Product name:900MHz wireless digital radio
model number:900M DATA-LINK

The device is connected to your computer with USB cable, then computer transmit and receive signals with this device. It can be used as sending instructions and receives information to/from drone. (ground terminal)



Product name:900MHz wireless digital radio
model number:900M DATA-LINK-air

This model fixed on drone is connected to FCU on Flight Control System (FCS) made by TOPXGUN. FCS sends the flight information and receives instruction through the communication with ground counterpart. (on board terminal)

Detailed list

ground terminal (900M DATA-LINK) x 1, on board terminal (900M DATA-LINK-air) x 1

antenna x 2

Universal Symbol Description

Symbol	Significance	Description
!	Attention	This mark represents potential risk, if ignore it, may result in equipment damage, loss of data or other unpredictable consequences.
💡	Instruction	Starting with this mark is the additional information of the body and the emphasis and supplement on the body.

model number:900M DATA-LINK
hardware version: V1.0
software version: V1.0

model number:900M DATA-LINK-air
hardware version: V1.0
software version: V1.0

1 Installment

1.1 Install data-link

Antenna is installed into on board and ground terminal

On board wireless digital radio terminal is fixed on frame, the antenna should be placed vertically downward as far as possible.

on board terminal is connected to COM port of FCU

Connect ground terminal and PC by USB cable, on ground antenna is placed vertically upward as far as possible.

1.2 Install ground station

Step 1: Install driver software which can be download from website www.topxgun.com



If install driver to adjust parameters already and then no need to re-install

Step 2: You can install software of ground terminal according to installment guide, the software can be download from official website www.topxgun.com

2 USE

2.1 Check before using

Pls check below information in order to avoid unexpected situation.

- check port connection and device type
 - Please confirm the connection to on board terminal is correct or not.
 - Please confirm the connection to ground terminal is correct or not.
 - Need to match antenna specifications , use correct and firm installation.
Please confirm the fix of antenna. It is easy to burn up modules if turn on power before antenna installation.
Before use, please make sure ground and on board terminals are power on.
- check device relative position and antenna orientation
 - On board antenna is placed vertically downward as far as possible, and ground antenna is placed vertically upward as far as possible. Two antennas must remain visible (don't block), otherwise the communication distance will be greatly affected.
 - The ground terminal is placed on top as far as possible when in use so that the signal transmission distance can be extended.
 - Please confirm the two antenna digital terminal are not placed too close, and ensure that the distance between them are beyond 2.5 meters.
 - The barrier-crossing ability of wireless waves is much weak. So please keep visible between the ground and on board antennas when flying,in case lost contact immediately because of human body, trees, buildings, mountains and other obstacles.
- check software driver and port
 - Confirm software driver installed correctly
 - Please close software for adjust parameters and other software which occupy the serial port, otherwise it will lead to port conflict.
 - Please check computer port is not being occupied and ensure the port status is normal and effective
- Check Flight duration
 - Please make sure that your battery can support the estimated flight duration.

2.2 Using steps

Step 1. The light of on board wireless digital radio is on when flight controller is power on.

Open the software of ground station, the interface as follows:



Picture 1 Interface of ground station

For interface description, please see table 1:

Table 1 Interface description of ground station

No.	Item	Description
1	Connection state	It shows the state of flight controller and ground station, you can operate flight by ground station when it indicates 'connection'.
2	Positioning the aircraft	Click this button to position the aircraft
3	Position waypoints	Click this button to position waypoints
4	Enlarge	Click this button to enlarge the scope of the map
5	Zoom	Click this button to zoom the Scope of the map
6	Download waypoints	Click this button and download waypoints
7	Data status indicators	Flashing blue light indicates receiving and sending information
8	Port states indicators	For a red light in long time means port is connected.

According to the actual demand, you can control unmanned aerial vehicle (UAV) by ground station

When use it at the first time, it is need to connect Internet to load offline maps when the plane has its position. It can also be loaded manually from the Internet in indoor. The default location of longitude and latitude for the plane is the three zero. The default position is the position used of last time.

3 Introduction to the function of ground station

Functions of ground station is shown in the red box of picture 2.



functions of ground station

Waypoints, point-to-go, regional flight integrated in one icon, its function can be shift by click.

take off function

Click take off by GPS mode and operate by instruction, and unlock to pull throttle in 50% position, Aircraft will up to 5 meters and then take off.

landing function

Choose 'land' and then aircraft will land.

return function

Click 'return' , aircraft will return starting point and when height less than 10 meters aircraft will up to 10 meters, and return the start point along the line. It will land after hovering 5 seconds, when the height more than 10 meters, the aircraft will return start point automatically.

waypoints function

T1 supports 128 waypoints as many as possible.

The detailed operation as follows:

waypoints function

function	operation
Set/review waypoints	Double click the left button of mouse in the proper point on the map to set waypoints and copy this action to set next waypoint. Choose the waypoint on the map and change waypoints by dragging mouse.

function	operation
Delete waypoints	Choose the waypoint you want, click the right button of mouse and choose 'delete the current waypoint' or "delete all waypoints"; Click the right button of mouse at any point on the map, choose 'delete all waypoints' in the pop-up menu.
Submit waypoints	Click the right button of mouse on any point of the map. Choose to submit waypoints in the pop-up menu and there will be the pop-up of route settings window.
Set waypoints	In the waypoint setting window, height, speed, direction and hover time of waypoints can be set up. The nose direction when the drone takes off is the default 0° of direction. Click 'setting' to set waypoint parameters in bulk.
Upload and carry out waypoints	In the waypoint setting window, click 'upload' and the uploaded waypoints will be in red. After the upload, click 'run' and complete waypoint flight according to the instructions.
Save waypoints	In the waypoint setting window, click 'SAVE' to save waypoints for the future use of function - 'upload waypoints' when fly the same air route again.

Point-to-go

If you shift to Point-to-go, the aircraft will take off after unlocking the GPS mode, pls double click to choose the target point, the aircraft will fly to target point based on current height with the speed of 5m/s, you can shift to attitude mode by remote controller and will keep GPS hovering after arriving destination.

regional flight function

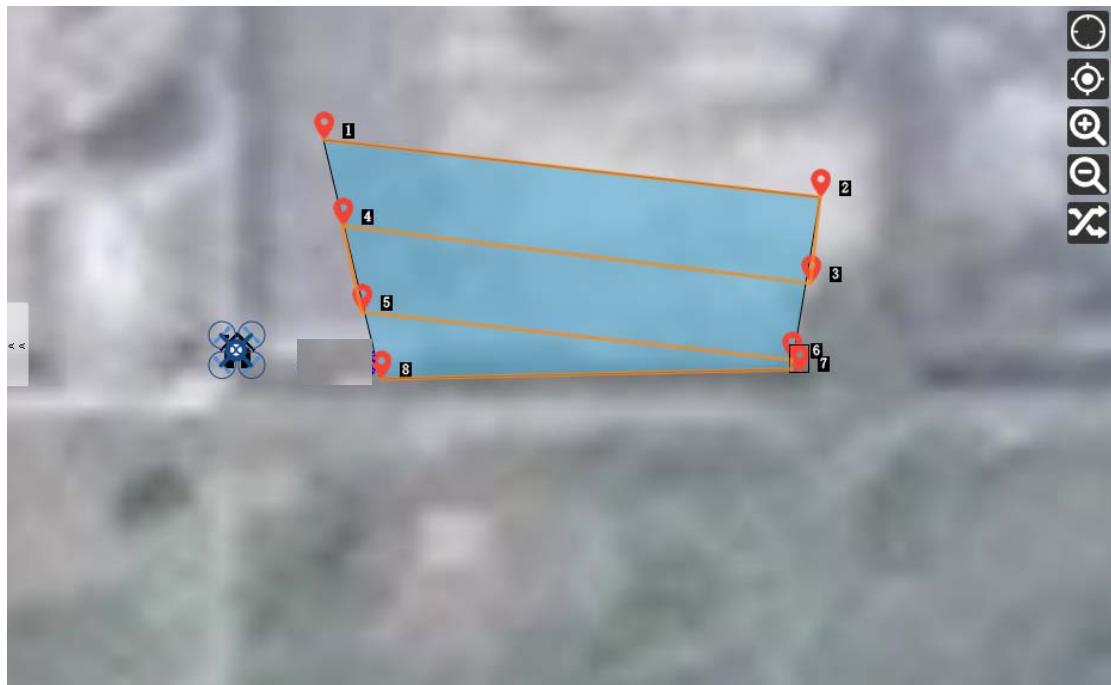
Switch to 'regional flight function' and choose boundary point by double click the left button of mouse.

T1 supports the regional area which can be fixed by four boundary points. Each boundary point can be changed by dragging mouse.

When the area is fixed, click the right button of mouse and choose 'Automatic planning air route' which should be parallel with the line between NO.1 and NO.2 boundary point as shown in picture 3.

In the pop-up dialog box, you can set up air route parameters in bulk.

After the finish of upload, click execution button to carry out flight according to the prompt. Its flight process is as same as the one of air route function.



picture 3 regional flight function

suspend & continue function

During flight, click "suspend" and "continue", then the function of suspend or continue its airline can be performed respectively. Switch remote control to attitude mode, the aircraft will exit its air route. When the flight is over, the aircraft will exit the auto-piloted and enter into the GPS mode to hover.

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- - Reorient or relocate the receiving antenna.
- - Increase the separation between the equipment and receiver.
- - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- - Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This device must be installed and operated with a minimum distance of 20 cm between the radiator and user body.