

T900-40-SMA User Guide

Version: 20230410V5.0



Contents

1.Product Introduction	3
2.Product Accessories	3
3.Product Connection	4
4.Product Use	5
4.1.Power Supply.....	5
4.2.Wiring Definition	6
4.3.Product Indicator Meaning.....	7
4.4.Control Serial Port Parameter Configuration	8
4.5.AT Software Parameter Configuration	10
4.6.AT Software Upgrade.....	12
5.Point-to-point Mode Configuration.....	13
5.1 Master Configuration (AT Software)	13
5.2 Slave Configuration (AT Software)	14
5.3 Master Configuration (UI Software)	15
5.4 Slave Configuration (UI Software)	16
6.Point-to-point with Relay Mode Configuration.....	17
6.1 Master-slave Configuration	17
6.2 Relay Configuration (AT Software).....	17
6.3 Relay Configuration (UI Software).....	19
7、 Point-to-multipoint Mode Configuration	20
7.1 Master Configuration (AT Software)	20
7.2 Slave Configuration (AT Software)	21
7.3 Master Configuration (UI Software)	22
7.4 Slave Configuration (UI Software)	23

1.Product Introduction

T900-40-SMA (10W) is one of the digital radio stations in the T900 series. It is mainly used for transmission of high-power long distance industrial data. It has the characteristics of small volume, good integration and high sensitivity. The T900-40-SMA operates in the 902~928MHz band. T900-40-SMA is mainly divided into two models, namely T900-40A-SMA and T900-40B-SMA. The only difference between the two is the maximum transmission distance, which can reach 100KM for the T900-40A-SMA and 200KM for the T900-40B-SMA under good conditions.

2.Product Accessories

T900-40-SMA (one)			
No.	Product	Description	Quantity
1	T900-40-SMA	10W module	1
2	Little glue stick antenna	2.5dBi	1
3	J30J-15pin wiring	wiring	1



T900-40-SMA module

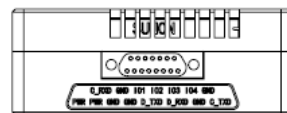
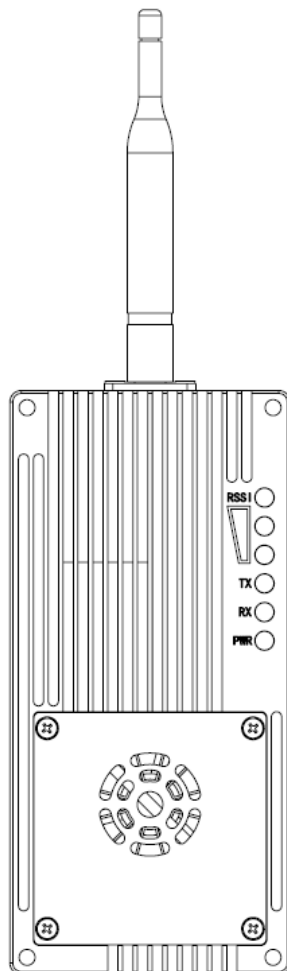


Little glue stick antenna



J30J- 15pin wiring

3.Product Connection

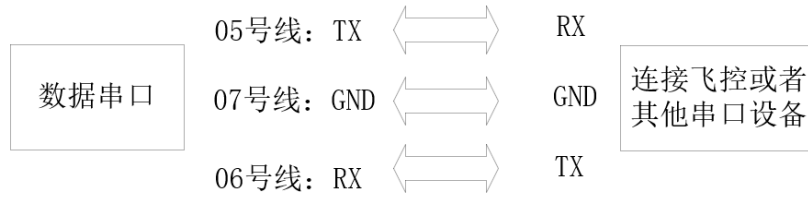


电源 15-26V	控制串口 TX, RX, GND	数据串口 TX, RX, GND
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T900-40-SMA Connection Steps:

- ◆ The device is connected to the antenna, and the tail is connected to the J30J wiring.

- ◆ The power supply for the device ranges from DC15 to 26V. The typical value is +24V.
- ◆ Data serial port is connected to computer or flight control for data transmission and can also be used for AT command parameter configuration.
- ◆ The control serial port can be connected to the computer, and the UI software can be used for parameter configuration.



4.Product Use

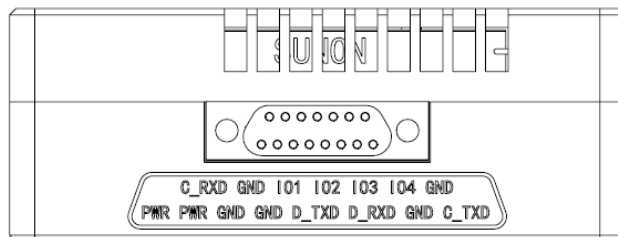
4.1. Power Supply

The T900-40-SMA device uses DC power supply. The supply voltage ranges from 15 to 26V, and the typical operating value is +24V. The maximum current required under full transmission mode with different voltage data is shown in the table below.

Supply Voltage	100% data full peak current (A)	100% data all generation average current (A)
15V	3.20A	2.10A
18V	2.80A	1.74A
24V	2.00A	1.30A
26V	1.85A	1.20A

Note: Please use 24V-2A or 18V-3A/15V-4A for power supply

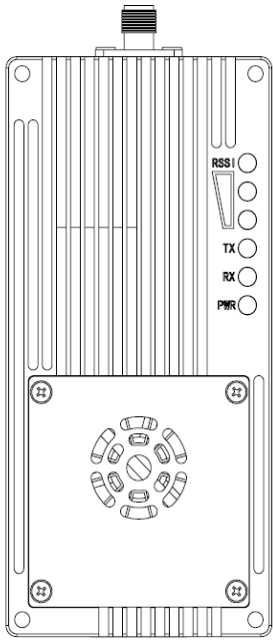
4.2. Wiring Definition



No.	Pin Name	Description	Direction
1	PWR	Power positive terminal	I
2	PWR	Power positive terminal	I
3	GND	Power negative terminal	I
4	GND	Power negative terminal	I
5	D_TXD	Data serial port transmits data TX	O
6	D_RXD	Data serial port receives data RX	I
7	GND	The data serial port is grounded GND	O
8	C_TXD	Control serial port transmits data TX	I
9	C_RXD	Control serial port receives data RX	O
10	GND	The control serial port is grounded GND	O
11	IO1	* reserve *	IO
12	IO2	* reserve *	IO
13	IO3	* reserve *	IO
14	IO4	* reserve *	IO
15	GND	grounding	O

Note: Please confirm whether the serial port of the module is TTL level or RS232 level.

4.3. Product Indicator Meaning



3个能量灯
2个数据灯
1个电源灯

Power PWR (Green)

The power light lights up to indicate that the device is powered on.

Transmit Lamp TX (red)

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

Receive Lamp RX (red)

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

Receiving signal strength lamp (RSSI 3 green lamps)

A greater number of energy lights indicates a greater strength of signal reception.

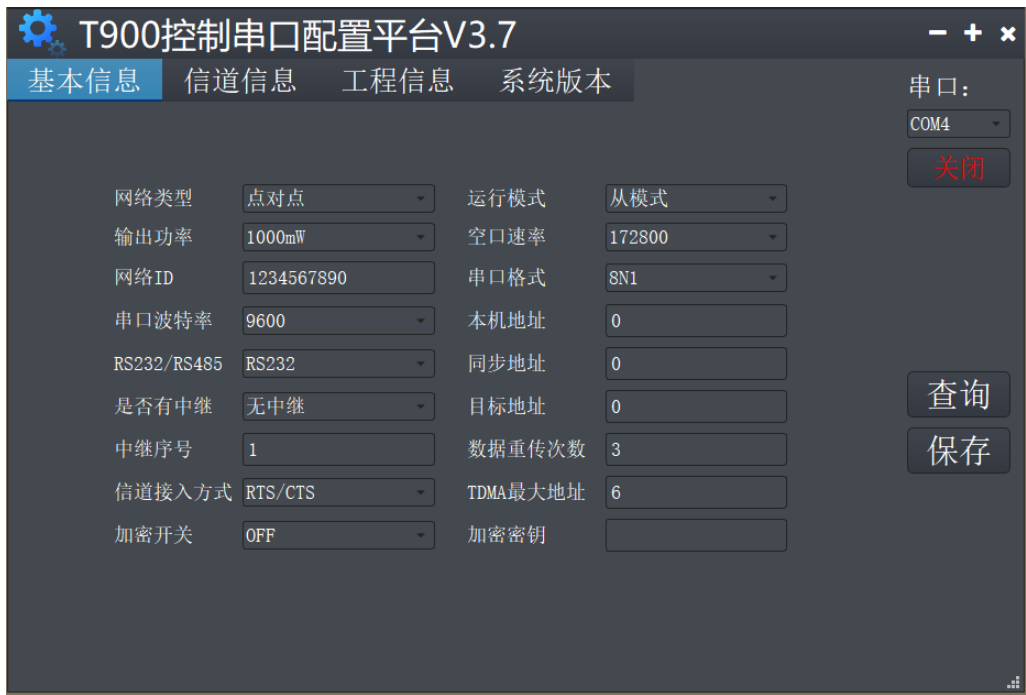
The RSSI lamp represents the strength of the received signal	
Numbers of RSSI energy lights on	Energy received dBm
All 3 RSSI lights are on	About -50dBm
2 RSSI lights are on	About -80dBm
1 RSSI light is on	About -95dBm

Module Type	Mode	T900-40-SMA 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 strength of the received signal
Slave	Non-sync	Turn off	Turn off	Cycle light every 860ms
Slave	Synchronization	Turn on (steady light)	Flashing when sending data	Proportional to the strength of the received signal
Repeater	Non-sync	Flashing alternately with the sending 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 strength of the received signal

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 slave 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.

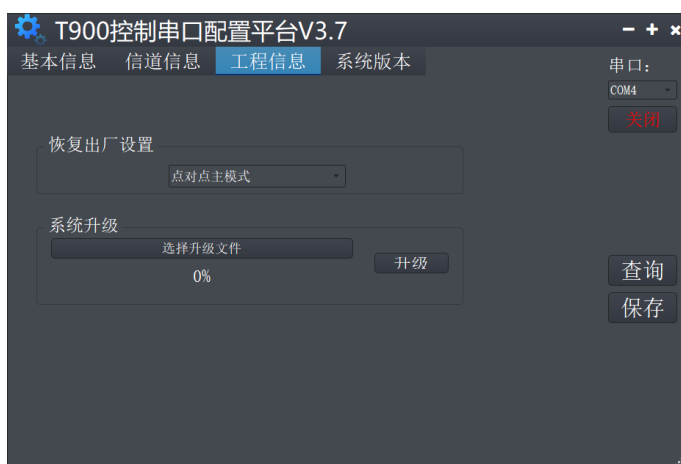
4.4. Control Serial Port Parameter Setting

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. T900-40-SMA control serial ports are the 8th, 9th and 10th pins in J30J-15PIN. Users can connect the computer through DB9 serial port to USB cable.



Control serial port parameter setting steps:

- 1) Open the T900-UI control serial port configuration platform. If the serial port is successfully opened, the lower left corner will display that the parameters have been read successfully.
- 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:** Used to query and configure parameters.
- ◆ **Channel information page:** Display information such as RSSI energy, statistics on sent and received data, and error statistics.
- ◆ **Project information page:** You can upgrade the device and restore factory settings.
- ◆ **System Version page:** Display the version numbers of the current device.

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. How do I enter the AT command mode 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) Type '+++' 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.

Users 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 the baud rate is set correctly, open the serial port. (The average baud rate is 9600/115200bps)
- 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), then 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.

5.3 Master Configuration (UI Software)



- 1) Power on the data transmission station, then connect the control serial port, open the serial port, **and the parameters are read successfully in the lower left corner.**
- 2) Click project information, **then select the master mode of point-to-point under the factory Settings restoration,** and then click Save.
- 3) Click the basic information to configure the network ID, serial port baud rate, port rate, etc. (Other parameters can be default).
- 4) Click Save.

5.4 Slave Configuration (UI Software)



T900控制串口配置平台V3.8

基本信息 | 信道信息 | 工程信息 | 系统版本

串口: COM9

关闭

网络类型	点对点	运行模式	从模式
输出功率	40dBm(10W)	空口速率	172800
网络ID	1234567890	串口格式	8N1
串口波特率	115200	本机地址	0
RS232/RS485	RS232	同步地址	0
是否有中继	无中继	目标地址	0
中继序号	1	数据重传次数	3
信道接入方式	RTS/CTS	TDMA最大地址	6
加密开关	OFF	加密密钥	

查询

保存

参数读取成功

- 1) Power on the data transmission station, then connect the control serial port, open the serial port, and the parameters are read successfully in the lower left corner.
- 2) Click project information, then select the slave mode of point-to-point under the factory Settings restoration, and then click Save.
- 3) Click the basic information to configure the network ID, serial port baud rate, port rate, etc. (Other parameters can be default).
- 4) Click Save.

6. Point-to-point with Relay Mode Configuration

6.1 Master-slave Configuration

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

6.2 Relay Configuration (AT Software)

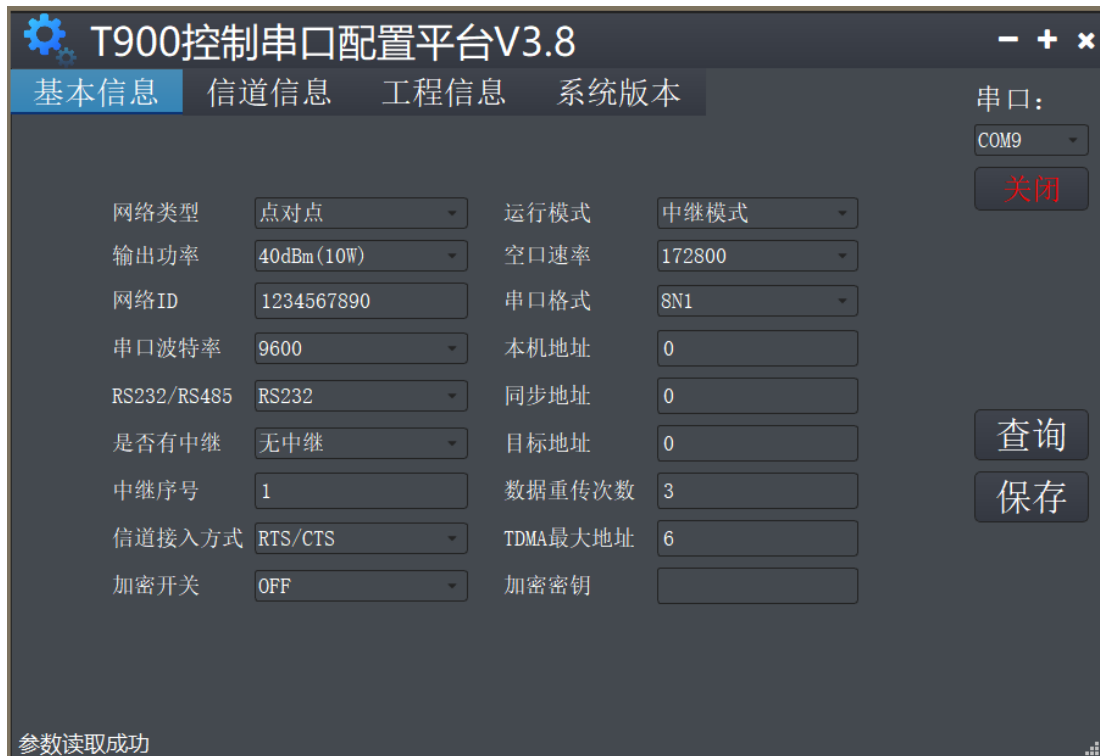


- 1) Power on the data transmission station, then connect the data serial port, and enter the AT configuration platform.
- 2) Click Restore factory Settings firstly, **select point-to-point relay mode secondly**, and then click OK.
- 3) Click Query to set the same network ID, port rate, and serial port baud rate as the master port.
- 4) **Set the relay 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. The master will automatically identify the relay)

- 5) Click Save.
- 6) Click to exit the AT mode.

6.3 Relay Configuration (UI Software)



- 1) Power on the data transmission station, then connect the control serial port, open the serial port, and the parameters are read successfully in the lower left corner.
- 2) Click project information, then select the relay mode of point-to-point under the factory Settings restoration, and then click Save.
- 3) Click Query to set the same network ID, port rate, and serial port baud rate as the master port.
- 4) Set the relay number to 1. If there are several relays, set the relay number from 1 to N.
- 5) Click Save.

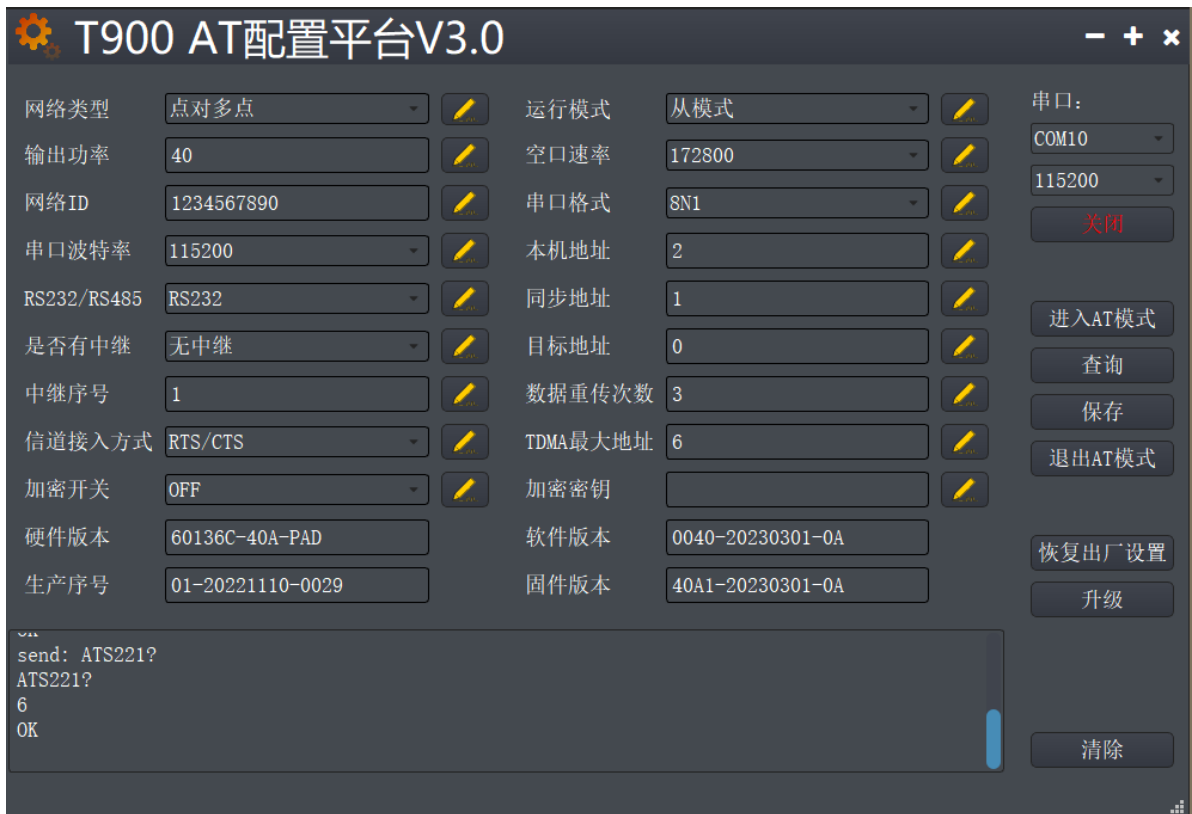
7.Point-to-multipoint Mode Configuration

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

7.3 Master Configuration (UI Software)

T900控制串口配置平台V3.8

基本信息 | 信道信息 | 工程信息 | 系统版本

串口: COM10

关闭

网络类型	点对多点	运行模式	主模式
输出功率	40dBm (10W)	空口速率	172800
网络ID	1234567890	串口格式	8N1
串口波特率	115200	本机地址	1
RS232/RS485	RS232	同步地址	0
是否有中继	无中继	目标地址	0
中继序号	1	数据重传次数	3
信道接入方式	RTS/CTS	TDMA最大地址	6
加密开关	OFF	加密密钥	

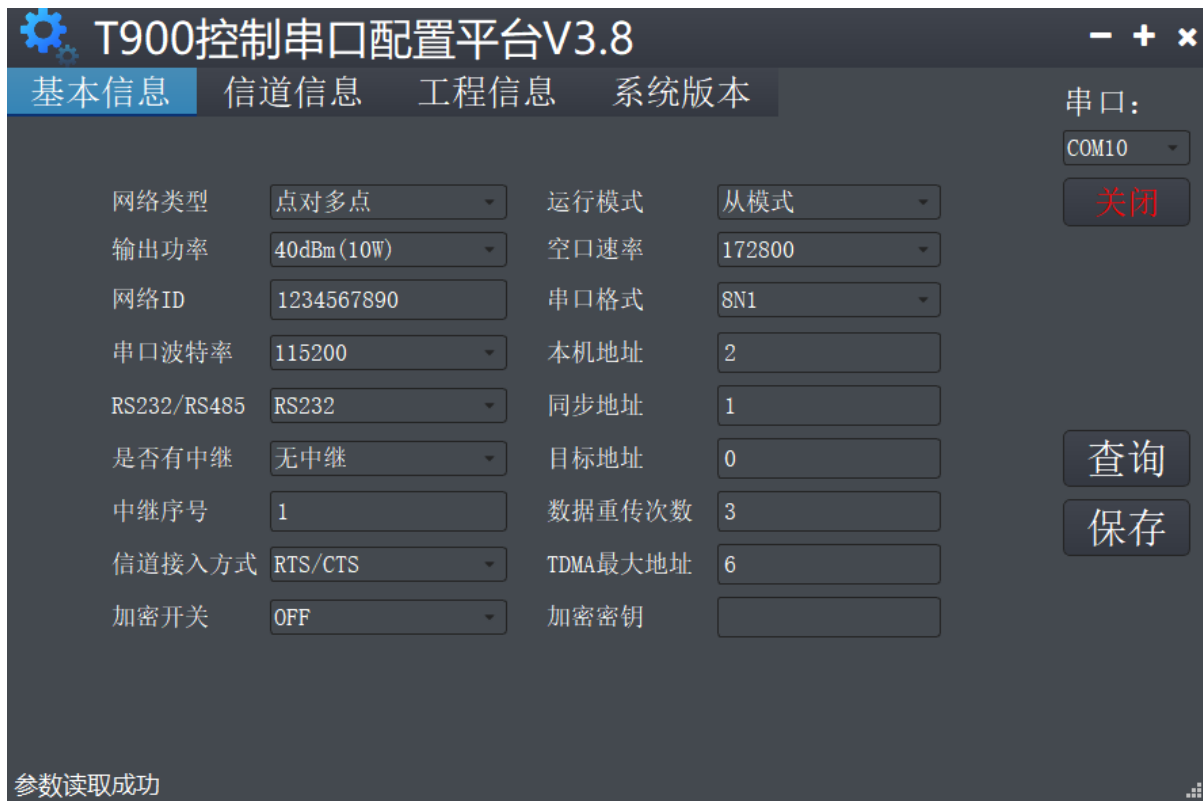
查询

保存

参数读取成功

- 1) Power on the data transmission station, then connect the control serial port, open the serial port, and the parameters are read successfully in the lower left corner.
- 2) Click project information, then select the master mode of point-to-point under the factory Settings restoration, and then click Save.
- 3) Click the basic information to configure the network ID, serial port baud rate, port rate, etc. (Other parameters can be default).
- 4) Local address =1, synchronous address =0, destination address =0, channel access mode select RTS/CTS.
- 5) Click Save.

7.4 Slave Configuration (UI Software)



- 1) Power on the data transmission station, then connect the control serial port, open the serial port, and the parameters are read successfully in the lower left corner.
- 2) Click project information, then select the slave mode of point-to-point under the factory Settings restoration, and then click Save.
- 3) Click the basic information to configure the network ID, serial port baud rate, port rate, etc. (Other parameters can be default).

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 and the channel access mode is RTS/CTS.

- 5) Click Save.

