T900-MINI series User Guide

Version： 20230410V2.0

Contents

1.Product Introduction

   The T900-MINI series is a miniaturized digital radio of the T900 series. The T900-MINI series mainly includes T01 and T02 models. The only difference between the two is the interface. The T01 is mainly used for the UAV end, while the T02 uses the Type C interface for the ground end. Both of them have the characteristics of small size, good integration and high sensitivity. T900-MINI series products work in the frequency band of 902~928MHz. In a good environment, the maximum transmission distance can reach 60KM.
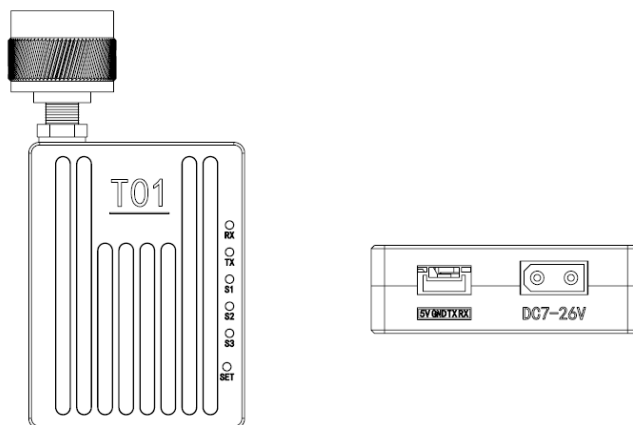
T01 Module and Interface Diagram
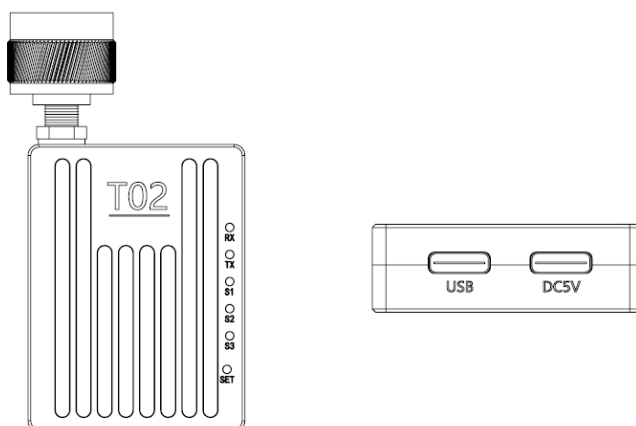
T02 Module and Interface Diagram

2.Product Accessories

2.1.T01 Accessories

T900-MINI-T01 Accessories (one)			
No.	Name	Description	Quantity
1	T900-MINI-T01	T01 Module	1
2	Small glue stick antenna	2.5dBi	1
3	XT30 Semi-bare power cable		1
4	GH1.25-4pinSerial port semi-bare cable		1

T900-MINI-T01 Module

Small glue stick antenna

XT30 Semi-bare power cable

GH1.25-4PINSemi-bare wire

2.2.T02 Accessories

T900-MINI-T02 Accessories (one)			
No.	Name	Description	Quantity
1	T900-MINI-T02	T02 Module	1
2	Small glue stick antenna	2.5dBi	1
3	Type C to USB cable		2

T900-MINI-T02 Module

TypeC to USB cable

Small glue stick antenna

3.Product Connection

3.1.T01 Connection Diagram
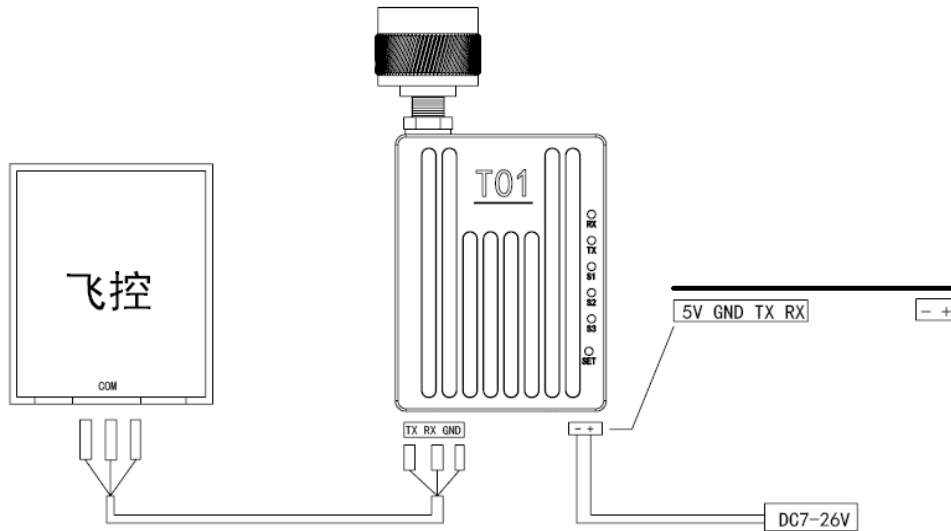
T900-MINI-T01 Connection steps:

◆ SMA Connected antenna.

◆ The power supply to T01 is DC7~26V, typical value is +12V.

◆ The serial port can be connected in the following ways. The serial port can also be

used to configure AT command parameters.

(Notes：Please confirm whether the serial port of the T01 device is TTL level or RS232

level).
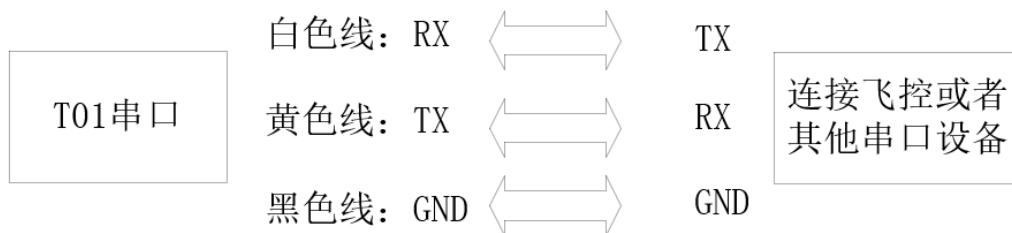
3.2.T02 Connection Diagram
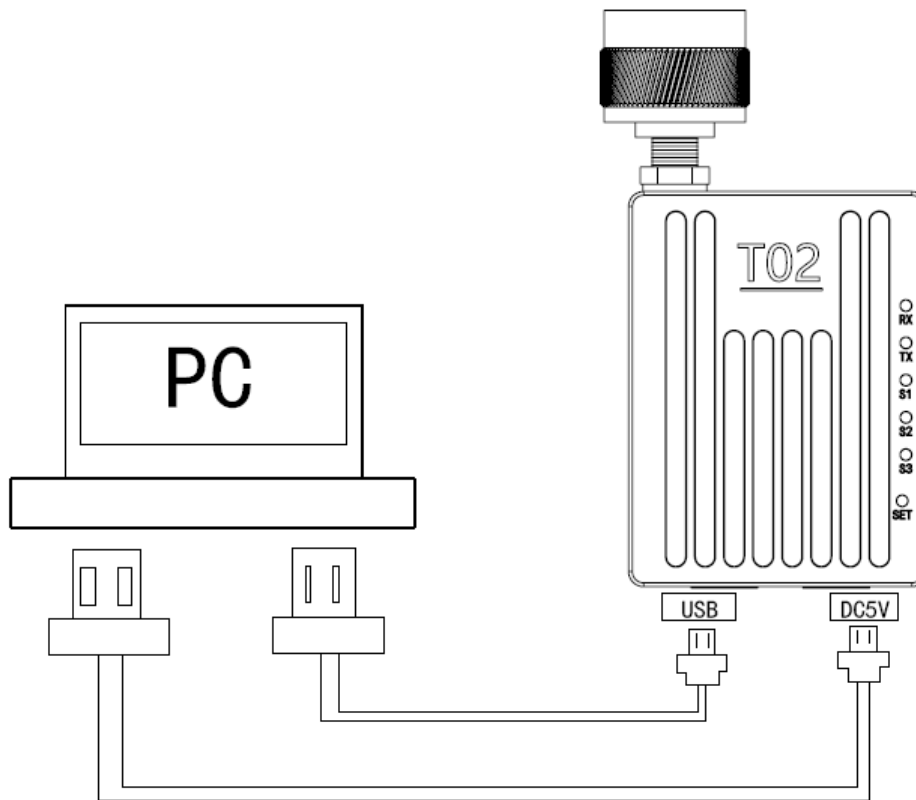
T900-MINI-T02 Connection Steps:

◆ SMA Connected antenna.

Two USB cables are connected to the computer. The USB port not only provides 5V

power supply, but also supports data transmission and parameter settings. The

DC5V port provides power supply only.

4.Product Use

4.1.T01/T02 Power Supply

◆ The T900-MINI-T01 uses DC power supply. The power supply voltage ranges from 7 to 26V, and the typical operating value is +12V. The maximum current required for 100% transmission of T01 data at different voltages is shown in the table below.

Supply Voltage	Peak Current (A)	Average Current（A）
7V	1.03A	0.76A
12V	0.60A	0.44A
24V	0.30A	0.22A
26V	0.28A	0.20A

◆ The T900-MINI-T02 device is powered by DC5V and USB simultaneously.

4.2.T01 Interface Definition
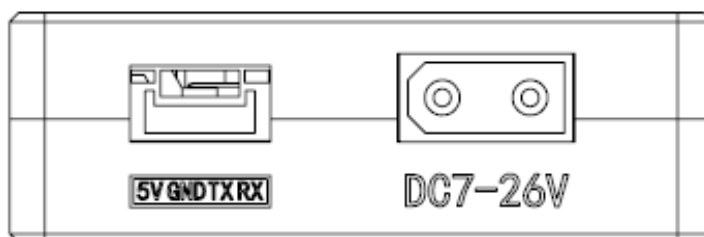
The T01 device has two interfaces, one serial port and one power supply port. When connecting the serial port, note whether the device is TTL level or RS232 level. The power port uses the male head of the XT30 terminal and supports 7 to 26V.

NO.	Interface	Description	Remarks
1	GH1.25-4PINSerial port	White line：RX Yellow line：TX Black line：GND Red line： 5V@1A Output	Note that the serial port is TTL level or RS232 level
2	XT30 Power male head inner needle	DC7~26V	

4.3.T02 Interface Definition
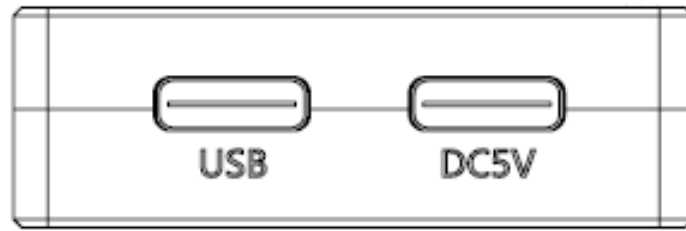
The T02 interface is two Type C ports, both with standard 5V voltage. The USB identification interface supports both power supply and data transmission. The DC5V port provides power supply only.

No.	Interface	Description	Remarks
1	USB	It can supply power, transmit data and configure parameters	
2	DC5V	Power supply only	

4.4.T01/T02 Indicator Meaning

Emission lamp TX（RED）

When the TX lights up, it indicates that the module is sending data.

Receiving lamp RX（RED）

When RX lights up, it indicates that the module is receiving data.

Power on to configure the SET button.

Press and hold the SET button and then power on. The release button will enter the AT command is used to set parameters.

Receive signal strength light（RSSI green lights)

The greater the number of power lights, the greater the signal receiving strength.

The RSSI lamp represents the strength of the received signal	
Number of RSSI Energy Lights On	Energy Received dBm
All three RSSI lights on	About -50dBm
Two RSSI lights on	About -80dBm
One RSSI light on	About -95dBm

Module Type	Mode	T900-MINI Series Indicator Status		
		RX	TX	RSSI 123
All	AT Command Configuration Mode	Turn off	Turn off	Turn off
Master	Normal operation	Flashing when receiving data	Turn on (steady light)	Proportional to the received signal strength
Slave	No-sync	Turn off	Turn off	Cycle light every 860ms
Slave	Synchronization	Turn on (steady light)	Flashing when sending data	Proportional to the received signal strength
Repeater	No-sync	Flashing alternately with the sanding light	Flashing alternately with the receiving light	Cycle light every 860ms
Repeater	Synchronization	Flashing when receiving data Otherwise on	Flashing when sending data Otherwise on	Proportional to the received signal strength

When the master and slave devices are successfully paired, the power indicator and TX indicator of the master device are steady on, and the power indicator and RX indicator of the slave device are steady on. If the master/slave pairing fails, the RSSI of the salve device is always in the search state. In this case, you should re-check the configured parameters. When data is being sent or received over the serial port, the RX indicator of the master device and the TX indicator of the slave device blink.

4.5.AT Software Parameter Configuration

You can configure the parameters of the AT command by using the general serial port Assistant or using the AT software of the upper computer.

You can use the general serial port terminal, through the data serial port, and use the AT command to configure parameters. For details about how to configure the AT command, see Chapter 6 of the T900 User Manual. Chapter 5 of the T900 User Manual describes how to enter the AT command mode.

SSCOM specifies the parameters for configuring the universal serial port tool:

1) Correctly connect the serial port to the power supply, set the correct baud rate, and turn on the serial port.

2) Enter '+++' to enter the AT command mode.

3) Enter AT&V to display the current configuration parameters.

4) Use the AT command to configure the required parameters (see AT command/Register instructions in Chapter 6 of the T900 User's Manual).

5) After the configuration is complete, enter AT&W to save the parameters.

6) Enter ATA to exit the AT command mode and start to work normally.

You can also use the T900 AT configuration platform to configure parameters through the data serial port. AT The upper computer software allows users to quickly configure the T900. All its functions can also be realized by manually inputting AT commands through the above general serial port tool.

AT software configuration parameters:

1) After setting the correct baud rate, open the serial port. （The general baud rate is 9600/115200bps）.

2) Click to enter AT mode (send '+++'), the data frame will return Welcome to Use T900 OK, indicating that the AT mode was successfully entered.

3) Click Query (send AT&V), and the queried parameters will be displayed one by one in the parameter list on the left.

4) After modifying the corresponding parameter as required, click the yellow button on the right of the parameter box (send AT command to set).

5) After all parameters to be modified are configured, click Save button (send AT&W).

6) Click the Exit AT mode button (send ATA) to return to the normal working state.
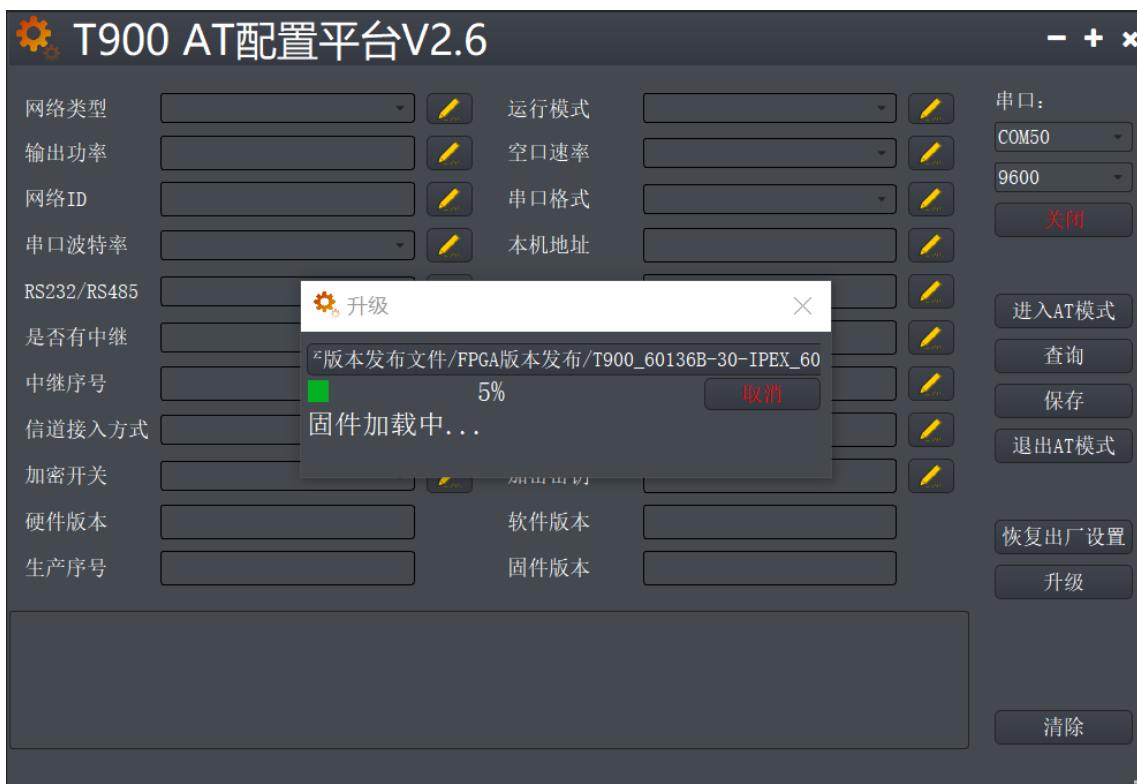
4.6. AT Software Upgrade

AT Software Upgrade Steps:

1) After setting the correct baud rate, open the serial port. (The average baud rate is 9600/115200bps）

2) Click the Upgrade button and select the Upgrade File.

3) During the firmware loading process, you can click the Cancel button to cancel the upgrade.

4) Firmware update phase. In this phase, the upgrade cannot be canceled and the power cannot be disconnected. An unexpected power failure may damage the device.

5) When the upgrade is completed, please power off and restart the equipment.

5. Point-to-point Mode Configuration

5.1 Master Configuration（AT Software）

1) Power on the data transmission station and then connect the data serial port firstly. Secondly, click to enter the AT mode, and then click query.

2) Click Restore factory Settings firstly, select point-to-point master mode secondly, and then click OK.

3) Click Query to configure network ID, serial port baud rate, port rate, etc. (Other parameters can be default).

4) Click Save.

5) Click to exit the AT mode.

5.2 Slave Configuration（AT Software）

1) Power on the data transmission station, then connect the data serial port, and enter the AT configuration platform.

2) Click Restore factory Settings firstly, select point-to-point slave mode secondly, and then click OK.

3) Click Query to set the same network ID, port rate, and serial port baud rate as the master port.

4) Click Save.

5) Click to exit the AT mode.

6.Point-to-point with relay Mode Configuration

6.1 Master-slave Configuration（AT Software）

The configurations on the master and slave ends are the same as those in 5.1 and 5.2.

6.2 Relay Configuration（AT Software）

1) Power on the data transmission station, then connect the data serial port, and enter the AT configuration platform.

2) Click Restore factory Settings firstly, select point-to-point relay mode secondly, and then click OK.

3) Click Query to set the same network ID, serial port baud rate, and port rate as the master port.

4) Set the trunk number to 1. If there are several relays, set the relay number from 1 to N.

(The master, slave, and relay do not need to configure whether there is a relay.

5)　Click Save.

6)　Click to exit the AT mode.

7. Point-to-multipoint Mode Configuration

7.1 Master Configuration（AT Software）

1) Power on the data transmission station, then connect the data serial port, and enter the AT configuration platform.

2) Click Restore factory Settings firstly, select point-to-multipoint master mode secondly, and then click OK.

3) Click query, and the user can configure the required network ID, serial port baud rate, and empty port rate.

4) Local address =1, synchronous address =0, destination address =0, channel access

mode select RTS/CTS.

5) Click Save.

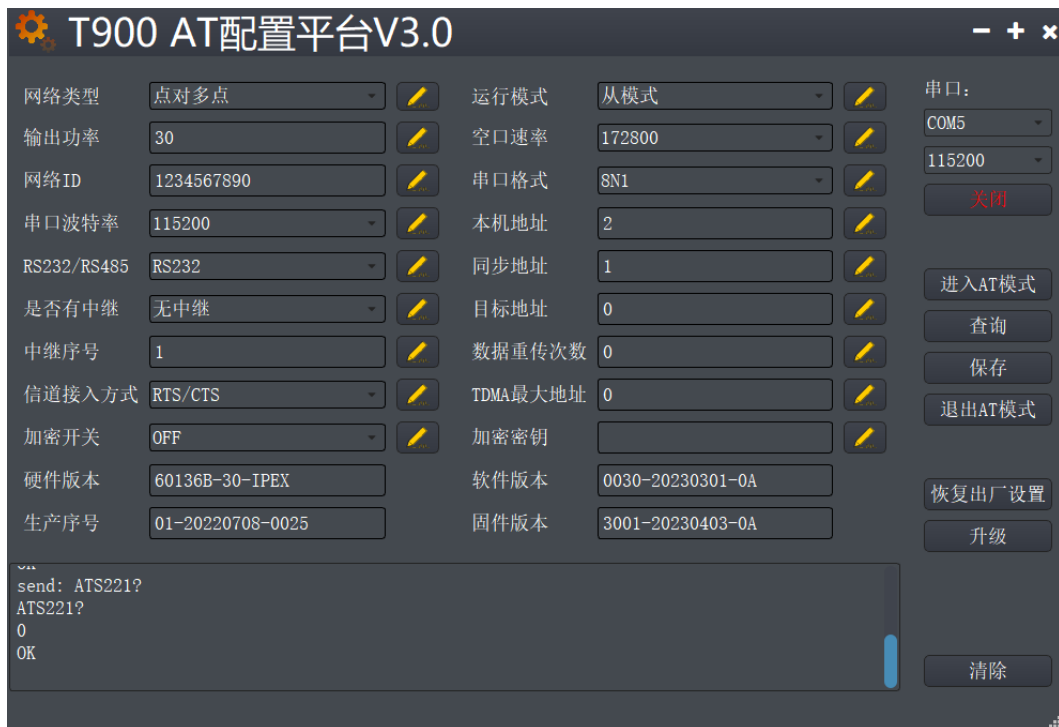6) Click to exit the AT mode.

7.2 Slave Configuration（AT Software）

1) Power on the data transmission station, then connect the data serial port, and enter the AT configuration platform.

2) Click Restore factory Settings firstly, select point-to-multipoint slave mode secondly, and then click OK.

3) Click Query to set the same network ID, port rate, and serial port baud rate as the master port.

4) The local address is 2 to N+1, where N is the total number of slave ends. Synchronization address =1.

synchronization address = local address of the master end.

The destination address is 0.

The channel access mode is RTS/CTS.

5) Click Save.

6) Click to exit the AT mode.

8.Have A Central MESH Model Configuration

8.1 Master Configuration（AT Software）

1) Power on the data transmission station, then connect the data serial port, and enter the AT configuration platform.

2) Click Restore factory Settings firstly, select Have A Central MESH mode secondly, and then click OK.

3) Click query, and the user can configure the required network ID, serial port baud rate, and empty port rate.

4) Local address =1, synchronization address =0, destination address =0.

   The channel access mode is TDMA_AUTO.

   TDMA slot allocation =15.

5) Click Save.

6) Click to exit the AT mode.

8.2 Slave Configuration（AT Software）

1) Power on the data transmission station, then connect the data serial port, and enter the AT configuration platform.

2) Click Restore factory Settings firstly, select Have a Central MESH mode secondly,

and then click OK.

3) Click Query to set the same network ID, port rate, and serial port baud rate as the master port.

4) The local address is 2 to N+1, where N is the total number of slave ends. Synchronization address =1.

Synchronization address = local address of the master end.

Destination address =0.

Channel access mode TDMA_AUTO.

Slave TDMA time slot allocation without configuration.

5) Click Save.

6) Click to exit the AT mode.