T900-DEMO User Guide

900MHz 1W Data radio
Version：20230423V2.0

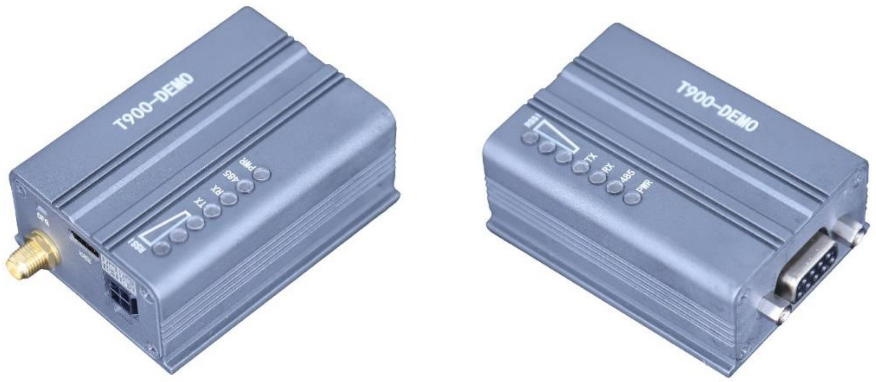
Contents

1.Product introduction

T900-DEMO provides standard data interface, control interface, power supply interface and antenna for T900-30-IPEX. T900-DEMO is suitable for applications that do not require auxiliary OEM integration, but still require a smaller size. The T900-Demo can also be used to quickly evaluate the features and performance of the T900.

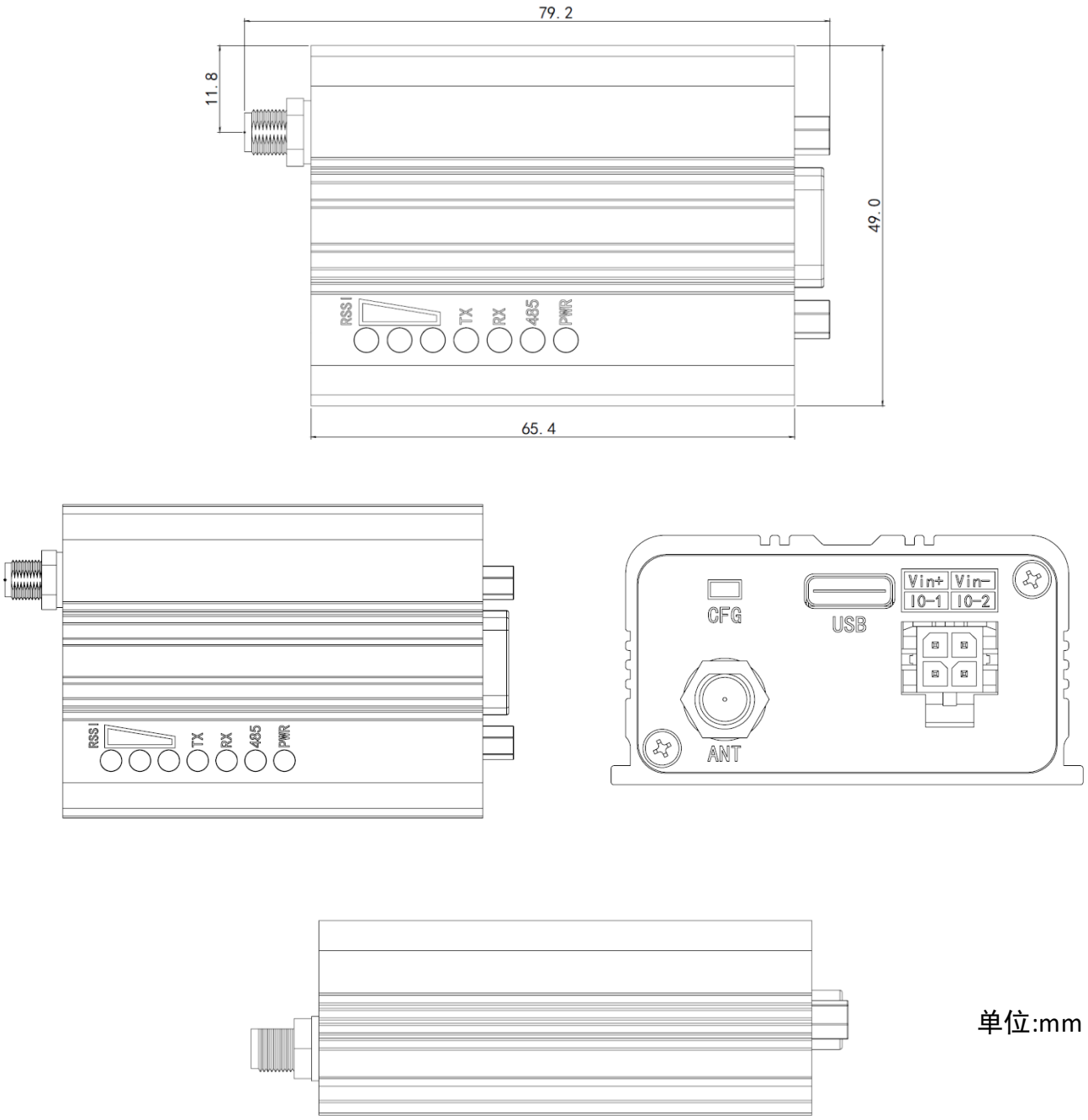
Interface：

- Input power: DC9~26V
- Power indicator light: PWR
- RS232/RS485
- Three RSSI
- Transmit/receive indicator light.
- CFG
- SMA
- USB
- Reserve IO



T900-DEMO

2.Dimensions&Weight



单位:mm

T900-DEMO Diagram

- T900-DEMO Dimensions(L*W*H): 79.2mm*49.0mm*26.0mm
- T900-DEMO Weight: 119g

3.Product accessories

T900-DEMO accessories (one)			
No	Name	Description	Quantity
1	T900-DEMO	module	1
2	Little glue stick antenna	2.5dBi	1
3	USB Type-C		1
4	DB9		1
5	Molex3.0 Semi-bare power cable	DC9~26V	1

T900-DEMO module

Little glue stick antenna

USB

DB9

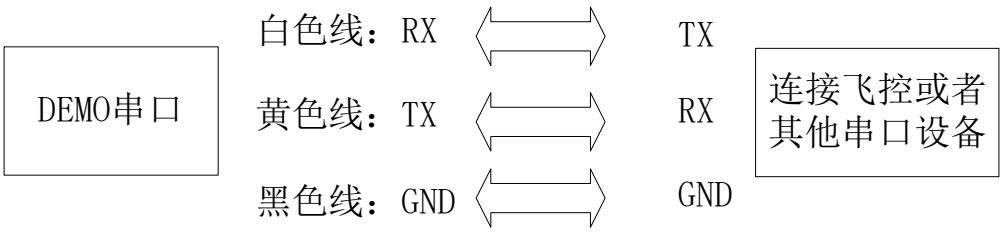
Molex3.0 Semi-bare power cable

4.Product connections

T900-DEMO Connection steps:

- Connected the SMA to the antenna.
- Power on: DC9~26V，Typical value:+12V.
- The USB is used to set parameters，use the UI upper computer software for configuration.
- DB9 connection steps: (The serial port can also be used to configure AT command parameters.)

(Notes: Please confirm whether the serial port of the DEMO device is TTL or RS232)



5.Product use

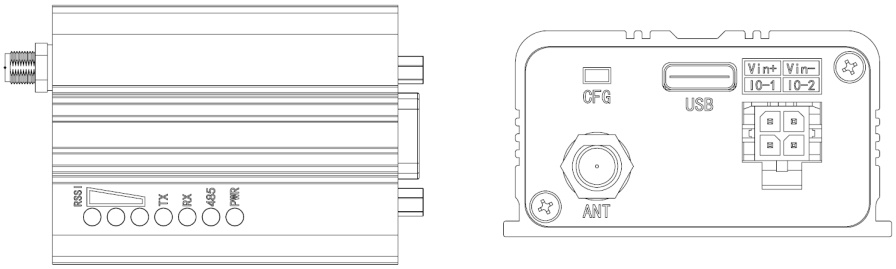
5.1.T900-DEMO Power

T900-DEMO use DC power, Supply voltage: DC9~26V, Typical value: +12V.

The maximum current required for sending data at different voltages is shown in the table below.

Supply voltage	Peak current (A)	Mean current （A）
9V	0.80A	0.59A
12V	0.60A	0.44A
24V	0.30A	0.22A
26V	0.28A	0.20A

5.2.T900-DEMO Interface



T900-DEMO has four interfaces: a DB9 serial port, a power supply port, a CFG button, and a USB configuration port. Note whether the device is TTL or RS232 when the serial port is connected. The power supply port supports DC9 to 26V.

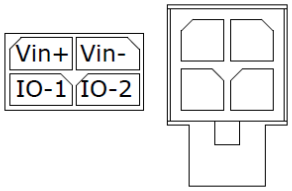
◆ **Power interface**

Vin+/Vin-

Supply power to modules， input power: DC9-26V

IO-1/IO-2

Pin reserved for use.



◆ USB interface

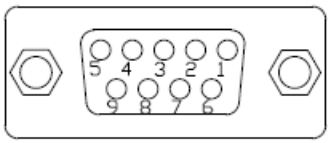
Use the USB to connect the UI software， it can configure parameters and upgrade T900-DEMO.

◆ CFG button

Press the CFG button and release it to enable T900-DEMO to enter the AT mode. In this case, open the AT software to configure module parameters, query, and upgrade modules.

◆ DB9 data serial port

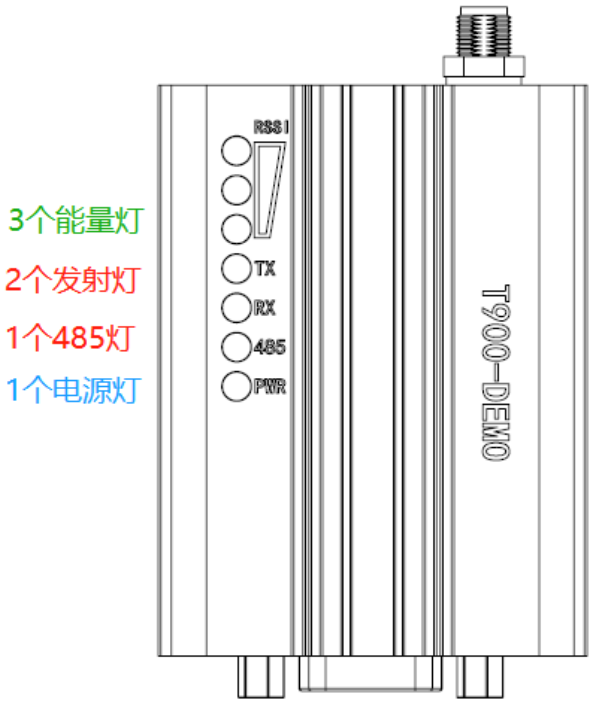
Connect to the data serial port of T900-DEMO for data transfer or AT command control. Currently, RS232 and RS485 half-duplex are supported. RS232 only uses RXD, TXD, and GND, but other control cables are not supported.



Pin	RS232	RS485 (Full duplex)	RS485 (Half duplex)
1	DCD		
2	TXD	TX-	Data-
3	RXD	RX+	
4	DTR		
5	GND	GND	GND
6	DSR		
7	RTS	RX-	
8	CTS	TX+	Data+
9			

DB9 Interface definition

5.3. Product indicator meaning



Power PWR（blue）

If the power indicator is on, the device is powered on.

Transmitting indicator TX（red）

When the TX light is on, it indicates that the module is sending data.

Receiving indicator RX（red）

When the RX light is on, it indicates that the module is receiving data.

Serial port 485 indicator（red）

When 485 is on, the serial port is configured as 485.

Receiving signal strength indicator（3 RSSI, green)

The more power lights on, the stronger the signal reception。

The RSSI indicator represents the strength of the received signal	
RSSI quantity	Received energy dBm
3 RSSI on	About -50dBm
2 RSSI on	About -80dBm
1 RSSI on	About -95dBm

Module type	Mode	T900-40-SMA Indicator status		
		RX	TX	RSSI 123
CFG	AT command configuration mode	off	off	off
master	work	blink when receiving data	on	proportional to the strength of the received signal
slave	out of sync	off	off	cycle light every 860ms
slave	after synchronization	on	blink when sending data	proportional to the strength of the received signal
relay	out of sync	flashes alternately with the sending light	flashes alternately with the receiving light	cycle light every 860ms
relay	after synchronization	blink when receiving data otherwise on	blink when sending data otherwise on	proportional to the strength of the received signal

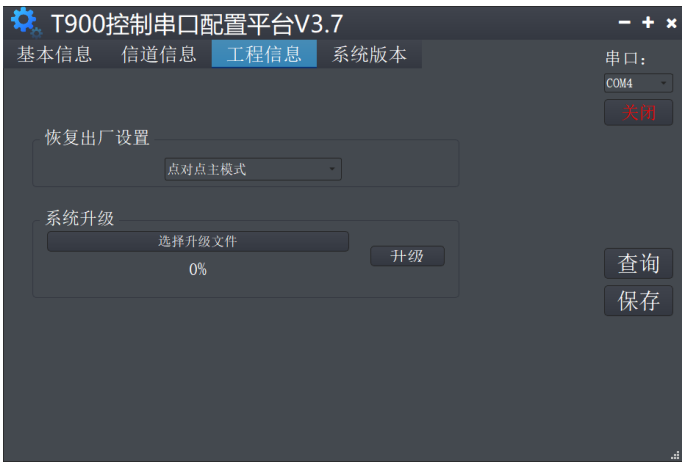
When the master and slave are successfully paired, the power indicator and TX indicator of the master are steady on, and the power indicator and RX indicator of the slave are steady on. If the primary/secondary pairing fails, the RSSI of the secondary device is always in the search state. In this case,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

5.4. Control serial port parameter settings

The control serial port is the auxiliary serial port of T900, and the built-in UI upper computer software can be used to configure parameters and obtain the status. Its baud rate is fixed at 115200bps 8N1. The control serial port of T900-DEMO is USB Type-C .

Control serial port parameter setting steps:

1) Open the T900-UI control serial port configuration platform. If the serial port is successfully opened, parameters are read successfully in the lower left corner. If the serial port fails to be opened, messages such as Communication timeout are displayed in red.
2) Select the Basic Information page and click the query button to query the current configuration parameters. The parameter list on the left will be updated to the current latest parameter.
3) Modify the required parameters.
4) Click the Save button to save the parameters on all pages. After the Settings are saved, the device soft resets and the parameters take effect immediately.



- **Basic information page:**

  It can be used for parameter query and parameter configuration.

- **Channel information page:**

  You can view information such as RSSI energy, statistics on sent and received data, and error statistics.

- **Engineering information page:**

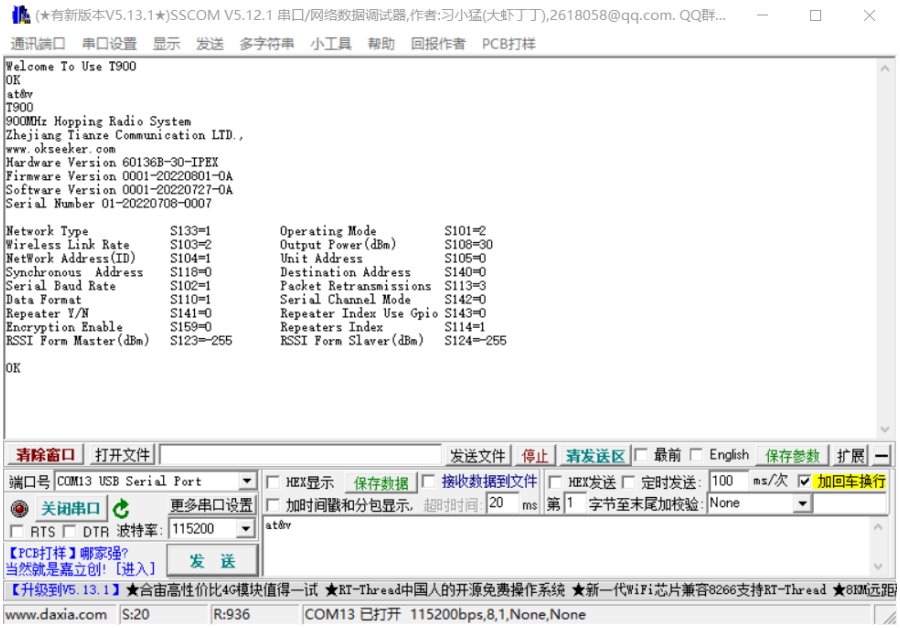
  You can upgrade the device and restore the factory settings.

- **System version page:**

  You can obtain the version numbers of the current device.

5.5. 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. How to enter the AT command mode is explained in the data serial port in Chapter 5 of the T900 User Manual.

SSCOM general serial port tool configuration parameters operation steps:

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) Using the AT command to set the required parameters (See AT command/Register Instructions in Chapter 6 of the T900 User's Manual for details).
5) After the configuration is completed, enter AT&W to save the parameters.

(or just type AT&WA save and exit).

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

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 operation steps:

1) After the baud rate is set correctly, open the serial port. (The average baud rate is 115200bps).
2) Click To enter the AT mode (send '+++'), and the data frame will return Welcome To Use T900 OK, which means that the AT mode is 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 parameters as needed, click the yellow button on the right of the parameter box (send AT command settings).

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

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

5.6. AT software version upgrade

AT software version upgrade steps:

1) After the baud rate is set correctly, open the serial port. (The average baud rate is 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) The upgrade cannot be canceled, and the power cannot be disconnected during the updating. An unexpected power failure may damage the equipment.

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

6. Point-to-point mode configuration

6.1 Master configuration（AT software）

1) Power on the data transmission, then connect the data serial port. Click to enter the AT mode, then click query.

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

3) Click Query to set the network ID, serial port baud rate, and port rate（Other parameters can be default.）.

4) Click Save.

5) Click to exit AT mode.

6.2 Slave configuration（AT software）

1) Power on the data transmission, then connect the data serial port. Click to enter the AT mode.

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

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

4) Click Save.

5) Click to exit AT mode.

6.3 Master configuration（UI software）

1) Power on the data transmission station, connect the control serial port, then open the serial port, and the parameters are read successfully in the lower left corner.

2) Click project information, select the master mode of point-to-point under factory Settings restoration, and click Save.

3) Click basic information to set the network ID, serial port baud rate, and port rate （Other parameters can be default）.

4) Click Save.

6.4 Slave configuration（UI software）

1) Power on the data transmission station, connect the control serial port, then open the serial port, and the parameters are read successfully in the lower left corner.

2) Click project information, select the point-to-point slave mode under factory Settings restoration, and click Save.

3) Click basic information to set the network ID, serial port baud rate, and port rate （Other parameters can be default）.

4) Click Save.

7.Point-to-point&relay mode configuration

7.1 Master-slave configuration

The master and slave configurations are the same as the 5.1/5.3 and 5.2/5.4 configurations.

7.2 Relay configuration (AT software)

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

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

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

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

(The master automatically identifies the relay, you do not need to configure it.)

5) Click Save.

6) Click to exit the AT mode.

7.3 Relay configuration (UI software)

1) Power on the data transmission station, connect the control serial port, then open the serial port, and the parameters are read successfully in the lower left corner.

2) Click project information, select the point-to-point slave mode under factory Settings restoration, and click Save.

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

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

5) Click Save.

8 Point-to-point mode configuration

8.1 Master configuration（AT software）

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

2) Click Restore factory Settings, select point-to-multipoint master mode, and 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.

8.2 Slave configuration（AT software）

1) Power on the data transmission radio, connect the serial port, and enter the AT configuration platform.
2) Click Restore factory Settings, select point-to-multipoint slave mode, and click OK.
3) Click Query to set the same network ID, port rate, and serial port baud rate as the master.
4) The local address=2~ N+1, N= total number of slaves.

   Synchronization address =1

   synchronization address = local address of the primary end

   Destination address =0

   The channel access mode is RTS/CTS.
5) Click Save.
6) Click to exit the AT mode.

8.3 Master configuration（UI software）

1) Power on the data transmission station, connect the control serial port, then open the serial port, and the parameters are read successfully in the lower left corner.

2) Click project information, select the master mode of point-to-multipoint under factory Settings restoration, and click Save.

3) Click basic information to set the network ID, serial port baud rate, and empty port rate.

   Local address =1, synchronization address =0, and destination address =0.

   The channel access mode is RTS/CTS.

4) Click Save.

8.4 Slave configuration（UI software）

1) Power on the data transmission station, connect the control serial port, then open the serial port, and the parameters are read successfully in the lower left corner.

2) Click project information, select the slave mode of point-to-multipoint under factory Settings restoration, and click Save.

3) Click basic information to set the network ID, serial port baud rate, and air port rate.

   Local address =2 to N, synchronization address =1, destination address =0.

   The channel access mode is RTS/CTS.

4) Click Save.

9.Have center MESH mode configuration

9.1 Master configuration（AT software）

1) Power on the data transmission radio, connect the serial port, and enter the AT configuration platform.
2) Click Restore Factory Settings, select master mode with Center MESH, and click OK.
3) Click query, and the user can configure the required network ID, serial port baud rate, and air port rate.
4) Local address =1, synchronization address =0, destination address =0.

   The channel access mode is TDMA_AUTO.

   TDMA slot allocation is set to 15.
5) Click Save.
6) Click to exit the AT mode.

9.2 Slave configuration（AT software）

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

2) Click Restore Factory Settings, select Slave mode with Center MESH, and click OK.

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

4) The local address=2~ N+1, N= total number of slaves.

   Synchronization address =1

   synchronization address = local address of the primary end. Destination address =0

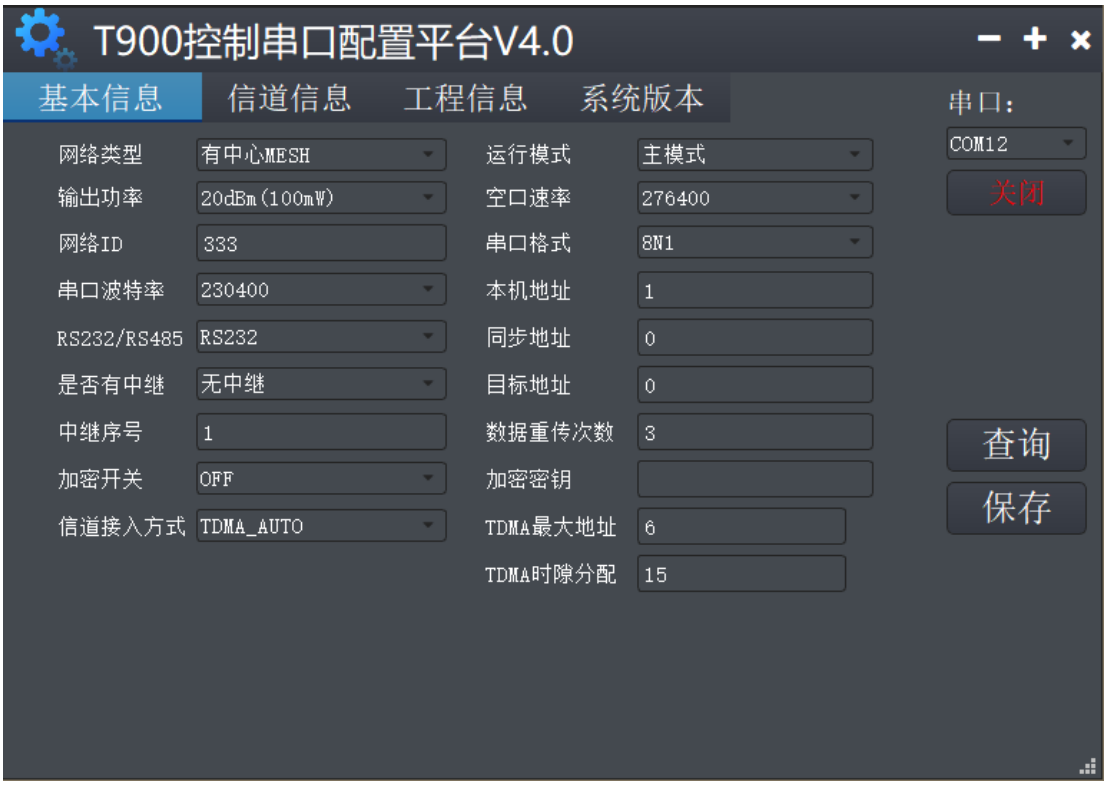
   The channel access mode is TDMA_AUTO

   The slave TDMA slot allocation does not need to be configured.

5) Click Save.

6) Click to exit the AT mode.

9.3 Master configuration（UI software）



1) Power on the data transmission station, connect the control serial port, then open the serial port, and the parameters are read successfully in the lower left corner.

2) Click project information, select the master mode with center MESH under factory Settings restoration, and click Save.

3) Click basic information, set the network ID number, serial port Baud rate, air port rate.

4) The local address is set to 1, and the synchronization address and destination address are both set to 0.

   The channel access method is selected as TDMA_AUTO, and the master TDMA time slot allocation is selected as 15.

5) Click Save.

9.4 Slave configuration（UI software）

1) Power on the data transmission station, connect the control serial port, then open the serial port, and the parameters are read successfully in the lower left corner.

2) Click project information, select the slave mode with center MESH under factory Settings restoration, and click Save.

3) Click basic information, set the network ID number, serial port Baud rate, air port rate.

   The local address ranges from 2 to N. Synchronization address =1, destination address =0.

   The channel access mode is TDMA_AUTO, and the slave TDMA time slot allocation is not configured.

4) Click Save.