

USR-DR504-G User Manual

version V1.0.3



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1. Introduction

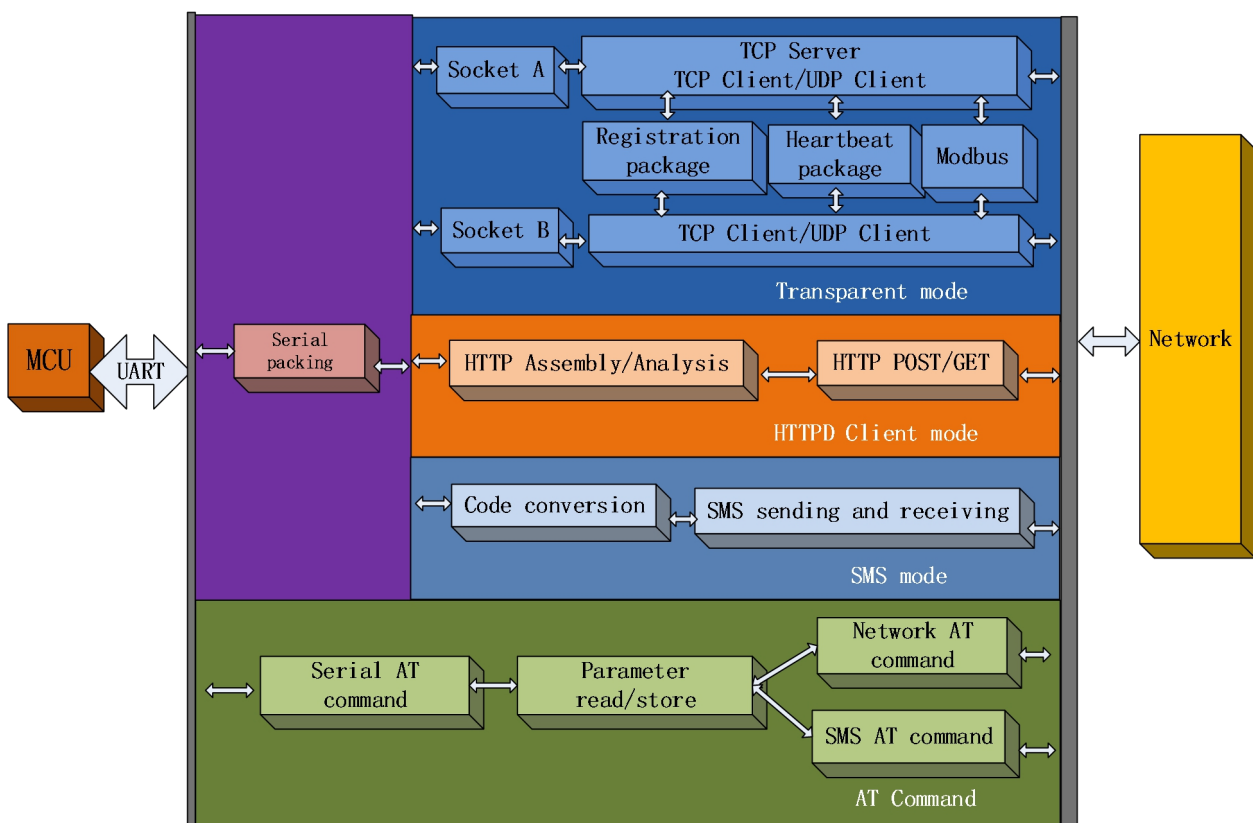
1.1. Overview

4G cellular modem USR-DR504-G is launched in 2020 featuring with high speed, low latency, compact size, high reliability and global bands. DR504-G provides wireless data communications between field serial devices and the central control system to enable remote control of industrial field sites. It supports TCP/UDP/HTTP protocol, SMS work mode, user-defined identity and heartbeat packets, 2 sockets connection, underneath device FTP upgrade and remote self-update. DR504 is ideal for M2M and IoT applications including distribution automation, smart metering, water & wastewater, heating, street light monitoring and etc.

Please open our official website for more information.

<https://www.pusr.com/products/4g-cellular-modems-with-global-bands-usr-g786-g.html>

1.2. Features



- Supports global 4G LTE frequency bands.
- Supports 2 sockets, TCP Server, TCP Client, UDP and HTTP client.
- Built-in hardware watchdog.
- Each socket supports buffering 5 packets of serial data, each packet up to 1000bytes.
- Supports user-defined identity and heartbeat packets.
- Supports configuration by serial / SMS / network AT commands.
- Supports base station location.
- Supports Modbus RTU/TCP protocol conversion.
- Supports base station positioning.
- Supports multiple modes including transparent transmission mode, HTTPD Client mode and SMS mode.
- Supports remote firmware upgrade, keep the firmware up to date.
- Supports sending English SMS.

2. Get Started

2.1. Specification

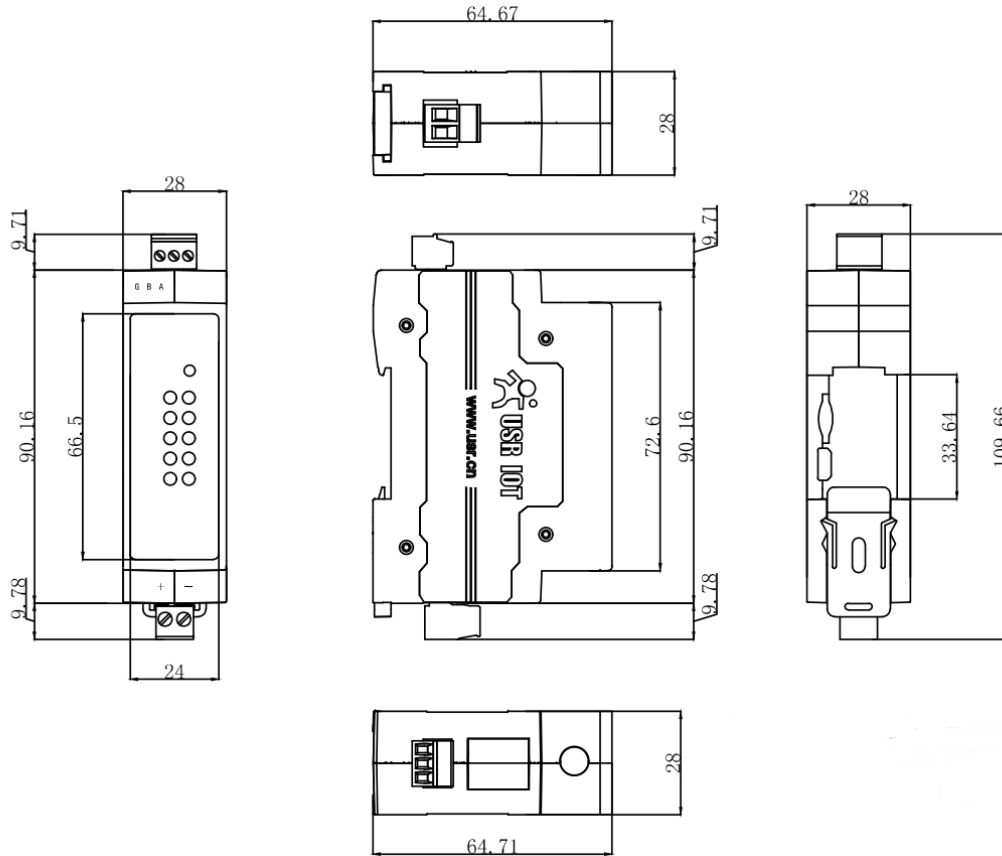
Item	Description	Parameter		
Wireless module	Standard	FDD-LTE, TDD-LTE, UMTS, GSM		
	Frequency Band	FDD-LTE	B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28	
		TDD-LTE	B38/B39/B40/B41	
		WCDMA	B1/B2/B4/B5/B6/B8/B19	
		GSM	B2/B3/B5/B8	
	Transmitting Power	TDD-LTE	+23dBm±2dB(Power class 3)	
		FDD-LTE	+23dBm±2dB(Power class 3)	
		WCDMA	+24dBm+1/-3dB(Power class 3)	
		PCS1900 8-PSK	+26dBm±2dB(Power class E2)	
		DCS1800 8-PSK	+26dBm±2dB(Power class E2)	
		EGSM900 8-PSK	+27dBm±2dB(Power class E2)	
		GSM850 8-PSK	+2dBm±2dB(Power class E2)	
		PCS1900	+30dBm±2dB(Power class 1)	
		DCS1800	+30dBm±2dB(Power class 1)	
		EGSM900	+33dBm±2dB(Power class 4)	
	GSM850	+33dBm±2dB(Power class 4)		
	Data Speed	FDD-LTE	Download 150Mbps, upload 50Mbps	
TDD-LTE		Download 130Mbps, upload 30Mbps		
WCDMA		Download 384Kbps, upload 384Kbps		

		EDGE	Download 296Kbps, upload 236.8Kbps
		GPRS	Download 107Kbps, upload 85.6Kbps
Hardware	Serial Port Type	RS-485	
	Baud Rate	2400bps - 230400bps	
	Port Connector	Pluggable industrial terminal block	
	Serial Signals	RS485:A B GND	
	Serial Port Protection	ESD: IEC 61000-4-2 Level 3 Surge: IEC 61000-4-5 Level 3	
	Power Interface	Pluggable industrial terminal block	
	Power Interface Protection	ESD: IEC 61000-4-2 Level 3 Surge: IEC 61000-4-5 Level 3 EFT: IEC 61000-4-5 Level 3 Anti-reverse protection	
	Power Input	DC 9V~36V	
	Consumption	67mA~102mA @12V	
	RS485 Pull-down resistance	2.2KΩ	
	SIM card	1,8V/3V, Micro SIM (3FF)	
	Antenna	1 x SMA Female interface	
	Working Temperature	-35℃ - 75℃	
	Storage Temperature	-40℃ - 90℃	
	Ambient Humidity	5 ~ 95% (non-condensing)	
	Indicators	POWER, WORK, NET, LINK, RSSI, TX, RX	
	Enclosure	Plastic casing	
	Protection Rating	IP30	
	Installation	DIN-rail mounting	
	Dimension (mm)	28*64.7*109.7 (L*W*H)	
Software	Work mode	Transparent mode, HTTPD mode, SMS mode	
	Configuration	Serial AT command, Net AT command, SMS AT command, windows utility	
	Network Protocol	TCP/UDP/DNS/HTTP/FTP	
	Maximum NO. Of TCP connection	2	
	Network Access	APN, VPDN	
	Modbus RTU/TCP protocol conversion	Support	
	SMS functions	Support	
	Heartbeat packet	Support	
	Identity packet mechanism	User defined identity packet/ICCID /IMEI	
	FTP upgrade	Support	
	Remote firmware update	Support	

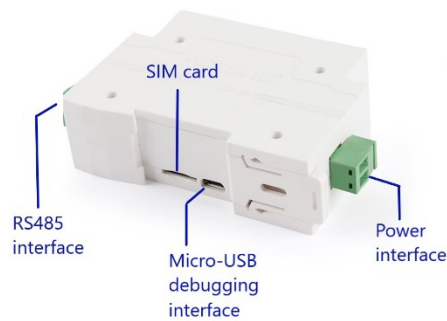
2.2. Hardware

2.2.1. Dimensions

Unit: mm



2.2.2. Interfaces






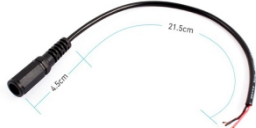
2.2.3. Indicators

There are eight LED indicators on USR-DR504-G, POWER,WORK,NET,LINKA,LINKB,TX,RX,RSSI. Status of the indicator is explained as follows:

Indicators	Function	Description
POWER	Power indicator	Always on after power on
WORK	System status.	Blinking after system run
NET	Network status.	Always on after registering the network
LINKA	Socket A connection status	Always on after socket A connection
LINKB	Socket B connection status	Always on after socket B connection
TX	Serial data sending indicator	On when sending serial data
RX	Serial data receiving indicator	On when receiving serial data
RSSI	Signal strength indicator	Changing according to the signal strength

2.3. Connecting Hardware

Open the packing box,the following accessories will be found:

			
USR-DR504-G	Sucker 4G antenna	Power adapter (optional)	Power cord

Required additional testing tools:



RS485 serial to USB cable



PC

1. Installing SIM card and antenna

Insert the SIM card according to the sign next to the slot.

Gently rotate the movable part of the metal SMA male connector to the end with your hand, until the external threads of the antenna SMA female connector cannot be seen.

2. Serial connecting

Remove the terminal from the device during installation, loosen the locking screws on the terminal, connect the corresponding wires to the terminal, and tighten the screws.

When connecting to a RS485 serial device, connect A of RS485 interface of DR504-G to A pin of the serial device, B of DR504-G to B of serial device.

3. Power supply

Connect a 9-36V DC power adapter to the power terminal. "POWER" LED will always be on and the "WORK" LED will blink after power on.

3. Utility Configuration

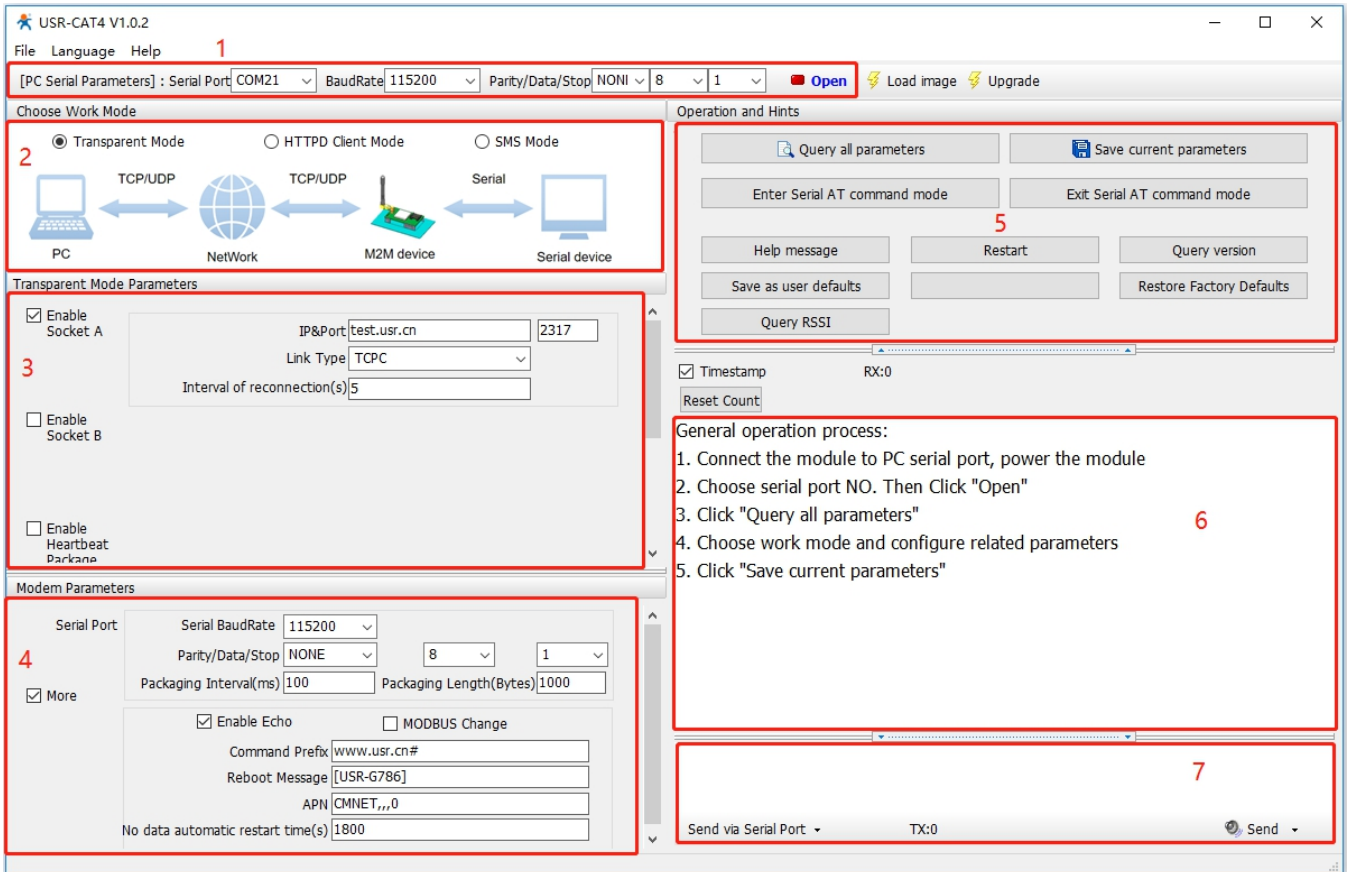
3.1. Download the Utility

Please download the utility from our official website:

https://www.pusr.com/support/downloads/usr_g786_g-setup-software-v1.0.1.html

3.2. Configuration via PC

USR-DR504-G configuration utility is shown below:



Step1: Set the serial port parameters of the utility, which must be the same with current parameters of serial port of DR504, otherwise it cannot communicate with DTU. Default settings of serial port of DR504: 115200, 8, None, 1.

Step2: Select the work mode of DTU, transparent mode.

Step3: Select a transparent transmission protocol.

Step4: If you want to change the serial port parameters of the DTU in accord with the connected device, please change the parameters here. You can also enable Modbus RTU/TCP conversion by clicking the "MODBUS change" option.

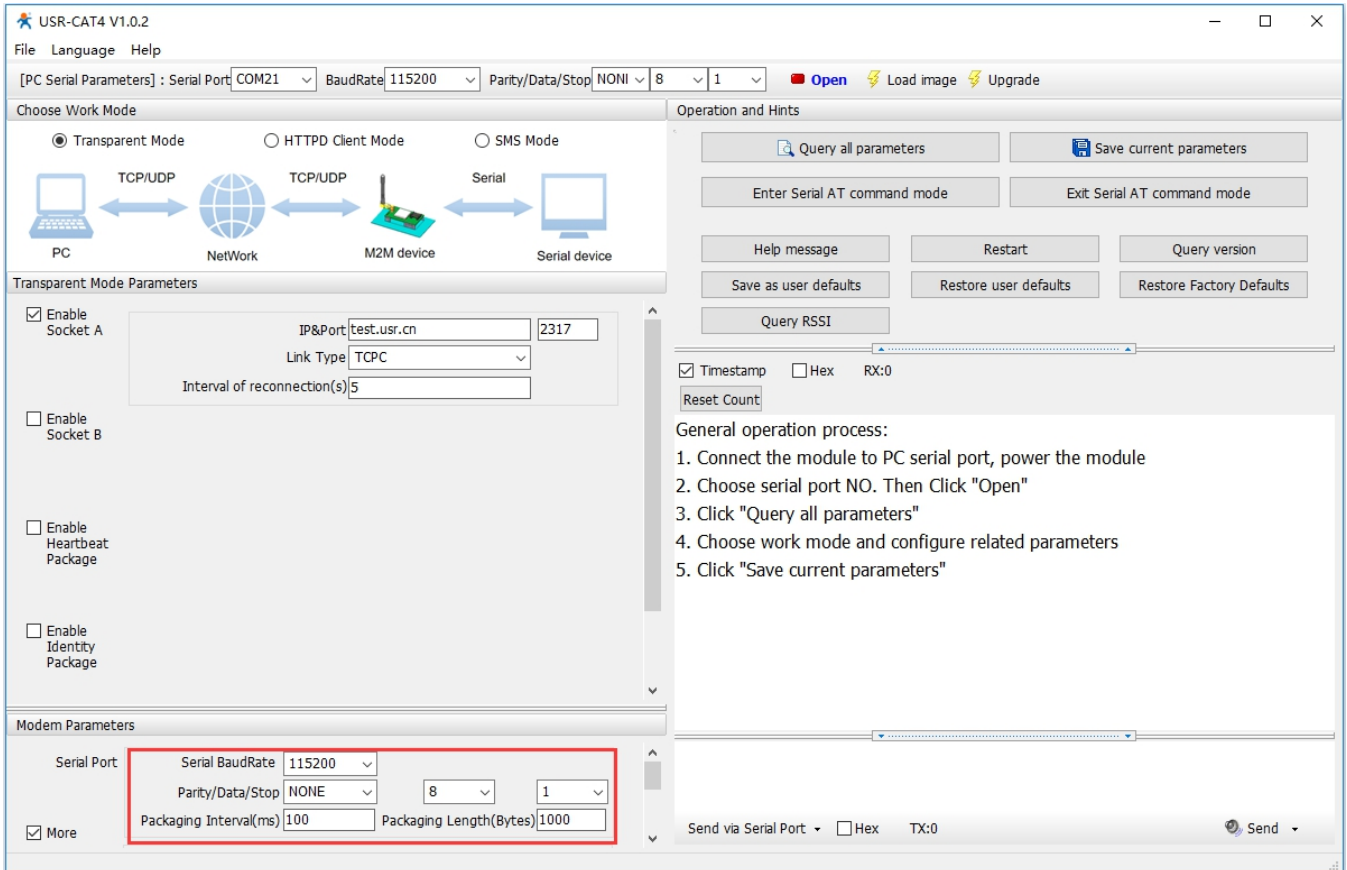
Step5: Save all configuration parameters, please click "Save current parameters" button. DR504 will save the configuration and restart automatically. If you changed serial parameters, please check the step1 before continuing.

Step6: Data display area, displaying the data sent and received with time stamp when clicking the "Timestamp" option.

Step7: Data sending area, enter the data and click Send.

4. Serial Port

4.1. Basic Parameters



Serial parameters of USR-DR504-G must be consistent with the parameters of the connected serial device.

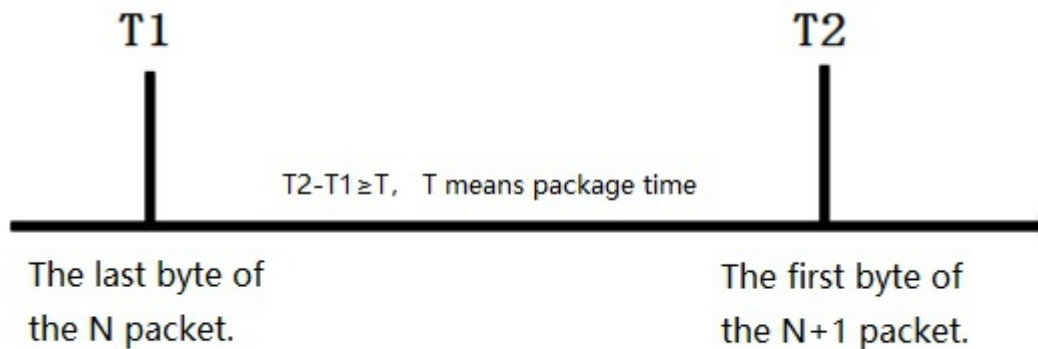
Item	Parameter
Baud rate	RS485: 2400,4800,9600,14400,19200,28800,33600,38400,57600,115200,230400
Data bits	8
Stop bits	1,2
Parity bit	NONE EVEN ODD

4.2. Framing Mechanism

4.2.1. Time Trigger

When DR504-G receives data from the UART, it continuously checks the interval of two adjacent bytes. If the interval time is greater or equal to a certain "time threshold", then a frame is considered finished, otherwise the data is received until greater or equal to the packet length byte set. This frame is sent to the network as a TCP or UDP packet. The "time threshold" here is the time between packages. The range of settable is 100ms~60000ms. Factory default: 100ms.

This parameter can be set by AT command, AT+UARTFT=<time>.

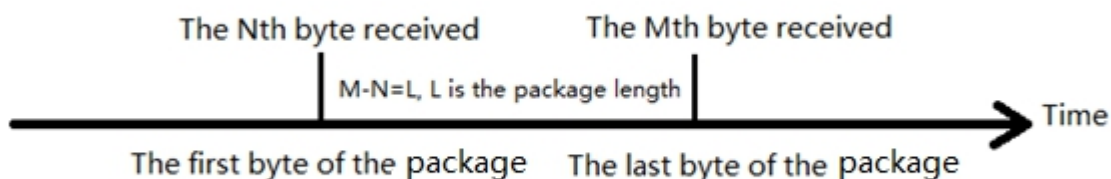


4.2.2. Length trigger

When DR504-G receives data from the UART, it constantly checks the number of bytes received. If the number of bytes received is equal to a certain "length threshold", a frame is considered to have ended, otherwise the packaging time is waiting for the end. This frame is sent to the network as a TCP or UDP packet. The "length threshold" here is the package length. The settable range is 100~1000. Factory default 1000.

(Note: when using "command password +AT command" function, the package length must be larger than the "command password +AT command", otherwise AT command is invalid)

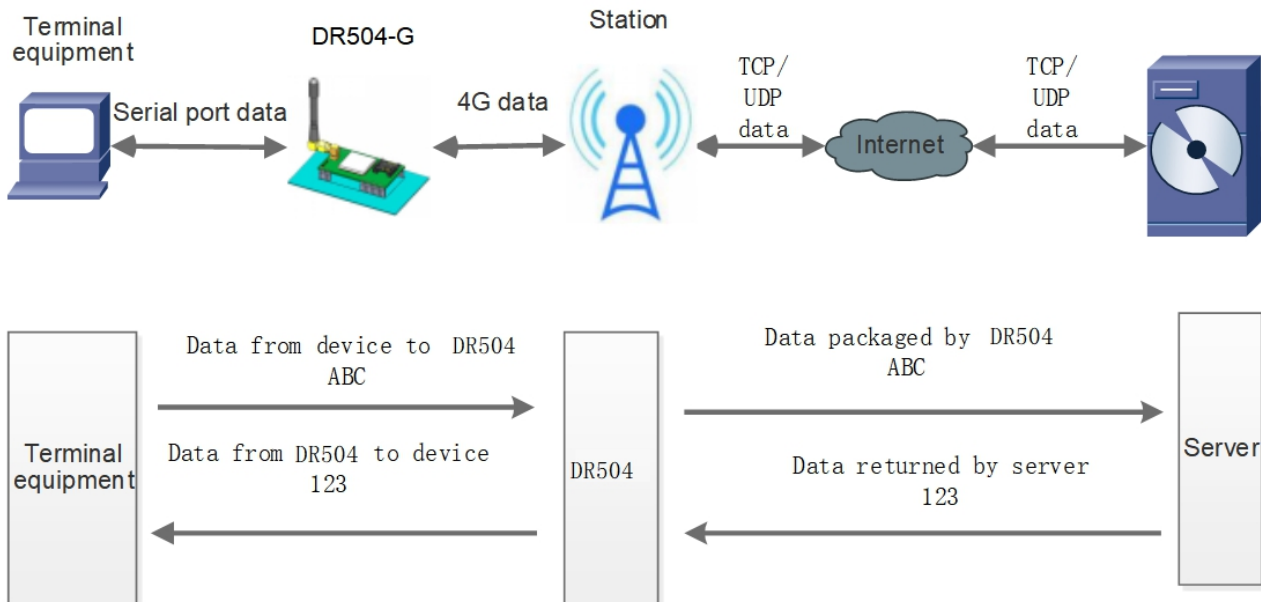
This parameter can be set by AT command, AT+UARTFL=<length>.



5. Selecting an Operating Mode

USR-DR504-G has three working modes: transparent mode, HTTPD Client mode and SMS mode.

5.1. Transparent Mode



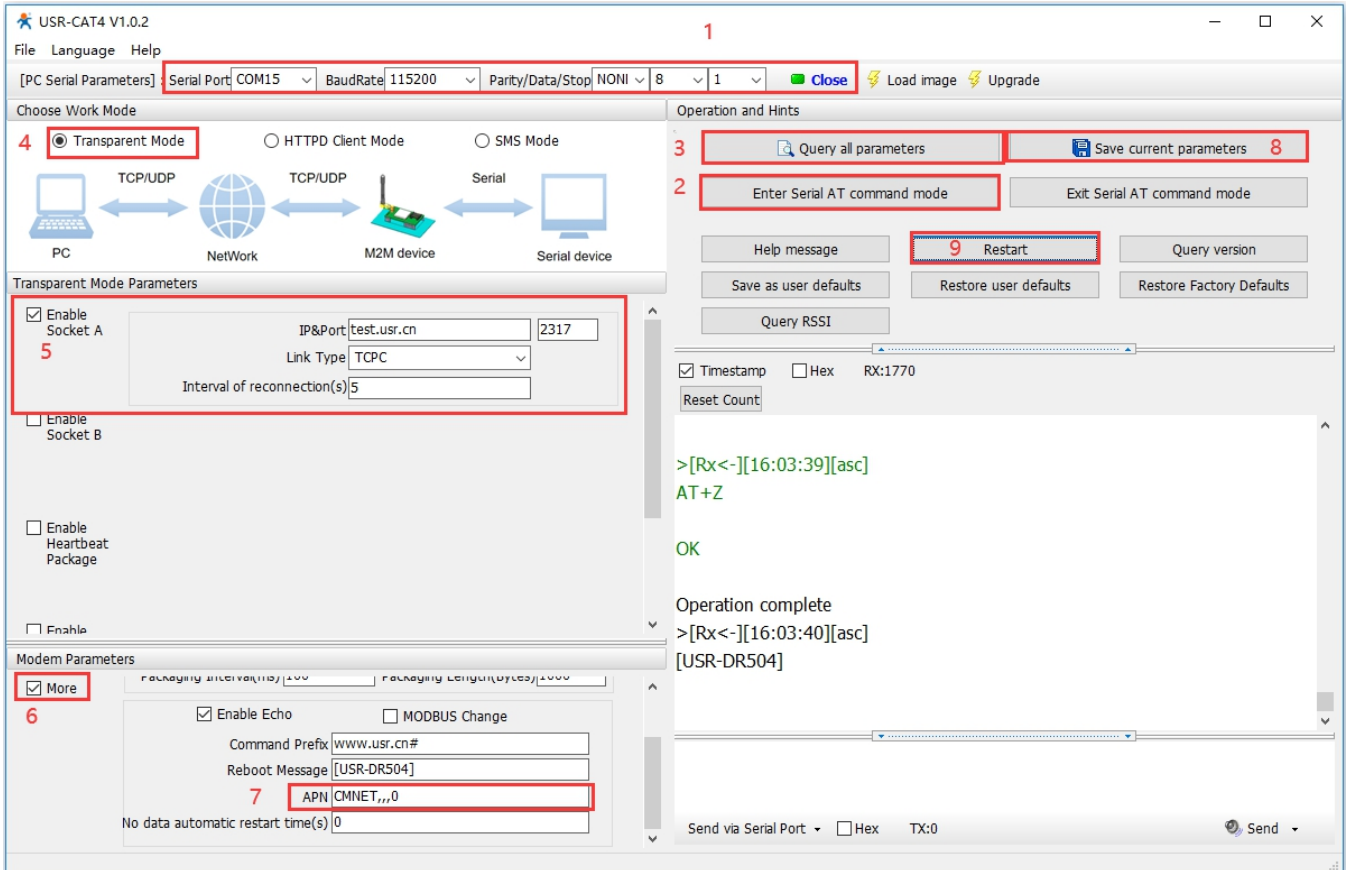
In this mode, user's serial device can directly send data to the specified network server through DR504-G. Module can also receive data from the server and directly forward to the serial device.

DR504-G supports 2 socket connections, Socket A and Socket B, which are independent of each other. Socket A supports TCP Client, TCP Server and UDP Client. Socket B only supports TCP Client and UDP Client .

It supports up to 3 TCP Clients when works as a TCP Server, for the Server function need to use a dedicated APN card .

5.1.1. TCP Client Mode

- Set parameters by the utility:



➤ Set by AT commands:

1. Set the work mode to net transparent transmission:

AT+WKMOD=NET

2. Enable socket A:

AT+SOCKAEN=ON

3. Set socket A to TCP Client:

AT+SOCKA=TCPC,test.usr.cn,2317

4. Set APN. E.g: APN is CMNET, username is empty, password is empty, authentication method is NONE:

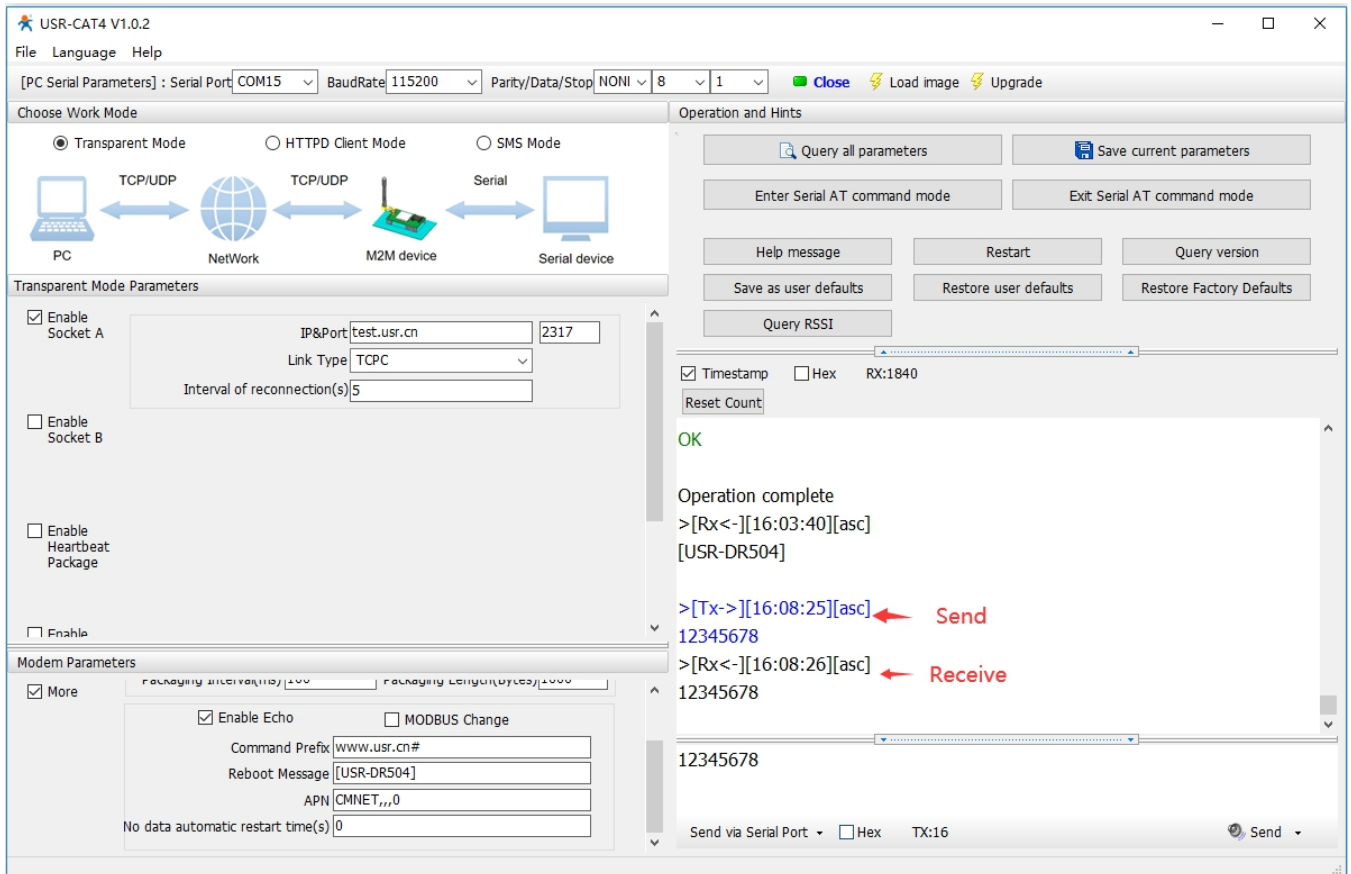
AT+APN=CMNET,,,0

5. Reboot:

AT+Z

➤ Test

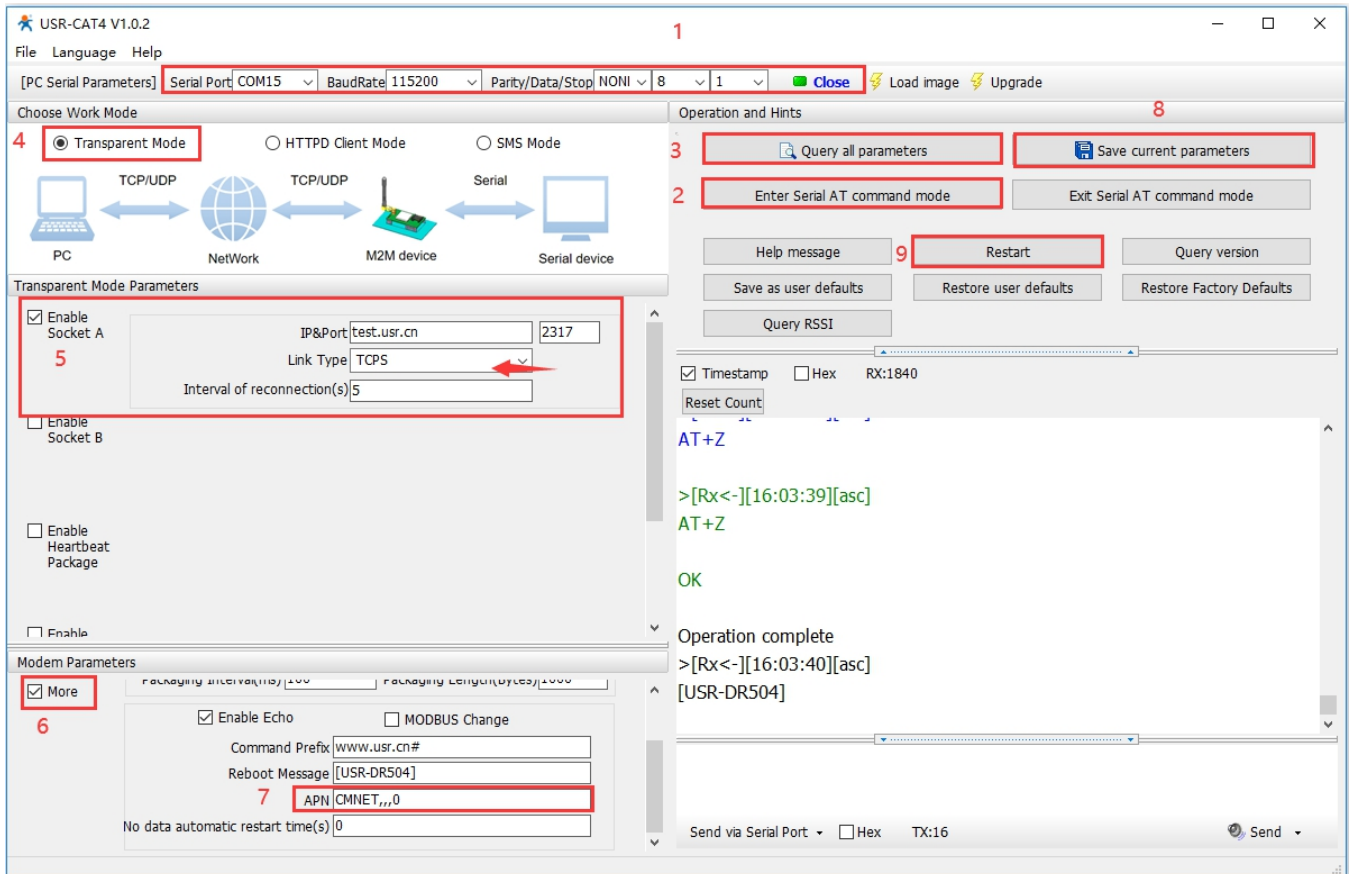
Connect the serial port of USR-DR504-G to the computer via a RS485 serial to USB cable, send data from the utility, our test server will return the same data to serial port.



5.1.2. TCP Server Mode

TCP Server function needs to be test through an APN dedicated network card.

- Set parameters by the utility:



➤ Set by AT commands:

1. Set the work mode to net transparent mode:

AT+WKMOD=NET

2. Enable socket A:

AT+SOCKAEN=ON

3. Set socket A as TCP Server, local port 2317, IP has no reference meaning in Server:

AT+SOCKA=TCPS,test.usr.cn,2317

4. Set APN. E.g: APN:CMNET, username: empty, password: empty, authentication method: NONE:

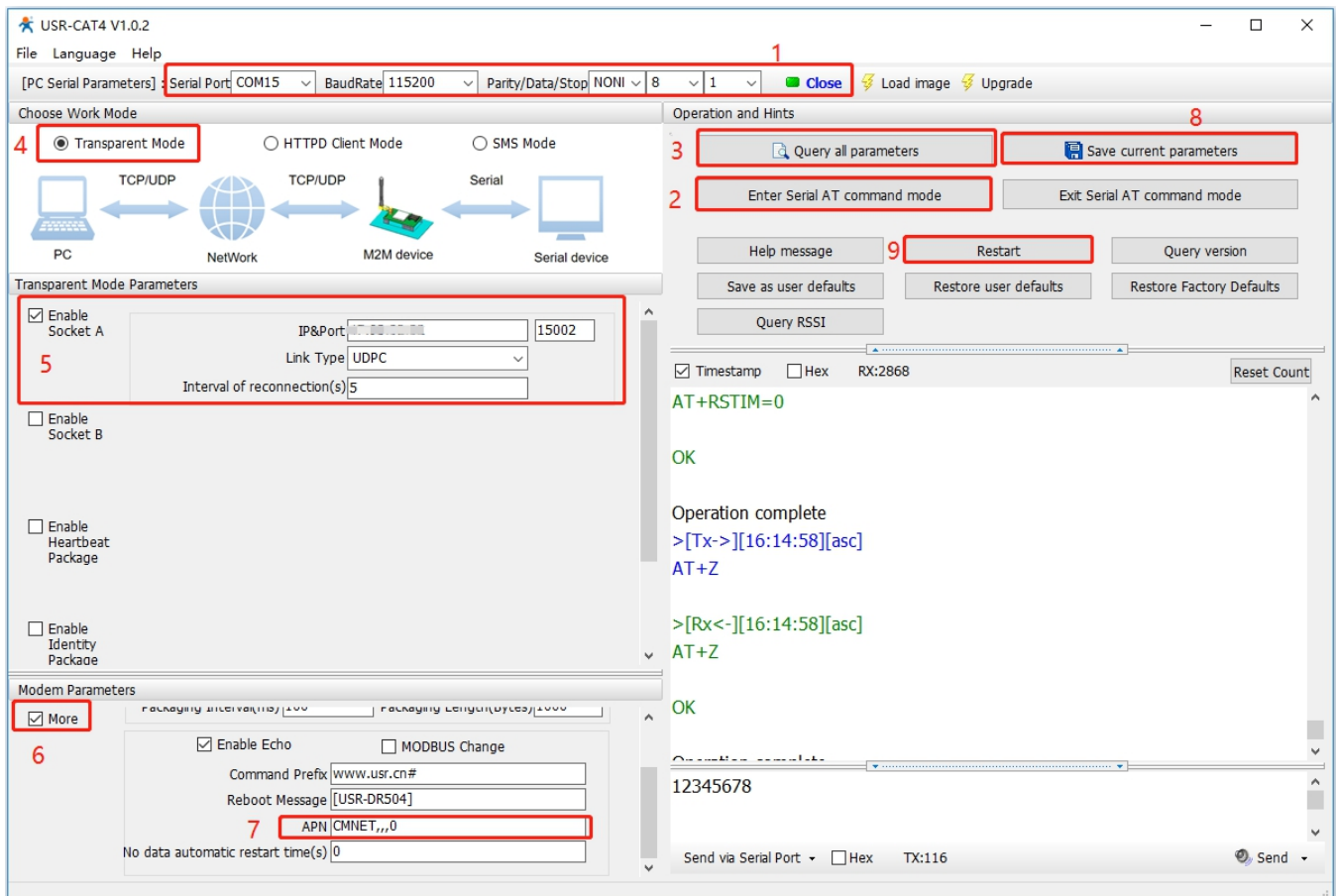
AT+APN=CMNET,,,0

5. Reboot:

AT+Z

5.1.3. UDP Client Mode

- Set parameters by the utility:



- Set by AT commands:

1. Set the work mode to net transparent mode:

AT+WKMOD=NET

2. Enable socket A:

AT+SOCKAEN=ON

3. Set socket A as UDP Client, port 2317:

AT+SOCKA=UDPC,test.usr.cn,2317

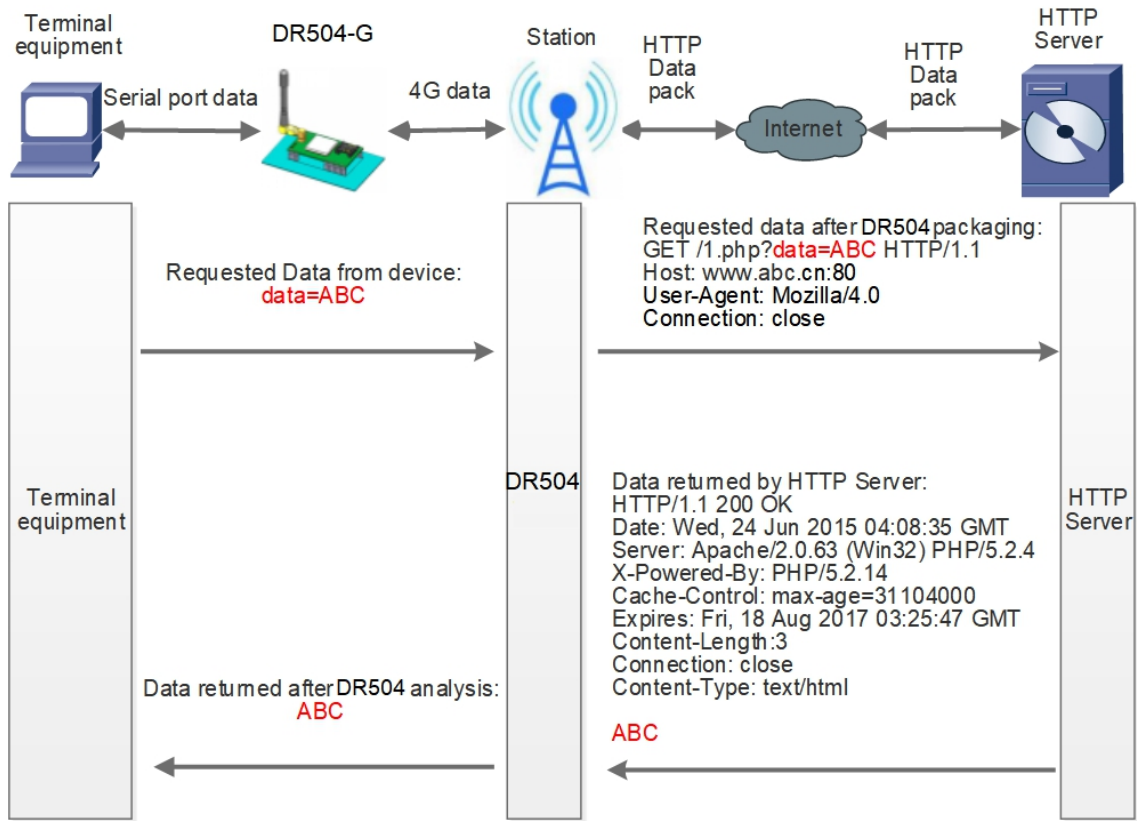
4. Set APN. E.g: APN:CMNET, username: empty, password: empty, authentication method: NONE:

AT+APN=CMNET,,,0

5. Reboot:

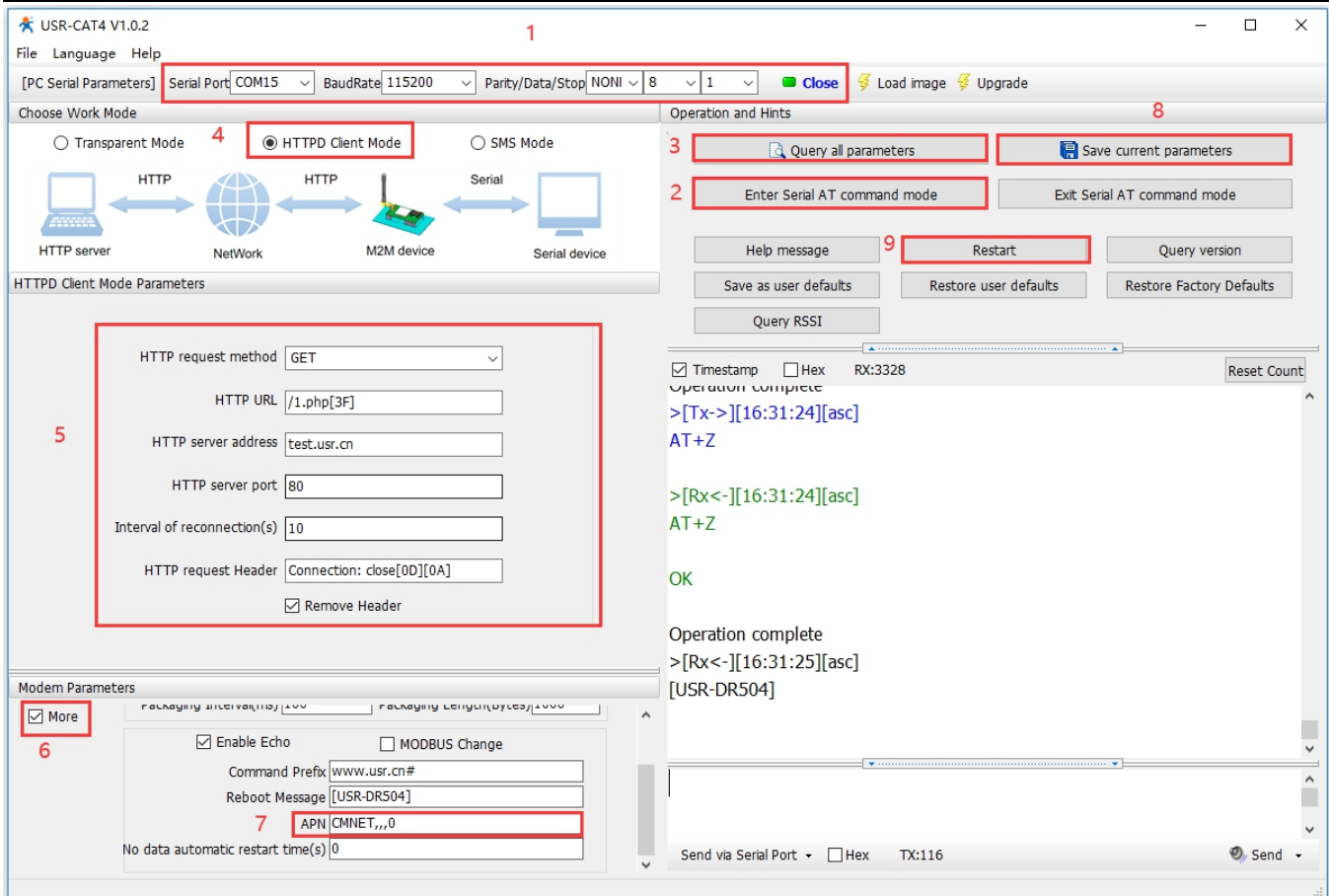
AT+Z

5.2. HTTPD Client Mode



In this mode, user's terminal device can send request data to the specified HTTP server through this module, then the module receives data from HTTP server, parses and sends data to the serial device. The module will filter out the received HTTP protocol header data by default, only output user data to the serial port. Customers can choose whether to filter HTTPD header data by AT command.

- Set parameters by the utility:



➤ Set by AT command:

1. Set the work mode to HTTPD:

AT+WKMOD=HTTPD

2. Set the request type:

AT+HTPTP=GET

3. Set HTTP URL:

AT+HTPURL=/1.php[3F]

4. Set the HTTP server address:

AT+HTPSV=test.usr.cn,80

5. Set HTTP request header:

AT+HTPHD=Connection: close[0D][0A]

6. Set HTTP over time:

AT+HTPTO=10

7. Whether to filter HTTP header:

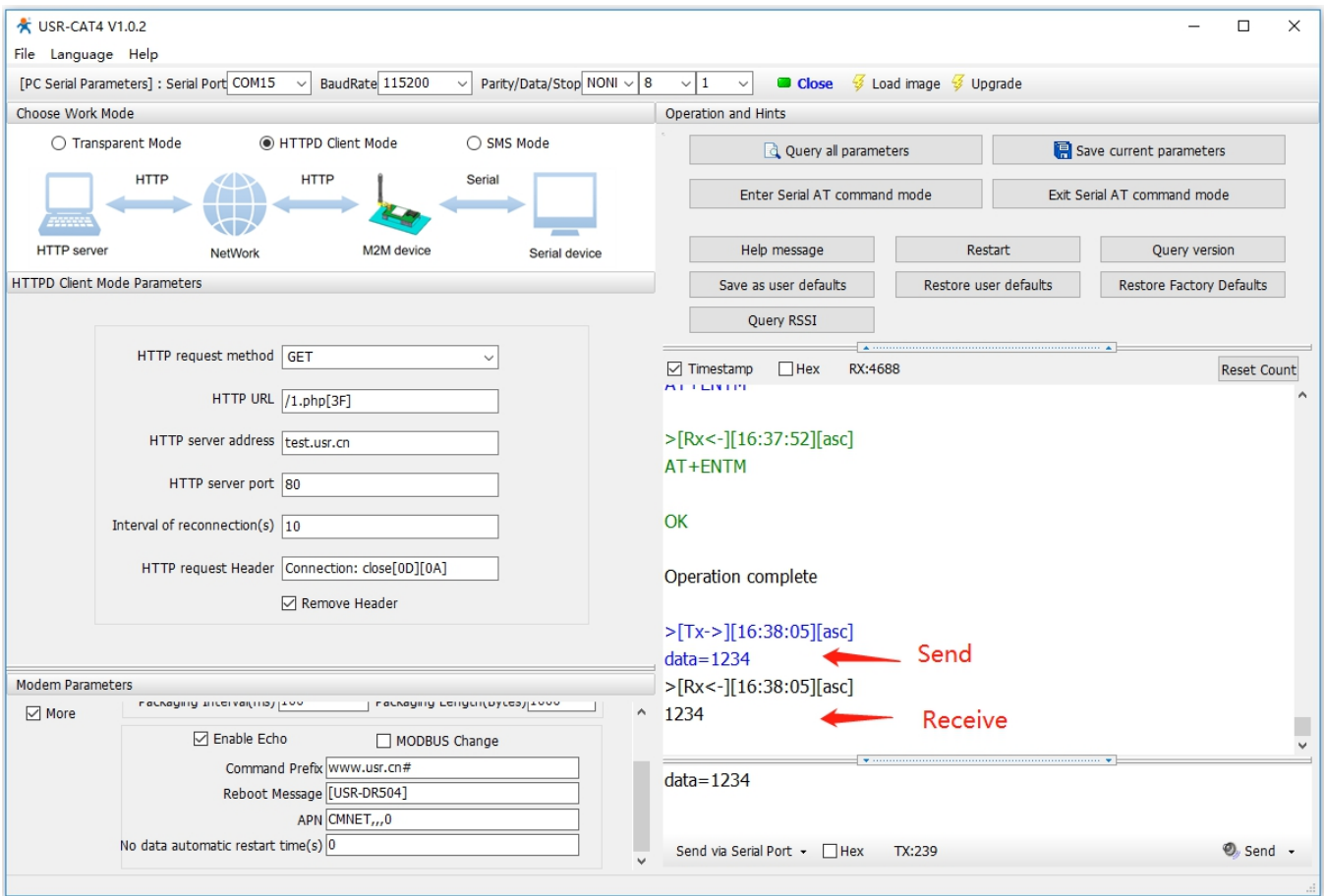
AT+HTPFLT=ON

8. Reboot

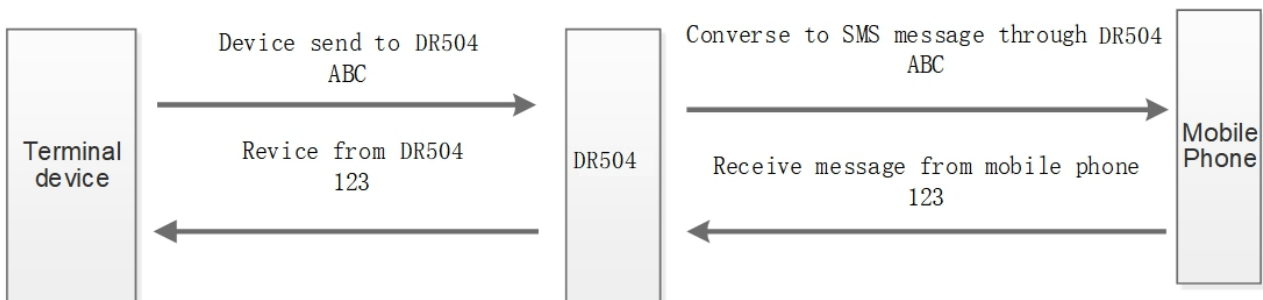
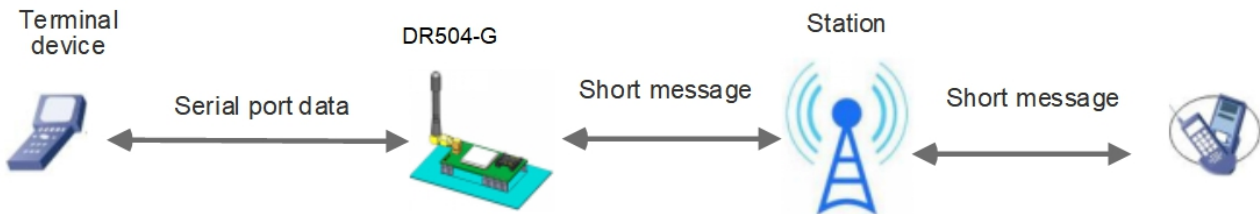
AT+Z

➤ Test

After the NET light is on, send the data in the format of "data =". After the data is sent successfully, server will return the data.



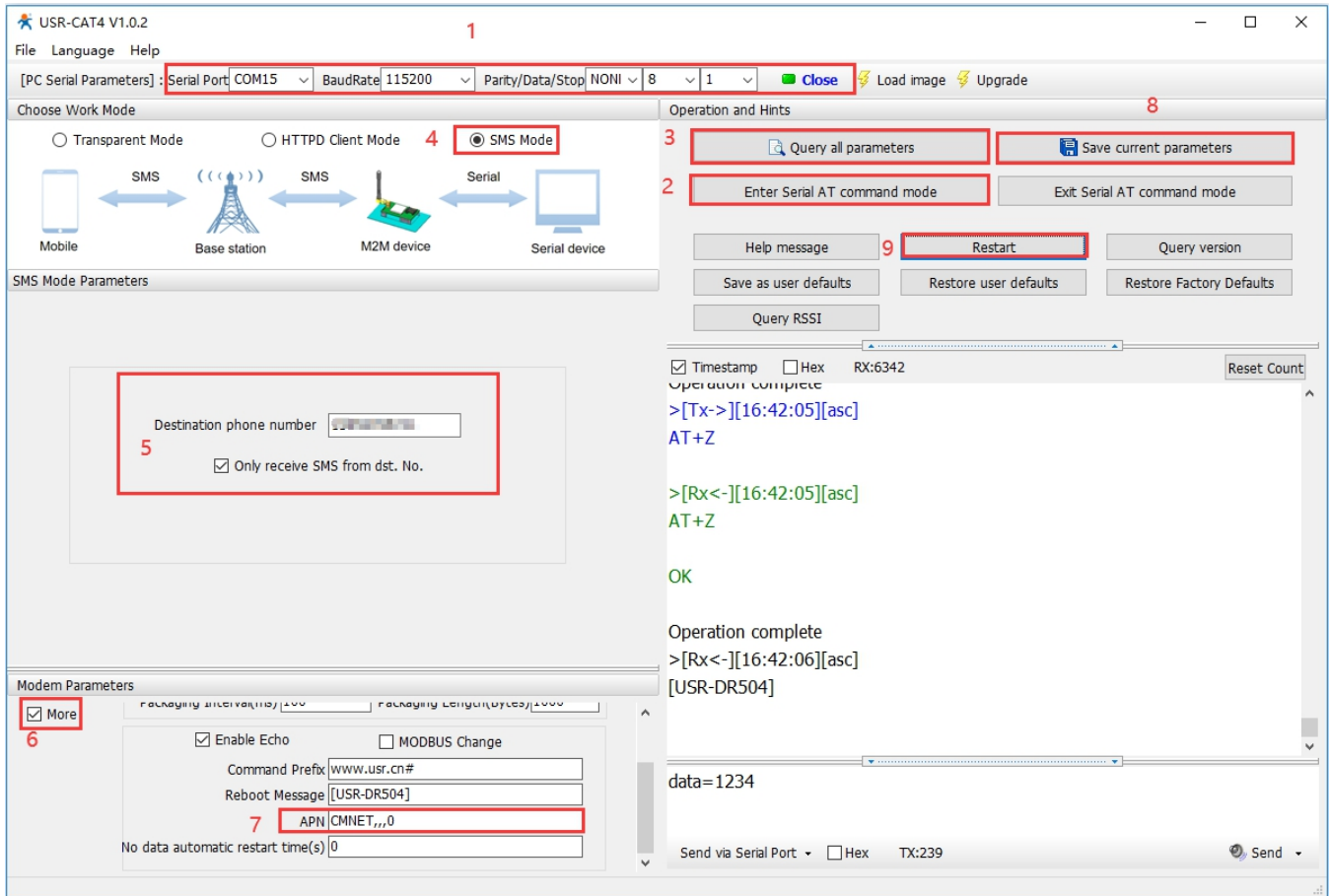
5.3. SMS Mode



In this mode, user's serial device can send SMS to the specified mobile phone and receive SMS from any mobile phone. User can choose whether to transmit the data of the specified mobile phone to the serial device through settings. USR-DR504-G can be used to check or control the running parameters of

the remote devices by SMS.

➤ Set by the utility:



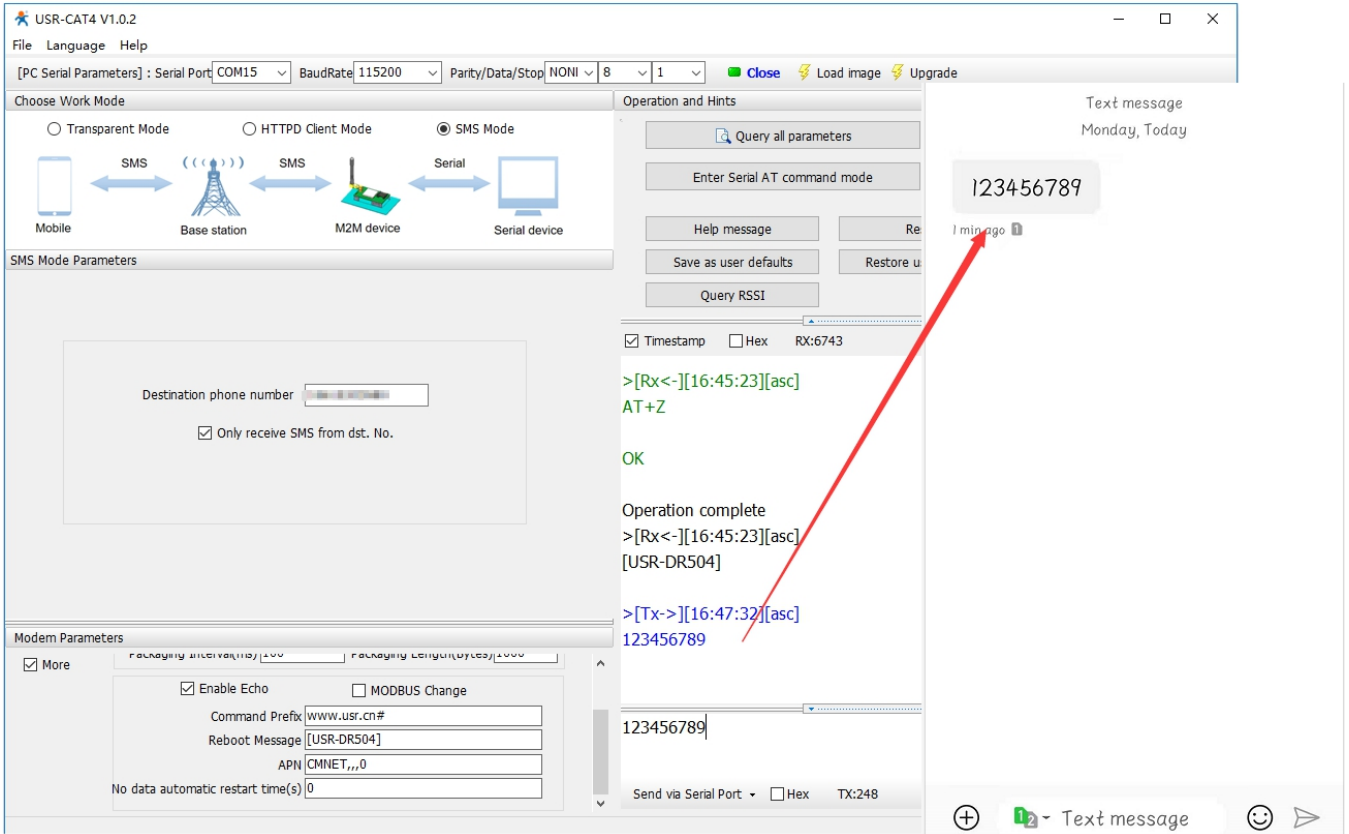
➤ Set by AT commands:

1. Set work mode to SMS mode:
AT+WKMOD=SMS
2. Set the destination mobile phone number to 10086. E.g:10086:
AT+DSTNUM=10086
3. Restart the module:
AT+Z

Note: 1. The destination phone number of SMS should be added with the international number.
 2. When “Only receive SMS from dst. No.” is enabled, other phone numbers still can query or set parameters.

➤ Test

When the NET light is on, we can send and receive data in both directions via SMS with destination phone number.



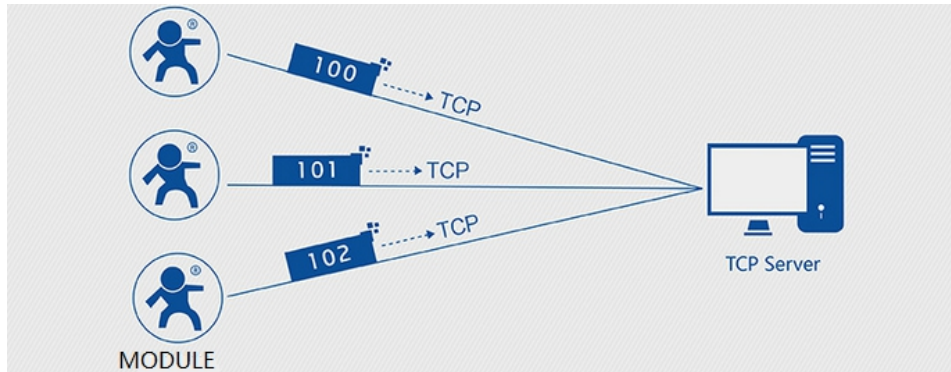
The screenshot displays the USR-CAT4 V1.0.2 software interface. The top menu bar includes 'File', 'Language', and 'Help'. Below the menu, the serial port is set to 'COM15', the baud rate to '115200', and parity to 'NONI'. The 'SMS Mode' is selected under 'Choose Work Mode'. The 'SMS Mode Parameters' section shows a 'Destination phone number' field and a checked option 'Only receive SMS from dst. No.'. The 'Modem Parameters' section includes 'Enable Echo' checked and 'MODBUS Change' unchecked. The 'Operation and Hints' panel shows a 'Query all parameters' button and a 'Send via Serial Port' button. The main terminal window displays the following text:

```
>[Rx<-][16:45:23][asc]
AT+Z
OK
Operation complete
>[Rx<-][16:45:23][asc]
[USR-DR504]
>[Tx->][16:47:32][asc]
123456789
```

 A red arrow points from the terminal output to a text message notification bubble that says '123456789'. The notification bubble also shows 'Text message' and 'Monday, Today'. The bottom of the interface features a 'Send via Serial Port' button and a 'Hex' checkbox.

6. General Function

6.1. Identity Package

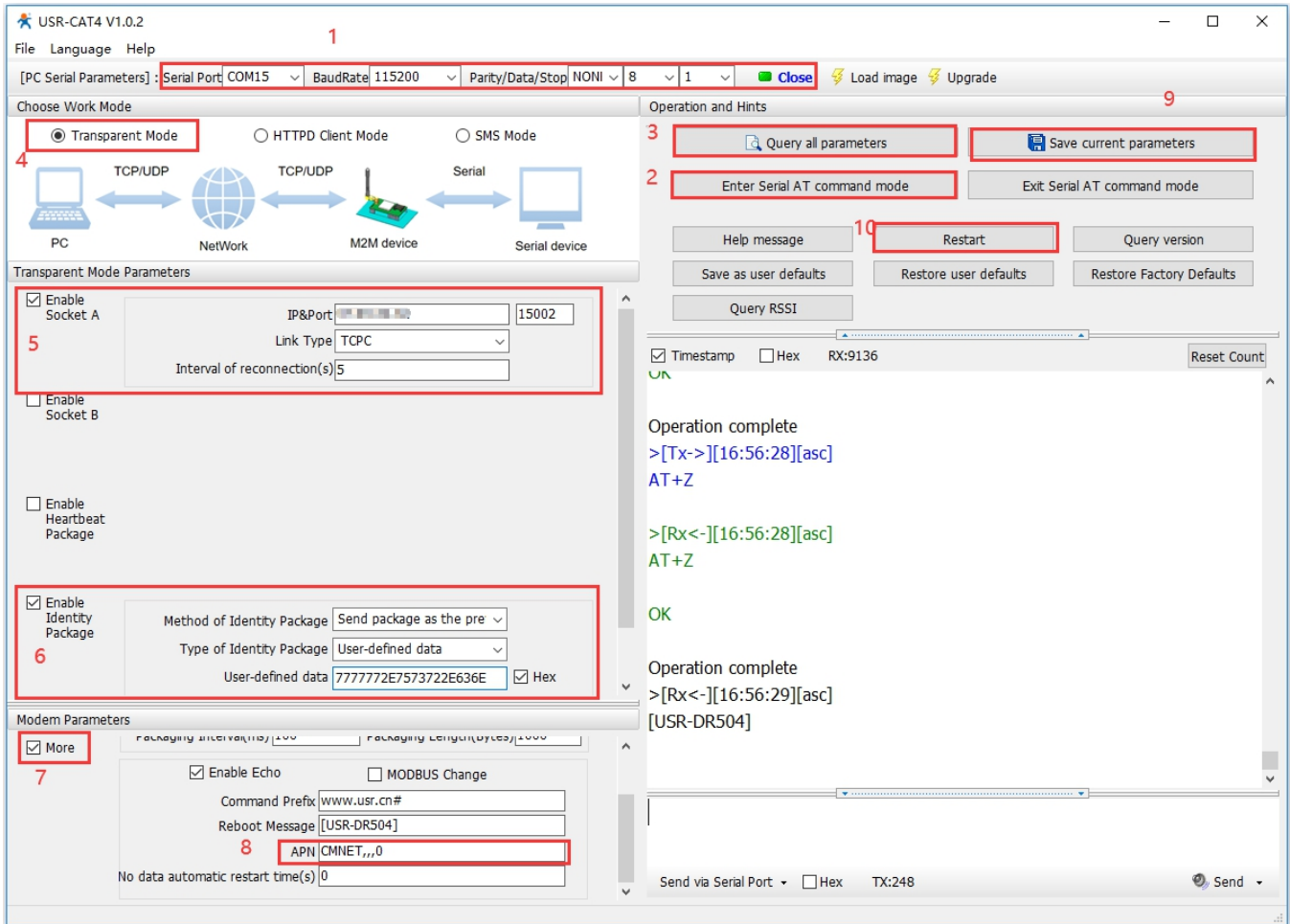


In transparent mode, user can set the device to send identity package to the server. Identity package is intended to allow the server to identify the data from which device or to use it as a password to obtain authorization for the server's functions. Identity package can be sent when the module establishes a connection with the server, or be added as the prefix of each data package. Identity package data can be ICCID code, IMEI code, or User-defined data.

ICCID: Unique SIM identification code, for applications based on SIM card identification.

IMEI: Unique identification code of the Internet module, which is mainly used in device identification, has nothing to do with SIM card.

- Set by the utility:

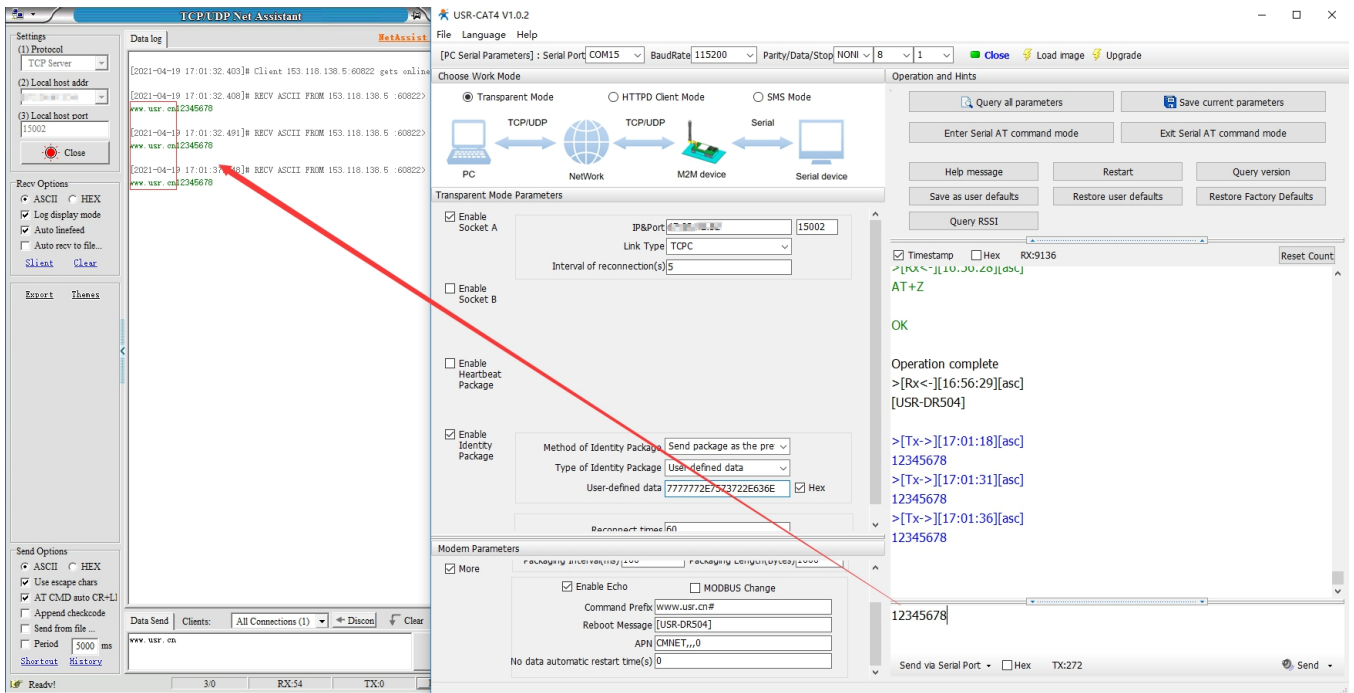


➤ Set by AT commands:

1. Enable identity package function:
AT+REGEN=ON
2. Set the type to User-defined data:
AT+REGTP=USER
3. Setup the contents:
AT+REGDT=7777772E7573722E636E
4. Setup the sending mode:
AT+REGSND=DATA
5. Reboot:
AT+Z

➤ Test

Connect the serial port of USR-DR504-G to the computer via a serial to USB cable, send data from serial port:



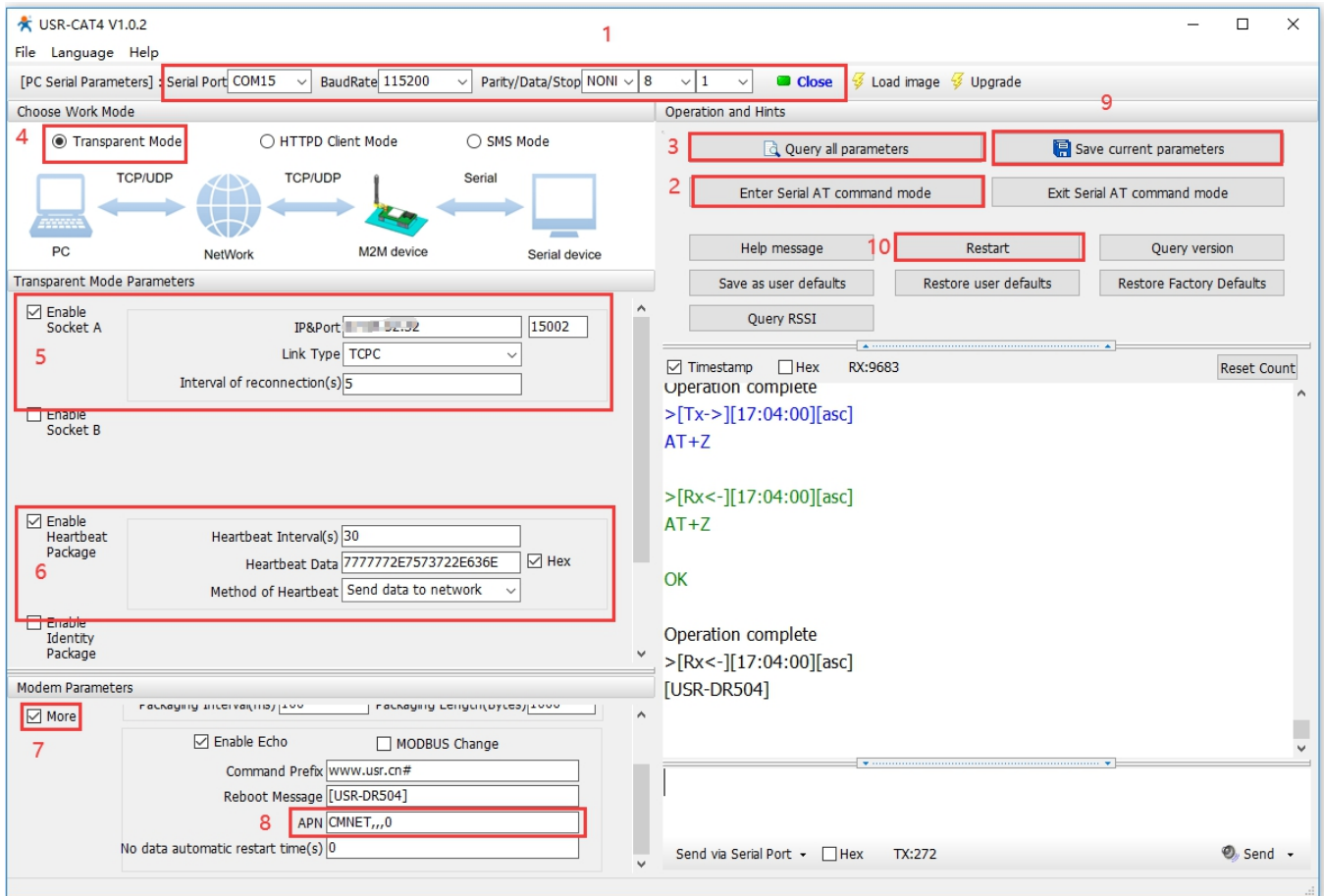
6.2. Heartbeat Package

In network transparent mode, user can send the heartbeat package from the module to meet specific requirements.

Heartbeat package can be sent to the network or serial port device. The main purpose of sending to the network is to keep the connection stable and reliable, to ensure the normal connection of the module.

In the application of fixed query commands sent by the server to the device, in order to reduce communication traffic, user can choose to send heartbeat package (query commands) to the serial device instead of sending query commands from the server, so as to save traffic and respond faster.

- Set by the utility:

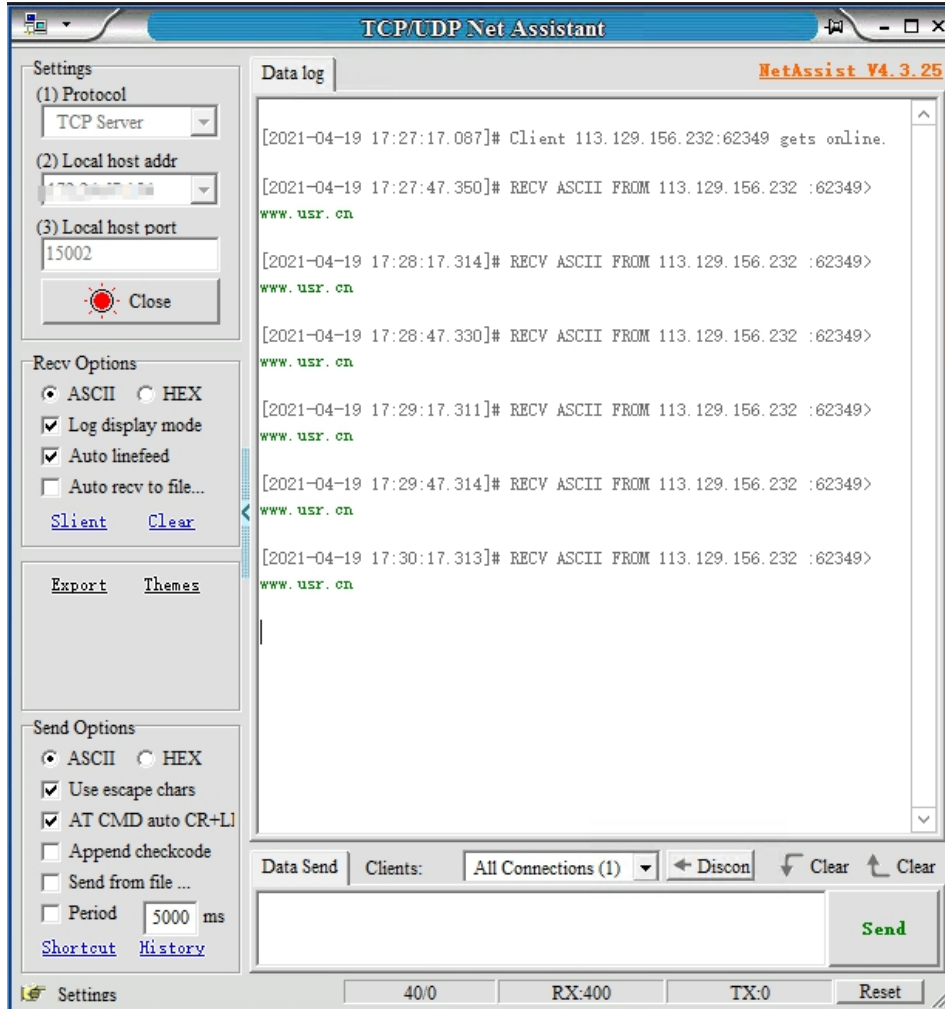


➤ Set by AT commands:

1. Enable heartbeat function:
AT+HEARTEN=ON
2. Set the contents of heartbeat data:
AT+HEARTDT=7777772E7573722E636E
3. Set the mode of heartbeat data:
AT+HEARTTP=NET
4. Setup the sending interval:
AT+HEARTTM=30
5. Reboot:
AT+Z

➤ Test

Heartbeat package data sent from DR504-G to the network:



6.3. Base Station Geolocation

USR-DR504-G supports LBS base station positioning function, and can obtain general location of the device through the operator's network. Base station positioning information is obtained through serial/SMS AT commands.

AT command

Command	Function	Default parameter
AT+LBS	Query station positioning information	Empty

Note: This function does not obtain positioning information directly(E.g: latitude and longitude information), but base station location information. Users need to obtain direct positioning information through calculation on a third-party platform. Third-party location information services are generally require charges. User can go to the URL to convert the actual location to test:

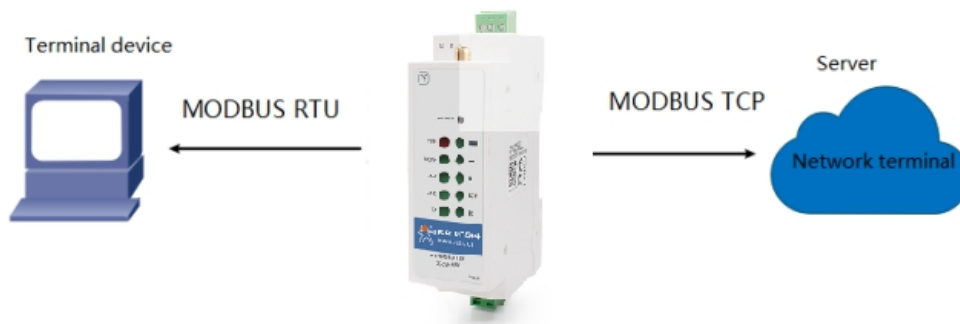
<http://www.minigps.net/cellsearch.html> (Just for testing)

Query interface is shown below:

Click the query to get the converted location information

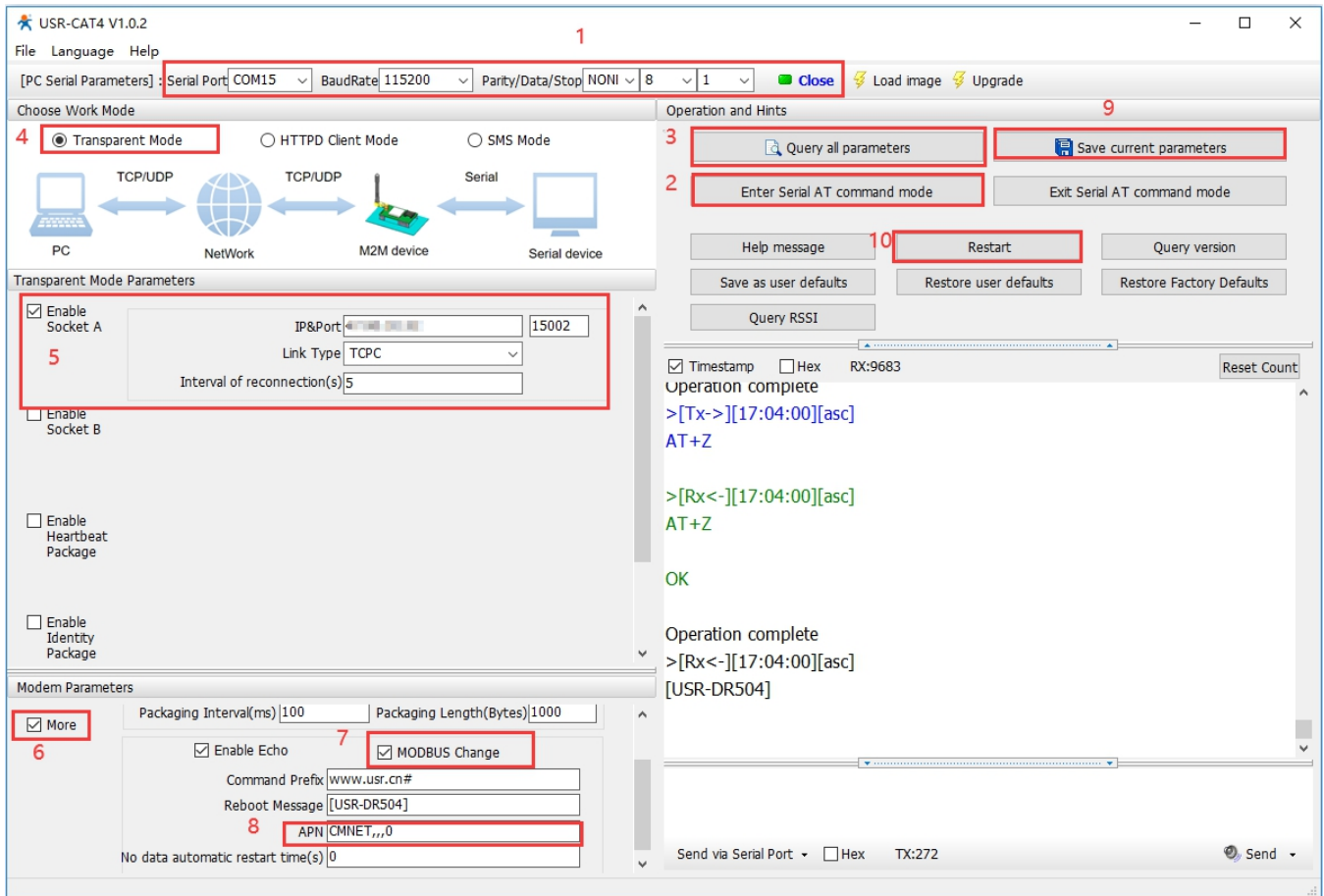


6.4. Modbus



In network transparent mode, if the terminal device transmits data through Modbus RTU protocol and the server communicates through Modbus TCP protocol, user can enable Modbus function. After this function is enabled, DR504-G converts the Modbus TCP protocol data sent by the server into Modbus RTU data and sends it to the terminal device, and converts the Modbus RTU protocol data sent by the terminal device into Modbus TCP data and sends it to the server.

- Set by the utility:

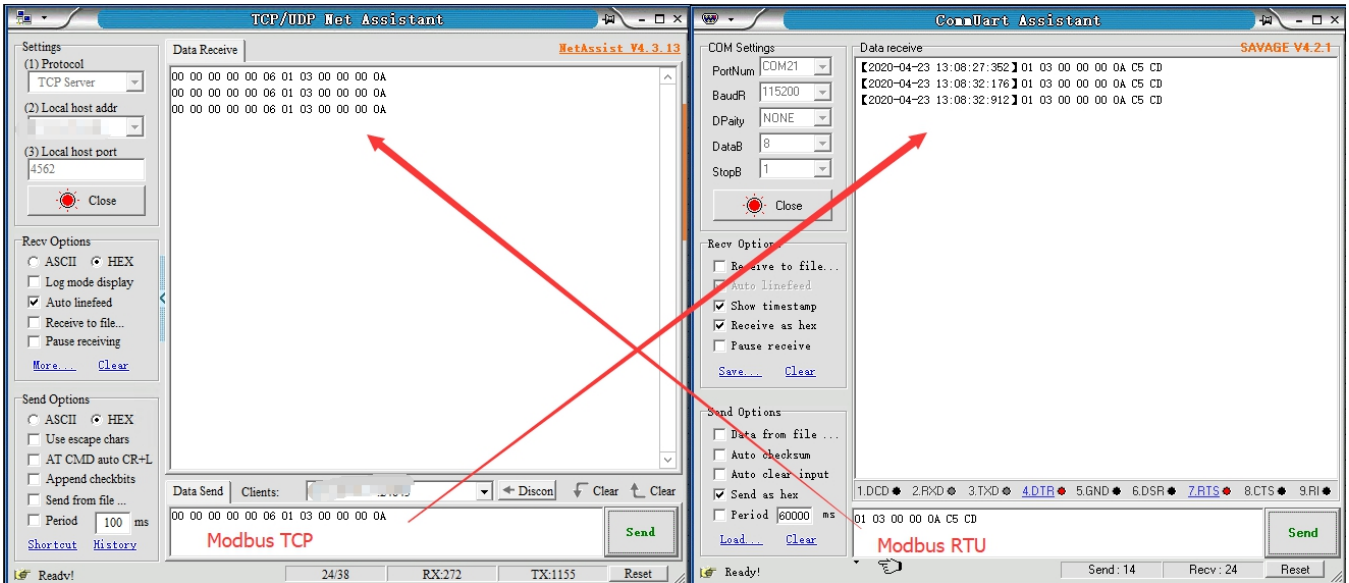


➤ Set by AT command:

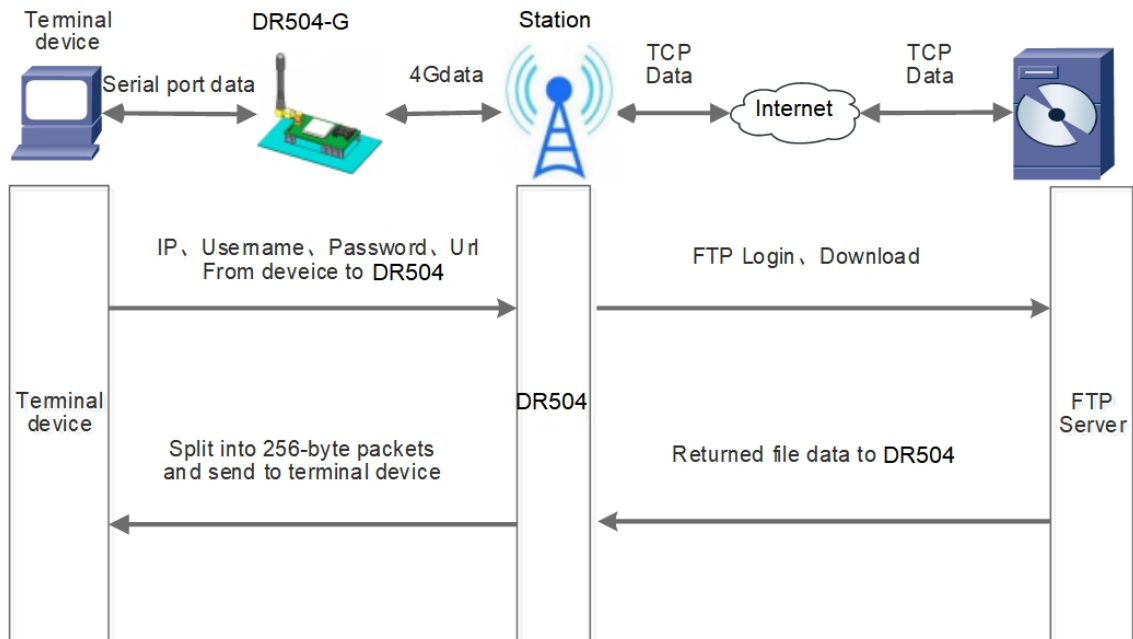
1. Set work mode to Transparent mode.:
AT+WKMOD=NET
2. Enable Socket A:
AT+SOCKAEN=ON
3. Set socket A to TCP Client:
AT+SOCKA=TCP,test.usr.cn,2317
4. Enable Modbus protocol conversion:
AT+MODBUSEN=ON
5. Restart the module:
AT+Z

➤ Test

Connect the serial port of USR-DR504-G to the computer via a serial to USB cable, Modbus RTU data sent by the serial port is converted into MODBUS TCP data by DR504-G and then sent to the network side. Similarly, DR504-G converts the MODBUS TCP data on the network side into MODBUS RTU data and transmits it to the serial port.



6.5. FTP Upgrade



DR504-G supports FTP upgrade protocol, user's device can request files on FTP server by special protocol through serial port. The file of the server can be split into small packets with a maximum size of 256 bytes for transmission, which is convenient for customer device to upgrade or download large files remotely.

For details, please refer to "[USR FTP Upgrade protocol](#)".

6.6. Restore to Factory Default Settings

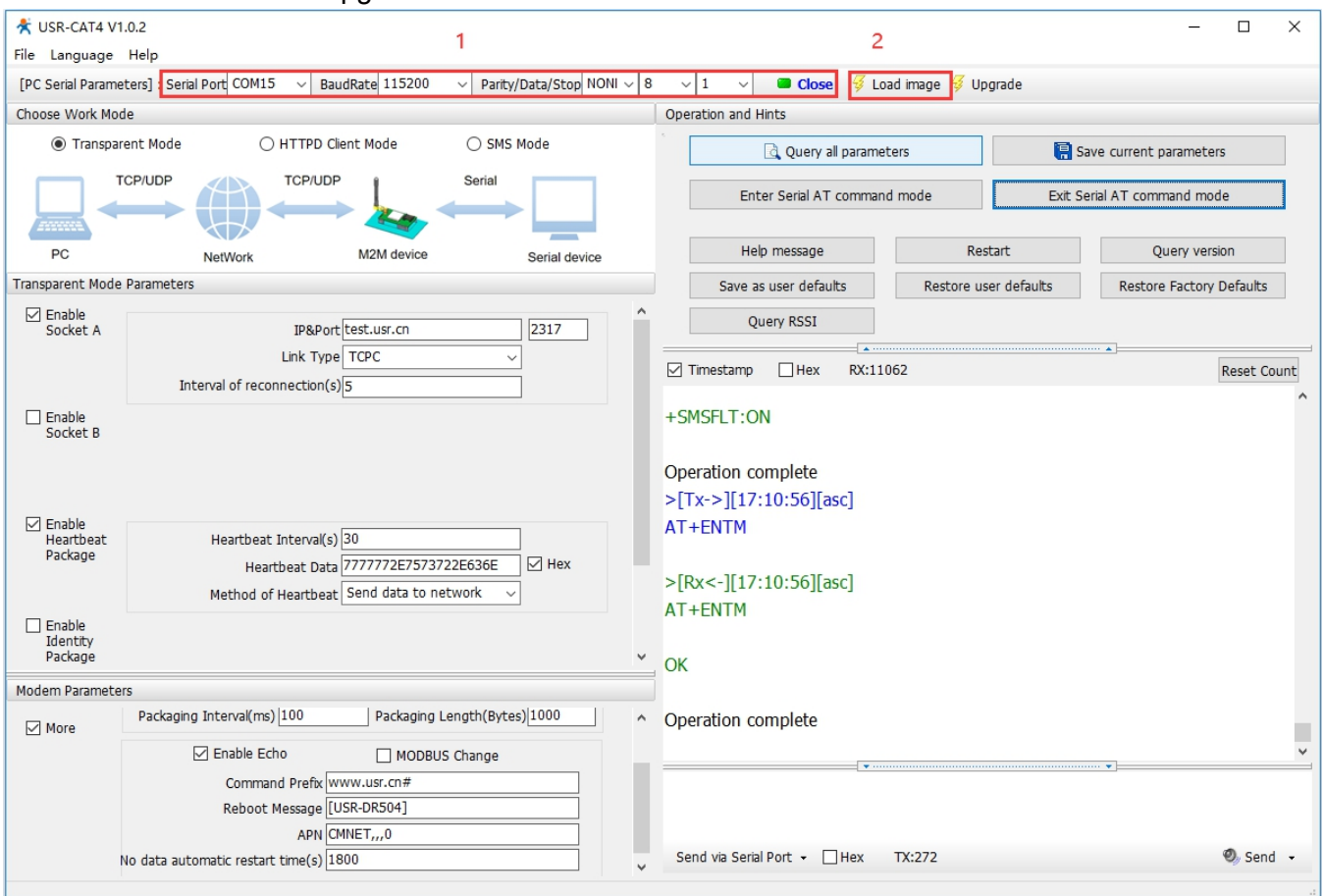
After power on, press the “Reload” button for 3~15S and release it to restore the device parameters to factory default parameters.

6.7. Upgrade Firmware

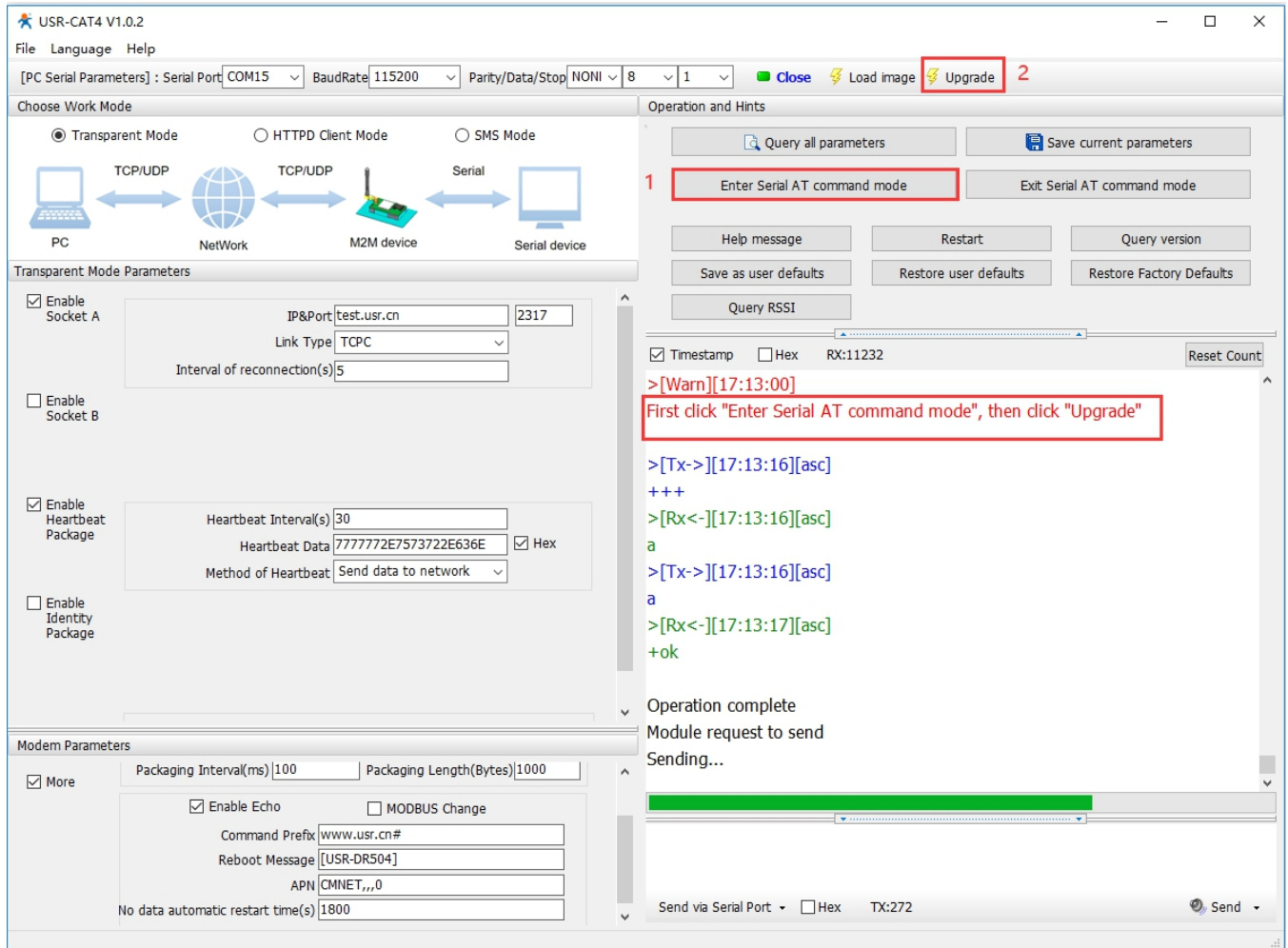
6.7.1. Upgrade by Serial Port

USR-DR504-G support upgrade firmware via serial ports.

(1) Set baud rate to 115200, no check bit, data bit 8, stop bit 1, open serial port, click “Load Image”, and select the firmware to be upgraded.

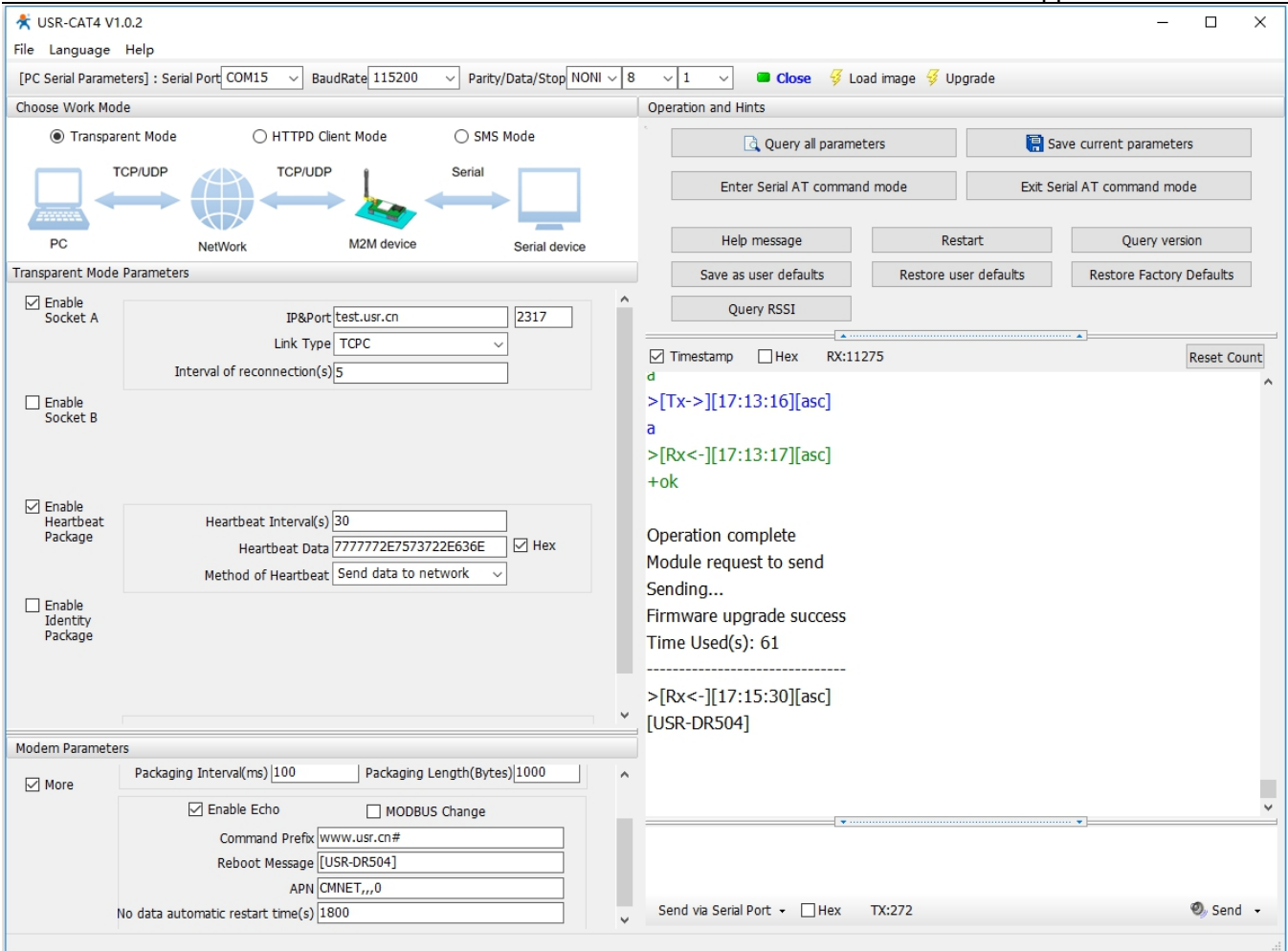


(2) Follow the prompts and wait for the device to be upgraded.



The screenshot shows the USR-CAT4 V1.0.2 software interface. The 'Upgrade' button is highlighted with a red box and a '2'. The 'Enter Serial AT command mode' button is highlighted with a red box and a '1'. The terminal window shows the AT command sequence: >[Warn][17:13:00] First click "Enter Serial AT command mode", then click "Upgrade" (highlighted with a red box), >[Tx->][17:13:16][asc] +++ >[Rx<-][17:13:16][asc] a >[Tx->][17:13:16][asc] a >[Rx<-][17:13:17][asc] +ok. The status bar shows "Operation complete" and "Module request to send Sending...".

(3) Firmware update is completed and the device will restart.



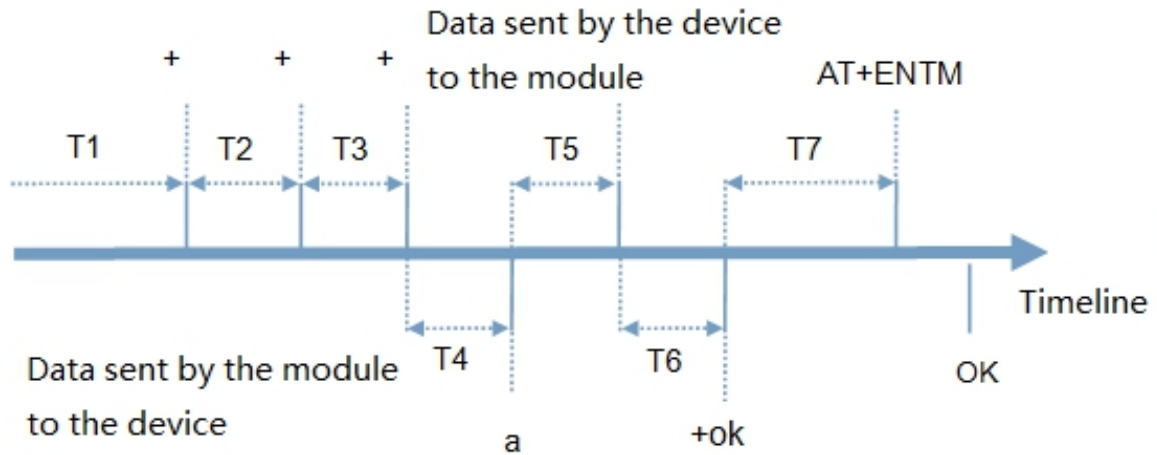
6.7.2. Remote Upgrade

DR504-G queries by polling, request the server once every 30 minutes by default to get whether there is an upgrade demand. If the upgrade is needed, the firmware data will be downloaded from the server for the upgrade; if not, the system will sleep and wait for the next round. The polling time of Fota upgrade can be set through "AT+FOTATIME" with a range of 10~65535s. Set to 0 to close the upgrade request.

7. AT Command Set

7.1. AT Command Examples

When the device works in network transparent mode, can switch to "AT command mode" by sending time-specific data by serial port. When the operation is completed in "AT command mode", send specific commands to return to the previous working mode.



Toggles the timing of command mode:

In the figure above, the horizontal axis is time, data above the time axis is sent by the serial device to DR504-G, data below the time axis is sent by DR504-G to the serial port.

Time requirement:

T1 > current serial port packaging interval (refer to AT+UARTFT)

T2 < current serial port packaging interval time (refer to AT+UARTFT)

T3 < current serial port packaging interval time (refer to AT+UARTFT)

T4 = current serial port packaging interval time (refer to AT+UARTFT)

T5 < 3 s

T6 = current serial port packaging interval time (refer to AT+UARTFT)

The time sequence of switching from Transparent mode to “AT Command mode” :

Serial device continuously sends "+++" to the device. After receiving "+++", the device will send an "a" to the serial device. No data can be sent during a packaging cycle before sending "+++".

When the serial device receives “a”, a “a” must be sent to the device within 3 seconds.

After receiving 'a', the device returns "+ok" and enter “temporary command mode”.

After receiving "+ok", the device has enter "temporary command mode" and now can send AT command to it.

Time sequence of switching from AT command mode to network transparent mode:

Serial device sends "AT+ENTM" to DR504-G.

After receiving the command, sends "OK" to the serial device and returns to the previous working mode.

After the serial device receives "OK", it knows that the device has returned to its previous working mode.

7.1.1.Serial AT Command

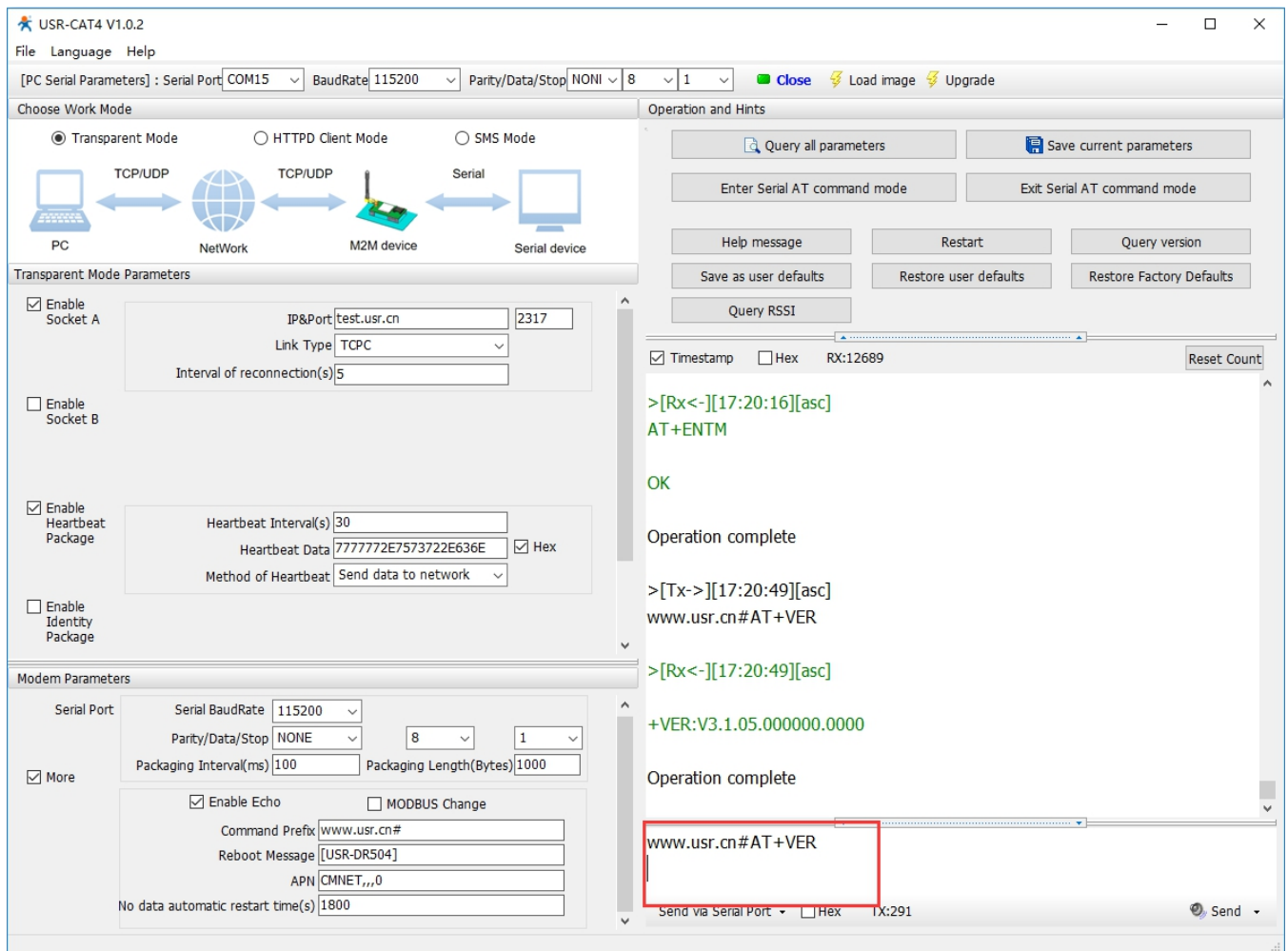
In transparent mode, do not need to switch to the command mode, we can use “Command prefix + AT command” to query and set parameters. It does not need complicated “+++” timing sequence to enter AT command mode, so as to quickly query or set parameters.

Serial Port	Serial BaudRate	115200		
	Parity/Data/Stop	NONE	8	1
<input checked="" type="checkbox"/> More	Packaging Interval(ms)	100	Packaging Length(Bytes)	1000
	<input checked="" type="checkbox"/> Enable Echo	<input type="checkbox"/> MODBUS Change		
	Command Prefix	www.usr.cn#		
	Reboot Message	[USR-DR504]		
	APN	CMNET,,,0		
	No data automatic restart time(s)	1800		

Query current command prefix , query/setting command: **AT+CMDPW**

We can check the current command password by setup software is: www.usr.cn#

After the setting is completed, restart the module, and send www.usr.cn#AT+VER (Note: there is an Carriage Return at the end of the string) from the serial port to the module. After receiving the string, module will return the response information.



The screenshot shows the USR-CAT4 V1.0.2 software interface. The 'Modem Parameters' section is expanded, showing the 'Command Prefix' set to 'www.usr.cn#'. The terminal window on the right shows the following sequence of events:

```

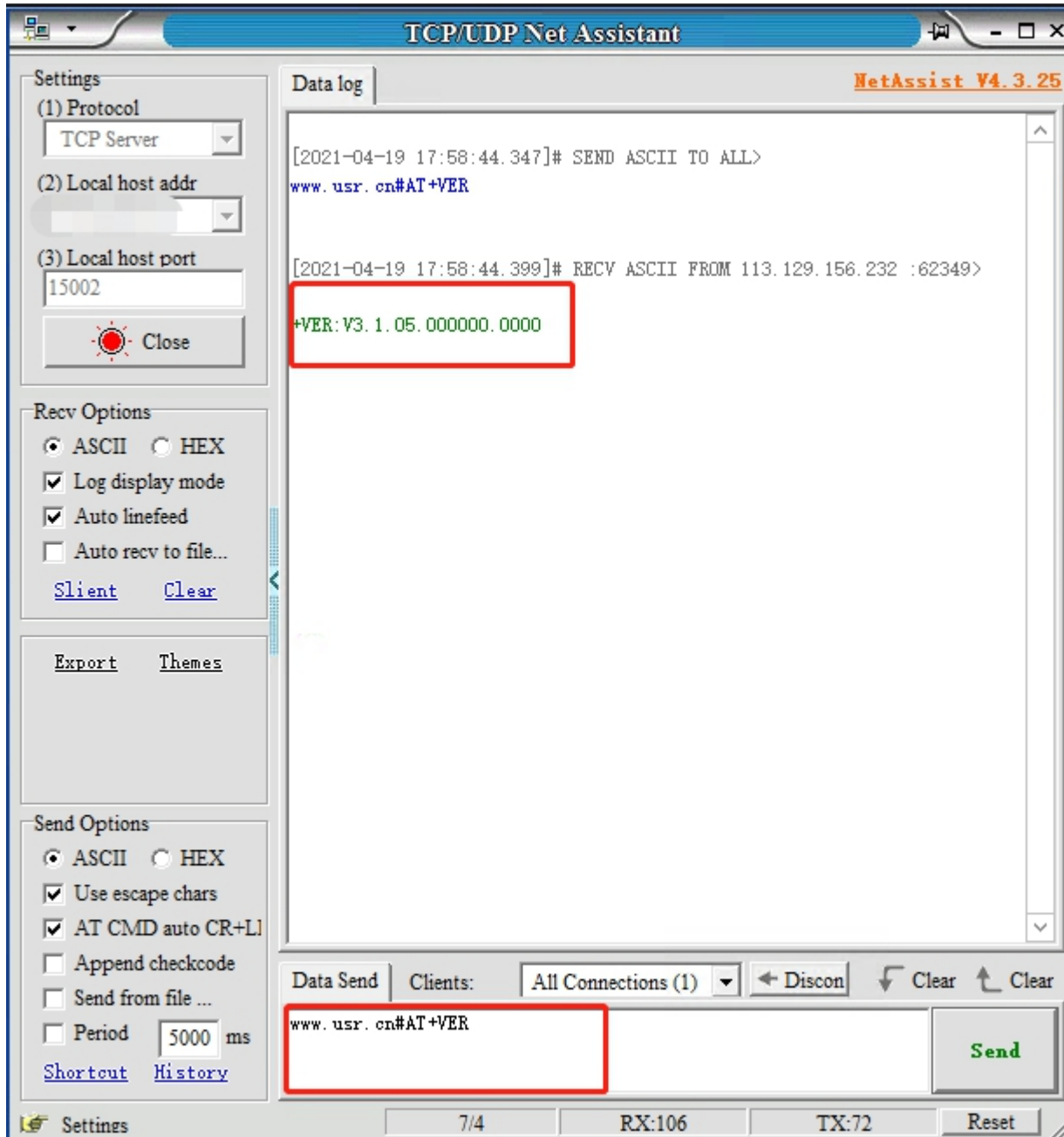
>[Rx<-][17:20:16][asc]
AT+ENTM
OK
Operation complete
>[Tx->][17:20:49][asc]
www.usr.cn#AT+VER
>[Rx<-][17:20:49][asc]
+VER:V3.1.05.000000.0000
Operation complete
www.usr.cn#AT+VER
    
```

The final response 'www.usr.cn#AT+VER' is highlighted with a red box in the terminal window.

7.1.2. Network AT Command

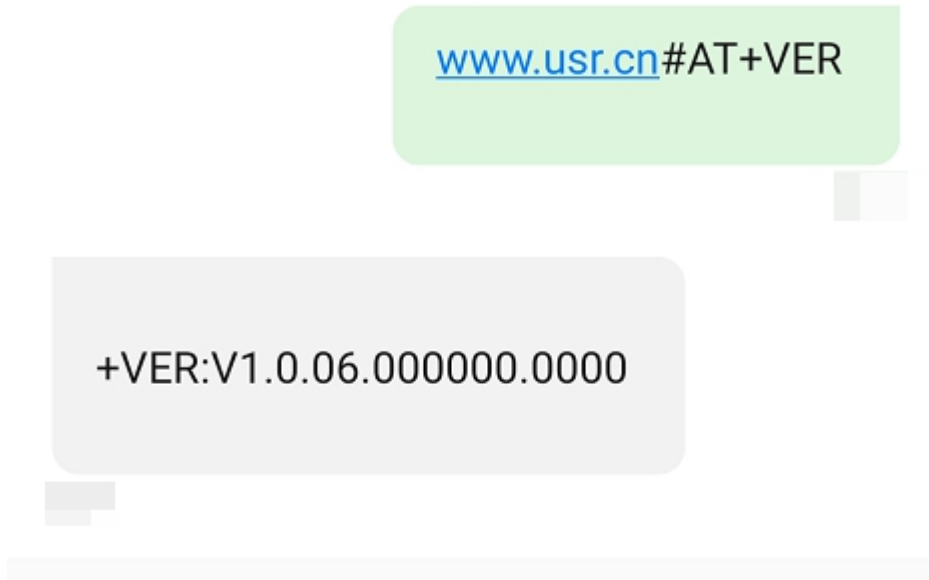
Network AT command refers to set and query parameters by sending “command prefix + AT command” through the network when working in transparent mode.

For example, query the firmware version and send `www.usr.cn#AT+VER` (note: there is an Carriage Return at the end of the string) from the server to the module. After receiving the command, the module will return a response message:



7.1.3.SMS AT Command

SMS AT command means that we can use SMS to query and configure the parameters of DR504-G. Take the query of firmware version as an example, send AT command. Send "www.usr.cn#AT+VER" (Note: there is an Carriage Return at the end of the string) from the mobile phone to the module. After receiving it, the module will return the response information as shown in the figure below:



7.1.4.Command Format

AT command is "query and reply" command, divided into "query" and "reply" two parts."Query" means that the device sends an AT command to DR504-G, and "reply" means that DR504-G sends a reply to the device.

Note: characters in instructions are case-insensitive.

7.1.4.1 Symbol Introduction

Symbol	Implication
<>	The content is essential items
[]	The content is non-essential items
{ }	The content is a string with special meaning
~	Parameter range, e.g. A~B. Parameter 's range is from A to B
CMD	Command code
OP	The operator
PARA	Parameters
CR	Carriage Return in ASCII, 0X0D in hex
LF	Line Feed in ASCII, 0X0A in hex

7.1.4.2 Query format in command

Command string: <AT+>[CMD][OP][PARA]<CR>

Command code	Implication	Necessary or not
AT+	AT command header	YES
CMD	Command name	NO
OP	Operator, such as =,?	YES
PARA	Executed Parameter	NO
CR	Carriage Return, command terminator	YES

Command type description:

Type	String format	Description
0	<AT+><CMD>?<CR>	Query current parameters
1	<AT+><CMD><CR>	Execute the action of this command or query current parameters
2	<AT+><CMD>=<PARA><CR>	Set this command's parameter

7.1.4.3 Reply format in command

Note: the response information of the command can be divided into two types: echo and no echo. Echo means to return the input content when the command is input, and then make a response to the command.

No echo means no input is returned and only the command is responded to. In the following instructions, no echo mode is used as an example.

Command String: [CR][LF][+CMD][OP][PARA][CR][LF]<CR><LF>[OK]<CR><LF>

Command	Implication	Necessary or not
CR	Carriage Return	No
LF	Line Feed	No
+CMD	Response header	No
OP	Operator , e.g: “:”	No
PARA	Returned parameter	No
CR	Carriage Return	No
LF	Line Feed	No
CR	Carriage Return	Yes
LF	Line Feed	Yes
OK	Operate successfully	No
CR	Carriage Return	Yes
LF	Line Feed	Yes

Response command type description:

Type	String Format	Description
0	<CR><LF><OK><CR><LF>	Means command send success
1	<CR><LF><+CMD:><PARA><CR><LF><CR><LF><OK><CR><LF>	Return current parameters

7.1.4.4 Special symbols

In AT commands, "=", ",", "?", carriage return, line feed are special symbols, so the parameter can not directly contain "=", ",", "?". All need to be escaped.

Escape rule: use [] to enclose the hexadecimal code of a special symbol, representing the ASCII code represented by an input hexadecimal code.

E. g:

"?": The hexadecimal encoding of 0x3F is expressed as [3F] after escaping by this escape method.

Symbol	Implication	Escape characters
=	Equal sign	[3D]
,	Comma	[2C]
?	Question mark	[3F]
<CR>	Enter key	[0D]
<LF>	Line break	[0A]

7.2. AT Command Set

Code	Implication
Err1	Does not conform to the AT commands format, is not the beginning of AT
Err2	The AT command was not found and does not exist
Err3	Not meet the format of query or settings
Err4	Wrong parameters or number
Err5	Setting parameter failed

Command	Command description
Executive command	
AT	Test Command
H	Help information
Z	Module reboot
E	Query/set whether to enable command echo
ENTM	Exit AT command mode
WKMOD	Query/set work mode

CMDPW	Query/set command prefix
STMSG	Query/set module start information
RSTIM	Query/set the time of equipment automatically restart
CSQ	Query signal strength information of device currently
SYSINFO	Query network information of device
UCPIN	Query/set PIN code
Query/set query commands	
RELD	Restore to the user default settings
CLEAR	Restore original factory settings
CFGTF	Save current settings to default settings
Query/set information query commands	
VER	Query version information
SN	Query SN code
ICCID	Query ICCID code
IMEI	Query IMEI code
CIP	Query IP address
LBS	Query base station positioning information
CCLK	Query current time
PING	Query the network status
Serial parameter commands	
UART	Query / set the parameters of serial ports
UARTFT	Query/set serial port package time
UARTFL	Query/set the serial port package length
Network commands	
APN	Query/set APN information
SOCKA	Query/set socket A parameter
SOCKB	Query/set socket B parameter
SOCKAEN	Query/setup whether to enable socket A
SOCKBEN	Query/setup whether to enable socket B
SOCKALK	Query socket A connection status
SOCKBLK	Query socket B connection status
SOCKATO	Query/set reconnect time after disconnection of socket A
SOCKBTO	Query/set reconnect time after disconnection of socket B
SOCKRSTM	Query/Set the max number of reconnect when socket connection failure
MODBUSEN	Query/set whether to enable Modbus protocol conversion
Identity package commands	
REGEN	Query/set whether to enable identity package
REGTP	Query/set the content type of identity package
REGDT	Query/set user-defined identity package data
REGSND	Query/set identity package sending type
Heartbeat package commands	
HEARTEN	Query/set whether to enable heartbeat

HEARTDT	Query/set heartbeat package data
HEARTSND	Query/set heartbeat package sending type
HEARTTM	Query/set heartbeat package sending interval
HTTPD commands	
AT+HTPTP	Query/set HTTP request type
AT+HTPURL	Query/set URL
AT+HTPSV	Query/set HTTP server address and port
AT+HTPHD	Query/set HTTP request header
AT+HTPTO	Query/set HTTP timeout
AT+HTPFLT	Query/set whether to filter HTTP header
SMS commands	
DSTNUM	Query/set the target mobile phone number of SMS mode
SMSFLT	Query/set whether to enable only receive SMS from source number
CISMSEND	Send SMS

7.2.1.AT

- Function: Test commands to test whether the current device is active
- Format
 - ◆ Query:


```
AT{CR}
{CR}{LF}OK{CR}{LF}
```

7.2.2.AT+H

- Function: Helping command
- Format
 - ◆ Query:


```
AT+H{CR}
{CR}{LF} help message {CR}{LF}
```
- Parameter:
 - ◆ help message: command.

7.2.3.AT+Z

- Function: Reload the module.
- Format


```
AT+Z{CR}
{CR}{LF}OK{CR}{LF}
```

7.2.4.AT+E

- Function: Query/set the echo status of AT commands.
- Format:
 - ◆ Query current parameter:


```
AT+E{CR} or AT+E?{CR}
```

{CR}{LF}+E:status{CR}{LF}

◆ Setting:

AT+E=status{CR}

{CR}{LF}OK{CR}{LF}

➤ Parameter:

◆ status: echo status, including:

ON: open

OFF: close

Command echo default is on.

➤ E.g: AT+E=ON

7.2.5. AT+ENTM

➤ Function: set the device to return to the previous working mode.

➤ Format:

◆ Perform specified function:

AT+ENTM{CR}

{CR}{LF}OK{CR}{LF}

7.2.6. AT+WKMOD

➤ Function: Query/Setting module's work mode

➤ Format:

◆ Query current parameter:

AT+WKMOD{CR} or AT+WKMOD?{CR}

{CR}{LF}+WKMOD:mode{CR}{LF}

◆ Setting:

AT+WKMOD=mode{CR}

{CR}{LF}OK{CR}{LF}

➤ Parameter:

◆ mode: work mode, including:

NET: Network transparent mode

HTTPD: HTTPD Client mode

SMS: SMS mode

Default in NET mode:

➤ E.g: AT+WKMOD=NET

7.2.7. AT+CMDPW

➤ Function: Query/Setting command prefix.

➤ Format:

◆ Query current parameter:

AT+CMDPW{CR} or AT+CMDPW?{CR}

{CR}{LF}+CMDPW:password{CR}{LF}

◆ Setting:

AT+CMDPW=password{CR}

{CR}{LF}OK{CR}{LF}

- Parameter:
 - ◆ password: Command prefix, 1~11 bytes ASCII code, default is www.usr.cn#.
- E.g: AT+CMDPW=www.usr.cn#

7.2.8. AT+STMSG

- Function: Query/Setting module's welcome message.
- Format:
 - ◆ Query current parameter:
AT+STMSG{CR} or AT+STMSG?{CR}
{CR}{LF}+STMSG:message{CR}{LF}
 - ◆ Setting:
AT+STMSG=message{CR}
{CR}{LF}OK{CR}{LF}
- Parameter:
 - ◆ message: Welcome message, after the device is powered on. ASCII of 1~20 bytes, default is [USR-DR504].
- E.g: AT+STMSG=www.usr.cn

7.2.9. AT+RSTIM

- Function: Query/Setting module's automatic restart time.
- Format:
 - ◆ Query current parameter:
AT+RSTIM{CR} or AT+RSTIM?{CR}
{CR}{LF}+RSTIM:time{CR}{LF}
 - ◆ Setting:
AT+RSTIM=time{CR}
{CR}{LF}OK{CR}{LF}
- Parameter:
 - ◆ Time: s. Range can be set from 60s to 60000s. When the network does not respond to data longer than this time, device will restart. The default time is 1800s. When the parameter is set to 0, this function is disabled.
- E.g: AT+RSTIM=1800

7.2.10. AT+CSQ

- Function: Query module's current signal strength.
- Format:
 - ◆ Query current parameter
AT+CSQ{CR} or AT+CSQ?{CR}
{CR}{LF}+CSQ: rssi {CR}{LF}
- Parameter:
 - ◆ rssi: Received signal strength information.

Number	Implication
0	Less than -113 dBm

1	-111 dBm
2....31	-109... -53 dBm
99	Unknown or unmeasured

7.2.11. AT+SYSINFO

➤ Function: Query module 's network information

➤ Format:

◆ Query current parameter:

AT+SYSINFO{CR} or AT+SYSINFO?{CR}

{CR}{LF}+SYSINFO: state,srv_domain ,roam_status,sys_mode,sim_state{CR}{LF}

➤ Parameter

◆ state: current network status

Number	Implication
0	No service
1	Restricted service
2	Network service
3	Restricted regional services
4	Power saving state

◆ srv_domain: business domain

Number	Implication
0	No service
1	Only CS service
2	Only PS service
3	PS+CS service
4	CS,PS is not registered and is in the search state

◆ roam_status: Roaming state

0: Non-roaming state

1: Roaming state

◆ sys_mode: System mode

Number	Implication
0	No service
1	AMPS mode
2	CDMA mode
3	GSM mode
4	HDR mode
5	WCDMA mode
6	GPS mode
7	GSM/WCDMA mode
8	CDMA/HDR mixed mode
9	LTE mode
10	GSM/WCDMA/LTE mode
11	TDS mode

- ◆ sim_state: UIM state.

Number	Implication
0	UIM card status is invalid
1	UIM card status is effective
2	UIM card status is invalid under CS
3	UIM is invalid under PS
4	UIM is invalid under PS+CS
240	ROMUIM version
255	UIM card not exist

7.2.12. AT+UCPIN

- Function: Query/Setting PIN code
- Format
 - ◆ Query current parameter:
AT+UCPIN{CR} or AT+UCPIN?{CR}
{CR}{LF}+UCPIN:pin{CR}{LF}
 - ◆ Setting:
AT+UCPIN=pin{CR}
{CR}{LF}OK{CR}{LF}
- Parameter:
 - ◆ pin: PIN code, default is empty.
- E.g: AT+PIN=1234

7.2.13. AT+RELD

- Function: Restore to default settings and the device will restart.
- Format:
 - ◆ Execute the specified function
AT+RELD{CR}
{CR}{LF}OK{CR}{LF}

7.2.14. AT+CLEAR

- Function: Reload the default settings, device will restart.
- Format:
 - ◆ Execute specified function:
AT+CLEAR{CR}
{CR}{LF}OK{CR}{LF}

7.2.15. AT+CFGTF

- Function: Save current parameter to default parameter.
- Format:
 - ◆ Execute specified function:
AT+CFGTF{CR}
{CR}{LF}OK{CR}{LF}

7.2.16. AT+VER

- Function: Query module's firmware version.
- Format:
 - ◆ Query current parameter:
AT+VER{CR} or AT+VER?{CR}
{CR}{LF}+VER:version{CR}{LF}
- Parameters:
 - ◆ version: Firmware version.

7.2.17. AT+SN

- Function: Query module's SN code.
- Format:
 - ◆ Query current parameter:
AT+SN{CR} or AT+SN?{CR}
{CR}{LF}+SN:code{CR}{LF}
- Parameters:
 - ◆ code:SN code

7.2.18. AT+ICCID

- Function: Query module's ICCID code.
- Format:
 - ◆ Query current parameter:
AT+ICCID{CR} or AT+ICCID?{CR}
{CR}{LF}+ICCID:code{CR}{LF}{CR}{LF}
- Parameters:
 - ◆ code: ICCID code.

7.2.19. AT+IMEI

- Function: Query module's IMEI code.
- Format:
 - ◆ Query current parameter:
AT+IMEI{CR} or AT+IMEI?{CR}
{CR}{LF}+IMEI:code{CR}{LF}
- Parameters:
 - ◆ code: IMEI code.

7.2.20. AT+CIP

- Function: Query local IP address.
- Format:
 - ◆ Query current parameter:
AT+CIP{CR} or AT+CIP?{CR}
{CR}{LF}+CIP: IP {CR}{LF}
- Parameters:

- ◆ IP: local IP address.

7.2.21. AT+LBS

- Function: Query base station positioning.
- Format:
 - ◆ Query:
AT+LBS{CR}
{CR}{LF}+IMEI : <lac>,<cid>{CR}{LF}
- Parameters:
 - ◆ <lac>: LAC information, Range: 1~65535
 - ◆ <cid>: CID information, Range: 2G: (1-65535) 3G/4G (1~268435455)
- E.g: AT+LBS

7.2.22. AT+CCLK

- Function: Query current time.
- Format:
 - ◆ Query:
AT+CCLK{CR}
{CR}{LF}+CCLK : <data>,<time>{CR}{LF}
- Parameters:
 - ◆ <data>: Data information
 - ◆ <time>: Time information
- E.g: AT+CCLK

7.2.23. AT+PING

- Function: Query network continuity.
- Format:
 - ◆ Query:
AT+PING="ip_address"{CR}
{CR}{LF}+PING: <result>,<ip_address>, <bytes>, <time>, <ttl>{CR}{LF}
{CR}{LF}+PING: <finresult>, <sent>, <rcvd>, <lost>, <min>,<max>,<avg>{CR}{LF}
- Parameters:
 - ◆ <result>: The result of each ping request. 0 means success.
 - ◆ <ip_address>: IP address.
 - ◆ <bytes>: The length of each sent ping request. Unit: byte.
 - ◆ <time>: The time wait for the response of the ping request. Unit: ms.
 - ◆ <ttl>: Time to live value of the response packet for the ping request.
 - ◆ <finresult>: The final result of the command. 0 means success.
 - ◆ <sent>: Total number of sent ping requests.
 - ◆ <rcvd>: Total number of the ping requests that received the response.
 - ◆ <lost>: Total number of the ping requests that are timeout.
 - ◆ <min>: The minimum response time. Unit: ms.

- ◆ <max>: The maximum response time. Unit: ms.
- ◆ <avg>: The average response time. Unit: ms.
- E.g: AT+PING="www.baidu.com"

7.2.24. AT+UART

- Function: Query/Setting serial port parameters
- Format:
 - AT+UART{CR} or AT+UART?{CR}
 - {CR}{LF}+UART:baud,data bit,stop bit,parity {CR}{LF}
 - ◆ Setting:
 - AT+UART=baud,data bit,stop bit,parity {CR}
 - {CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ Baud:band rate:2400,4800,9600,14400,19200, 28800, 33600,38400,57600,115200,230400,460800
Default rate 115200.
 - ◆ data bit: data bit, including:
 - 8: 8 data bits.
 - Default data bit :8.
 - ◆ stop bit: stop bit, including:
 - 1: 1 stop bit.
 - 2: 2 stop bits.
 - Default 1 stop bit.
 - ◆ Parity: including:
 - NONE
 - ODD
 - EVEN
 - Default is NONE.
- E.g.: AT+UART=115200,8,1,NONE.

7.2.25. AT+UARTFT

- Function: Query/Setting serial port packaging interval.
- Format:
 - AT+UARTFT{CR} or AT+UARTFT?{CR}
 - {CR}{LF}+UARTFT:time{CR}{LF}
 - ◆ Setting:
 - AT+UARTFT=time{CR}
 - {CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ time: Packaging interval, the range is 100~60000ms, default is 100ms.
- E.g: AT+UARTFT=100.

7.2.26. AT+UARTFL

- Function: Query/Setting serial port packaging length.
- Format:
 - AT+UARTFL{CR} or AT+UARTFL?{CR}
 - {CR}{LF}+UARTFL:length{CR}{LF}
 - ◆ Setting:
 - AT+UARTFL=length{CR}
 - {CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ length: Package length, ranging from 100 to 1000 bytes, default to 1000 bytes.
- E.g: AT+UARTFL =1000

7.2.27. AT+APN

- Function: Query/Setting APN code
- Format
 - ◆ Query current parameter:
 - AT+APN{CR} or AT+APN?{CR}
 - {CR}{LF}+APN:code,user_name,password,auth{CR}{LF}
 - ◆ Setting:
 - AT+APN=code,user_name,password,auth{CR}
 - {CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ code: APN, default is AUTO, with a maximum length of 50.
 - ◆ user_name: User name, default is empty, maximum length 64.
 - ◆ password: Password, default empty, maximum length 127.
 - ◆ auth: Authentication mode, 0: None, 1: PAP, 2: CHAP, 3: PAP+CHAP, default is 0.
- E.g: AT+APN=4gnet,admin,admin,1.

7.2.28. AT+SOCKA

- Function: Query/Setting the parameters of socket A.
- Format:
 - ◆ Query current parameter:
 - AT+SOCKA{CR} or AT+SOCKA?{CR}
 - {CR}{LF}+SOCKA:protocol,address,port{CR}{LF}
 - ◆ Setting:
 - AT+SOCKA=protocol,address,port{CR}
 - {CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ protocol: Connection Type, including:
 - TCPS: TCP Server
 - TCPC: TCP Client
 - UDPC: UDP Client

Default is TCPC.

- ◆ address: Server address. This address can be a domain name or IP. Default is test.usr.cn. It is invalid under TCPS. Can set any domain name or IP. Cannot be empty.
 - ◆ port: Server port, range 1~65535, default 2317, local port in TCPS mode
- E.g: AT+SOCKA=TCPC,test.usr.cn,8899.

7.2.29. AT+SOCKB

Function: Query/Setting the parameters of socket B .

- Function: Query/Setting the parameters of socket B.
- Format:
 - ◆ Query current parameter:
AT+SOCKB{CR} or AT+SOCKB?{CR}
{CR}{LF}+SOCKB:protocol,address,port{CR}{LF}
 - ◆ Setting:
AT+SOCKB=protocol,address,port{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ protocol: protocol, including:
 - TCPC: TCP Client
 - UDPC: UDP Client
 - Default TCPC.
 - ◆ address: Server address, this address can be domain name or IP, maximum support 100 bytes, default is test.usr.cn.
 - ◆ port: Server port, range 1~65535, default 2317
- E.g: AT+SOCKB=TCPC,test.usr.cn,2317

7.2.30. AT+SOCKAEN

- Function: Query/Setting whether to enable socket A
- Format:
 - ◆ Query current parameter:
AT+SOCKAEN{CR} or AT+SOCKAEN?{CR}
{CR}{LF}+SOCKAEN:status{CR}{LF}
 - ◆ Setting:
AT+SOCKAEN=status{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ status: whether to enable socket A, including:
 - ON: enable.
 - OFF: disable.

7.2.31. AT+SOCKBEN

- Function: Query/Setting whether to enable socket B.
- Format:
 - ◆ Query current parameter:

AT+SOCKBEN{CR} or AT+SOCKBEN?{CR}
{CR}{LF}+SOCKBEN:status{CR}{LF}

◆ Setting:

AT+SOCKBEN=status{CR}
{CR}{LF}OK{CR}{LF}

➤ Parameters:

- ◆ status: whether to enable socket B, including:
ON: enable.
OFF: disable

7.2.32. AT+SOCKALK

➤ Function: Query whether socket A is connected.

➤ Format:

- ◆ Query current parameter:
AT+SOCKALK{CR} or AT+SOCKALK?{CR}
{CR}{LF}+SOCKALK:status{CR}{LF}

➤ Parameters:

- ◆ status: socket A connection status, including:
ON: connected.
OFF: unconnected.

7.2.33. AT+SOCKBLK

➤ Function: Query whether socket B is connected.

➤ Format:

- ◆ Query current parameter:
AT+SOCKBLK{CR} or AT+SOCKBLK?{CR}
{CR}{LF}+SOCKBLK:status{CR}{LF}

➤ Parameters:

- ◆ status: socket B connection status, including:
ON: connected.
OFF: unconnected.

7.2.34. AT+SOCKATO

➤ Function: Query/Setting reconnect time of Socket A once timeout.

➤ Format:

- ◆ Query current parameter:
AT+SOCKATO{CR} or AT+SOCKATO?{CR}
{CR}{LF}+SOCKATO:time{CR}{LF}

➤ Parameters:

- ◆ time: reconnect time, time range is 1~100 s. Default time is 5s.

➤ E.g: AT+SOCKATO=10

7.2.35. AT+SOCKBTO

➤ Function: Query/Setting reconnect time of Socket B once timeout.

- Format:
 - ◆ Query current parameter:
AT+SOCKBTO{CR} or AT+SOCKBTO?{CR}
{CR}{LF}+SOCKBTO:time{CR}{LF}
- Parameters:
 - ◆ time: reconnect time, time range is 1~100 s. Default time is 5s.

7.2.36. AT+SOCKRSTIM

- Function: Query/Setting the maximum number of re-connections after connection failure, device will restart after the maximum number of re-connections.
- Format:
 - ◆ Query current parameter:
AT+SOCKRSTIM{CR} or AT+SOCKRSTIM?{CR}
{CR}{LF}+SOCKRSTIM:num{CR}{LF}
- Parameters:
 - num: Maximum re-connection times. Setting range is 10~600 times, default is 60 times.

7.2.37. AT+MODBUSEN

- Function: Query/Setting whether to enable Modbus protocol conversion function.
- Format:
 - ◆ Query current parameter:
AT+MODBUSEN{CR} or AT+MODBUSEN?{CR}
{CR}{LF}+MODBUSEN:status{CR}{LF}
 - ◆ Setting:
AT+MODBUSEN=status{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ status: Modbus protocol conversion function status, including:
ON: enable
OFF: disable
Default is OFF.

7.2.38. AT+REGEN

- Function: Query/Setting whether to enable identity package.
- Format:
 - ◆ Query current parameter:
AT+REGEN{CR} or AT+REGEN?{CR}
{CR}{LF}+REGEN:status{CR}{LF}
 - ◆ Setting:
AT+REGEN=status{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ status: identity package status, including:
ON: open.

OFF: close.

Default: OFF.

7.2.39. AT+REGTP

- Function: Query/Setting identity package type.
- Format:
 - ◆ Query current parameter:
AT+REGTP{CR} or AT+REGTP?{CR}
{CR}{LF}+REGTP:type{CR}{LF}
 - ◆ Setting:
AT+REGTP=type{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ type: Identity package data type, including:
ICCID: ICCID code.
IMEI: IMEI code.
CLOUD: USR-cloud.
USER: User-defined data.
Default: USER.
- E.g: AT+REGTP =ICCID

7.2.40. AT+REGDT

- Function: Query/Setting user-defined identity package data.
- Format:
 - ◆ Query current parameter:
AT+REGDT{CR} or AT+REGDT?{CR}
{CR}{LF}+REGDT:data{CR}{LF}
 - ◆ Setting:
AT+REGDT=data{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ data: User-defined identity package data, hexadecimal string format, maximum 160 bytes, 2 ~ 160 even bytes , default 7777772E7573722E636E, with ASCII code for the expression of www.usr.cn.
Note: The maximum bytes is the number of bytes after ASCII code is converted to a hexadecimal string.
- E.g: AT+REGDT =7777772E7573722E636E

7.2.41. AT+REGSND

- Function: Query/Setting the sending mode of the identity package.
- Format:
 - ◆ Query current parameter:
AT+REGSND{CR} or AT+REGSND?{CR}
{CR}{LF}+REGSND:type{CR}{LF}
 - ◆ Setting:

```
AT+REGSND=type{CR}
{CR}{LF}OK{CR}{LF}
```

➤ Parameters:

- ◆ type: Sending mode, including:

LINK: Sending when connection is established.

DATA: Identity package data as the beginning of each package data.

Default is DATA.

➤ E.g: AT+REGSND =DATA

7.2.42. AT+HEARTEN

➤ Function: Query/Setting whether to enable heartbeat package function.

➤ Format:

- ◆ Query current parameter:

```
AT+HEARTEN{CR} or AT+HEARTEN?{CR}
```

```
{CR}{LF}+HEARTEN:status{CR}{LF}
```

- ◆ Setting:

```
AT+HEARTEN=status{CR}
```

```
{CR}{LF}OK{CR}{LF}
```

➤ Parameters:

- ◆ status: the status of heartbeat package, including;

ON: open

OFF: close

Default: ON.

7.2.43. AT+HEARTDT

➤ Function: Query/Setting heartbeat package data.

➤ Format:

- ◆ Query current parameter:

```
AT+HEARTDT{CR} or AT+HEARTDT?{CR}
```

```
{CR}{LF}+HEARTDT:data{CR}{LF}
```

- ◆ Setting:

```
AT+HEARTDT=data{CR}
```

```
{CR}{LF}OK{CR}{LF}
```

➤ Parameters:

data: User custom heartbeat package data, hexadecimal string format, the maximum length is 160 bytes, 2 ~ 160 even bytes, default is 777772E7573722E636E. E.g: data is 777772E7573722E636E, in ASCII code is www.usr.cn.

Note:The maximum length of 160 bytes is the number of bytes after ASCII code is converted to a hexadecimal string.

➤ E.g: AT+HEARTDT =777772E7573722E636E

7.2.44. AT+HEARTSND

➤ Function: Query/Setting the sending mode of heartbeat package.

➤ Format:

- ◆ Query current parameter:
AT+HEARTSND{CR} or AT+HEARTSND?{CR}
{CR}{LF}+HEARTSND:type{CR}{LF}
- ◆ Setting:
AT+HEARTSND=type{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ type: sending mode, including:
COM: Send heartbeat package to serial port.
NET: Send heartbeat packet to network side.
Default is NET.
- E.g: AT+HEARTSND =COM

7.2.45. AT+HEARTTM

- Function: Query/Setting the interval time of heartbeat package.
- Format:
 - ◆ Query current parameter:
AT+HEARTTM{CR} or AT+HEARTTM?{CR}
{CR}{LF}+HEARTTM:time{CR}{LF}
 - ◆ Setting:
AT+HEARTTM=time{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ time: sending interval time, range is 1 ~ 6000s, default is 30s.
- E.g: AT+HEARTTM=60

7.2.46. AT+HTPTP

- Function: Query/Setting HTTP request type.
- Format:
 - ◆ Query current parameter:
AT+HTPTP{CR} or AT+HTPTP?{CR}
{CR}{LF}+HTPTP:type{CR}{LF}
 - ◆ Setting:
AT+HTPTP=type{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ type: HTTP request type, including:
GET
POST
Default is GET.
- E.g: AT+HTPTP=POST

7.2.47. AT+HTPURL

- Function: Query/Setting HTTP URL
- Format:
 - ◆ Query current parameter:
AT+HTPURL{CR} or AT+HTPURL?{CR}
{CR}{LF}+HTPURL:URL{CR}{LF}
 - ◆ Setting:
AT+HTPURL=URL{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
URL: HTTP URL, Maximum 100 bytes, default is /1.php[3F], please refer to the chapter of "Special Symbol" for the escaping rules.
- E.g: AT+HTPURL=/1.php[3F]

7.2.48. AT+HTPSV

- Function: Query/Setting HTTP server parameters.
- Format:
 - ◆ Query current parameter:
AT+HTPSV{CR} or AT+HTPSV?{CR}
{CR}{LF}+HTPSV:address,port{CR}{LF}
 - ◆ Setting:
AT+HTPSV=address,port{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ address: Server address, can be domain name or IP address. Maximum 100 bytes, default is test.usr.cn.
 - ◆ port: Server port, can be set from 1-65535, default is 80.
- E.g: AT+HTPSV=test.usr.cn,80

7.2.49. AT+HTPHD

- Function: Query/Setting HTTP request header.
 - ◆ Format:
AT+HTPHD{CR} or AT+HTPHD?{CR}
{CR}{LF}+HTPHD:head{CR}{LF}
 - ◆ Setting:
AT+HTPHD=head{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ head: HTTP request header, range from 9 to 200 bytes, must end with[0D][0A]. Default is Connection:close[0D][0A], please refer to the chapter of "Special Symbol" for the escaping rules.
- E.g: AT+HTPHD=Connection:close[0D][0A]

7.2.50. AT+HTPTO

- Function: Query/Setting HTTP request over time.
- Format:
 - ◆ Query current parameter:
AT+HTPTO{CR} or AT+HTPTO?{CR}
{CR}{LF}+HTPTO:time{CR}{LF}
 - ◆ Setting:
AT+HTPTO=time{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ time: HTTP request over time, range is 1-600s, default is 10s.
- E.g: AT+HTPTO=60

7.2.51. AT+HTPFLT

- Function: Query/Setting whether to enable filter HTTP header.
- Format:
 - ◆ Query current parameter:
AT+HTPFLT{CR} or AT+HTPFLT?{CR}
{CR}{LF}+HTPFLT:status{CR}{LF}
 - ◆ Setting:
AT+HTPFLT=status{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ status: Whether to enable filter HTTP header.
ON: enable.
OFF: disable.
Default is on.
- E.g: AT+HTPFLT=OFF

7.2.52. AT+DSTNUM

- Function: Query/Setting the target mobile phone number for SMS mode.
- Format:
 - ◆ Query:
AT+DSTNUM{CR} or AT+DSTNUM?{CR}
{CR}{LF}+DSTNUM: number{CR}{LF}
 - ◆ Setting:
AT+DSTNUM=number{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ number: SMS target phone number, please add international number, default number is 4000255652, up to 20 bytes.
- E.g: AT+DSTNUM=8618888888888

7.2.53. AT+SMSFLT

- Function: Query/Setting whether to enable only receive SMS from destination number.
- Format:
 - ◆ Query:
AT+SMSFLT{CR} or AT+SMSFLT?{CR}
{CR}{LF}+SMSFLT: status{CR}{LF}
 - ◆ Setting:
AT+SMSFLT=status{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ Status:
ON: enable.
OFF: disable.
Default : ON.
- E.g: AT+SMSFLT=ON

7.2.54. AT+CISMSEND

- Function: Sending SMS.
- Format:
 - ◆ Setting:
AT+CISMSEND=number,data{CR}
{CR}{LF}OK{CR}{LF}
- Parameters:
 - ◆ number : Target cellphone number for SMS, need add international number. E.g:
8618888888888
 - data: Content of the SMS, can be sent up to 70 characters once.
- E.g: AT+CISMSEND=8618888888888,Hello!

8. Contact Us

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