NP301 Serial Device Server
AT Command Rapid Configuration

2014/12/12

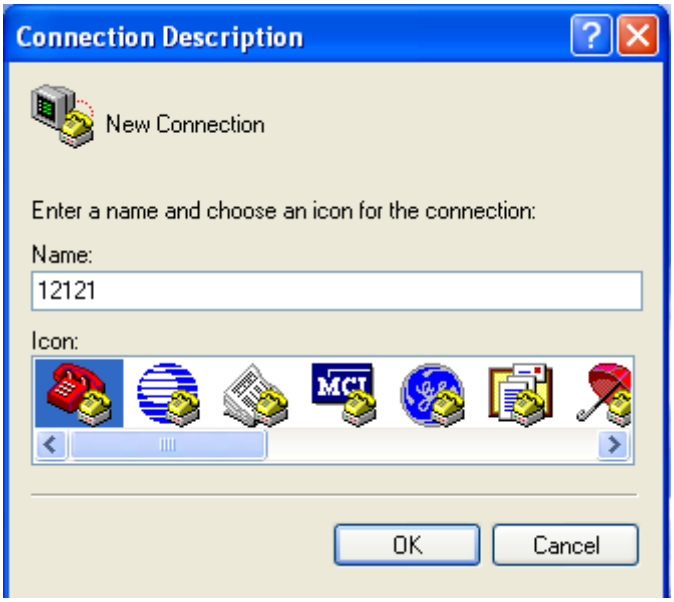
Content

This document is for reference only.

1 Login AT Command Interface

AT Command provided a standard configuration interface for user, the main function: users use SCM or their own software to configure NP301, it used to assist configuration to page, it can configure the device through Virtual COM port.

Turn the computer, on the Windows interface, click "Start/All Programs/Accessories/communication", run a terminal emulation program to create a new connection. The RS-232 port is connected to the computer. To take Hyper Terminal in Windows XP for example, as shown in Figure 1, type in a new name of the connection in a text box named "name", then click "OK" button.

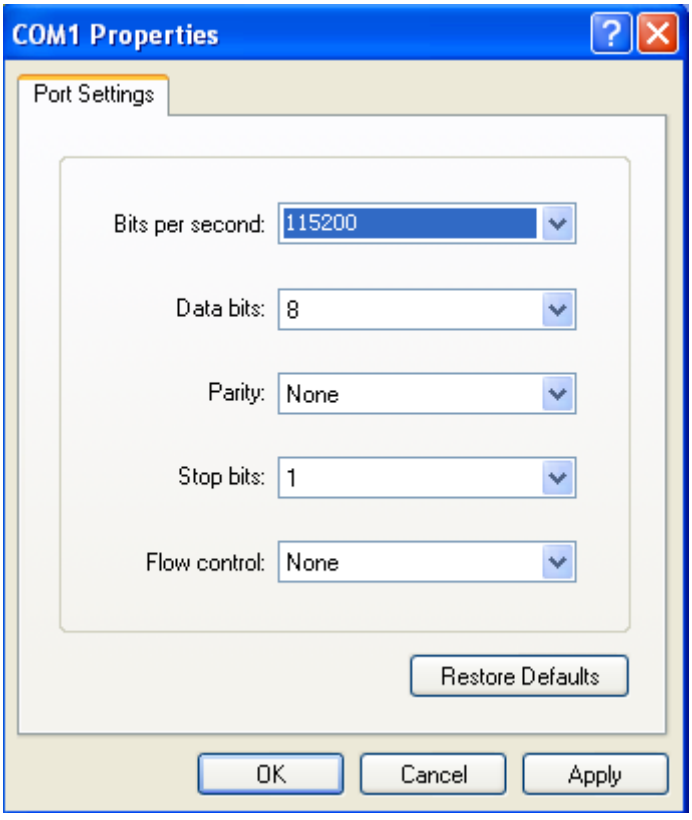


(Figure 1)

Choose connecting serial port. Choose connecting serial port under “Connect using”（pay attention to the chosen serial port is consistent with the port connected with the configuration cable），Click “OK”. As shown in Figure 2.

(Figure 2)

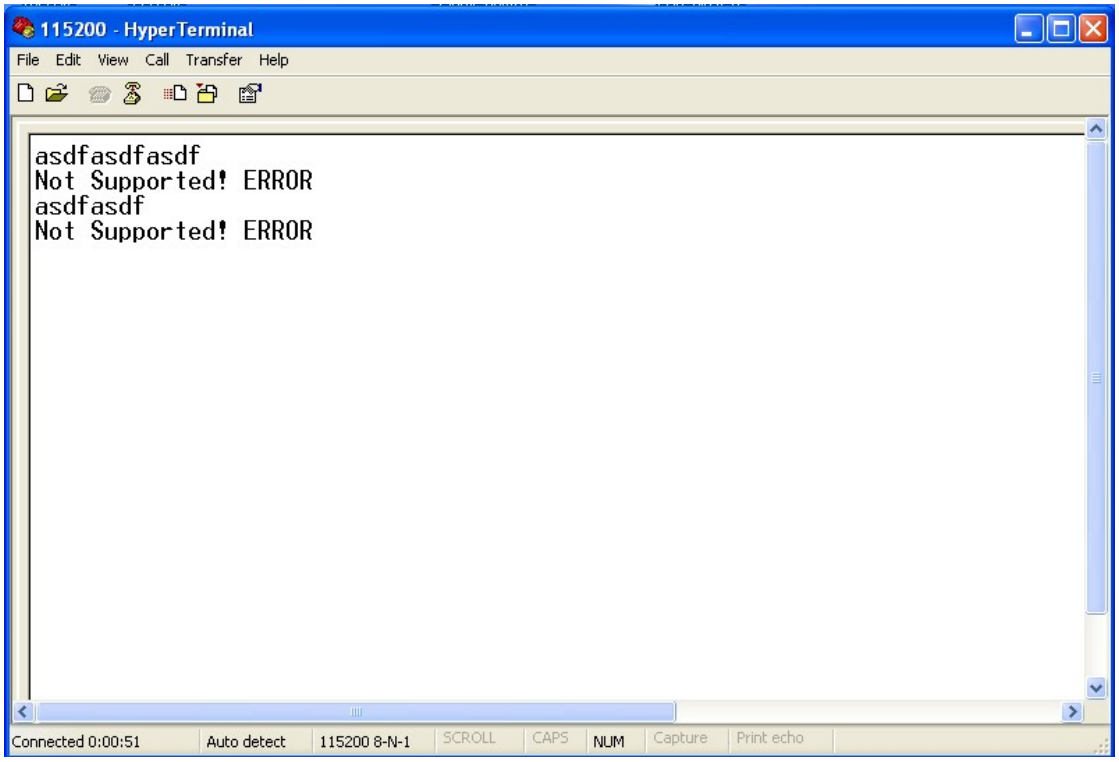
Set serial port parameters. As shown in Figure 3, set the "Bits per second" in the "Properties" of serial port is 115200bit/s, "Data bits" is 8, "parity" is None, "Stop Bits" is 1, "Flow Control" is None. Click "OK" button to enter to "Hyper Terminal" Window.



(Figure 3)

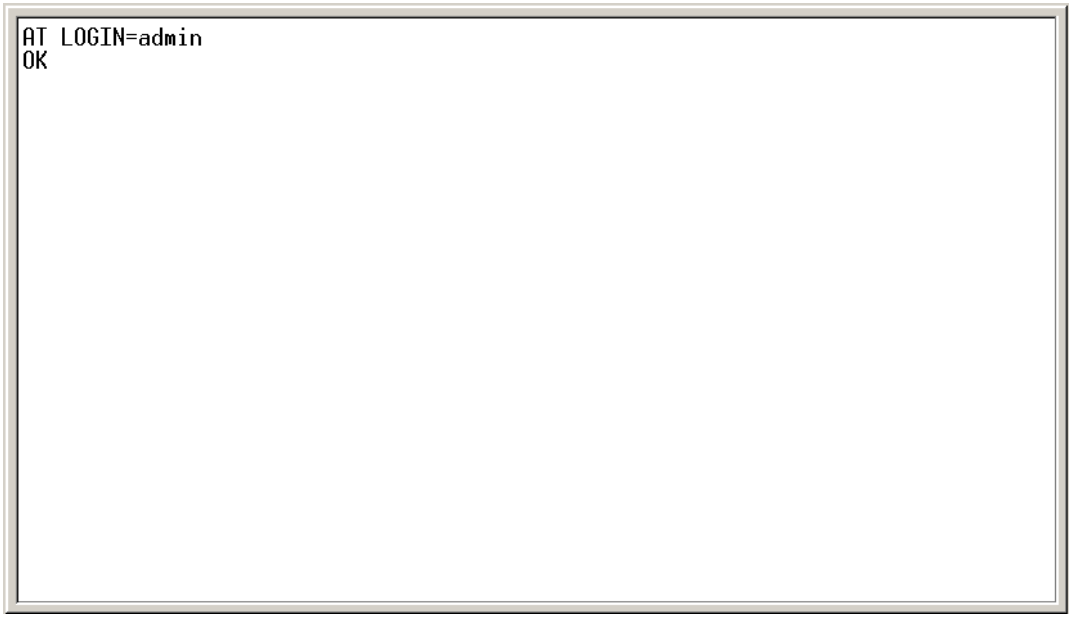
As figure 4, click again "Ctrl+Break", at the same time click "Enter" until blinking

cursor appears on the screen. In this time you can input AT configuration order through Hyper Terminal. Computer I/O port will directly trigger the AT command.



(Figure 4)

As figure 5，input correct user name and password, input “at login=admin” and Enter, it can enter into AT command format (Note: Default user name and password are “admin”), Once enter into AT command format, you can configure the corresponding functions.



(Figure 5)

2 View Device Information

AT command support by NP301 is a standard interface, it is Case insensitive, and always begin with “AT”, end with “\r\n” (Enter/line feed). Command, Return value and the format of parameters description is fixed. AT command have 3 types as follows:

Non-parameter command

It is a simple command, format is AT+Space+<command>\r\n. For example, quit configuration mode: AT+Space+QUIT\r\n.

Query command

It used for querying the configuration of the command. Former is AT+Space+<command>?\r\n, For example: AT+NAME？\r\n.

Parameter command

It is the most widely used format, it provided powerful flexibility, it used to configuration parameters, format is AT+Space+<command>=<>,<>,<>,<>,<>…r\n, like as; AT+IP=192.168.1.254\r\n.

IPM

Set or display dynamic or static IP mode. 0 is dynamic IP, 1 is static IP.

IP

Set or display IP address, save it as configure address. Effect or not, it is up to IP mode.

MASK

Set or display MASK address, save it as configure address.

GATE

Set or display gateway address, save it as configure address.

DNSM

Set or display DNS address, save it as configure address. 0 means DNS working mode is static, 1 means DNS working mode is dynamic.

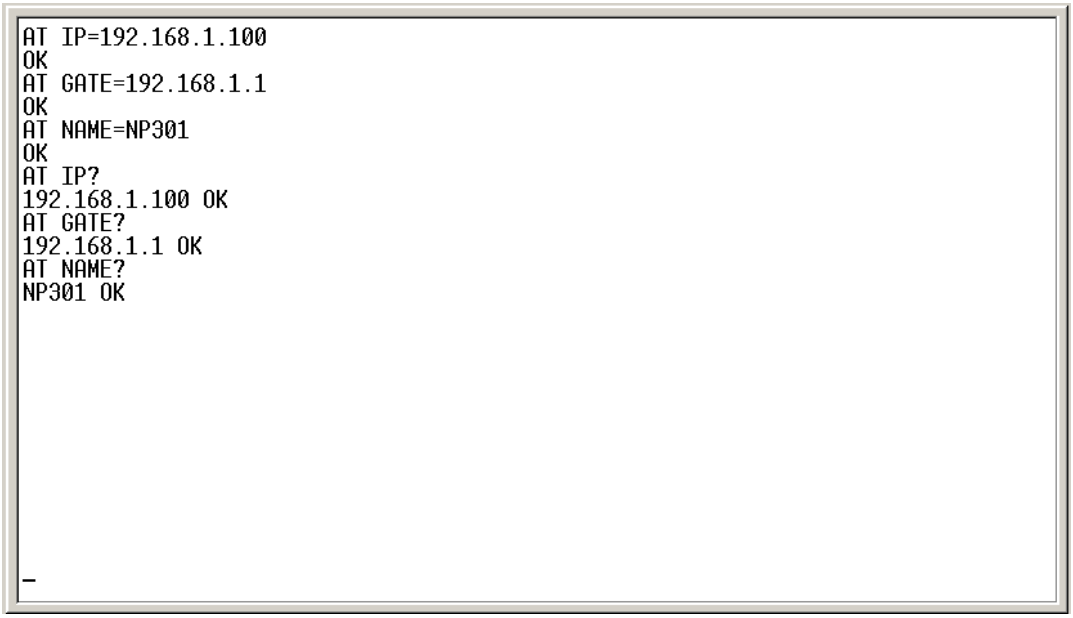
NAME

Set or display name information.

YPYE

Set or display description information.

(Figure 6)



(Figure 7)

3 Select Multiple Session

Sessions：Each serial port of serial device servers can support 1-4 sessions. It means serial port of serial device server send the received data to Ethernet through socket. More than one of the sessions means serial port of serial device server sends the received data to Ethernet through more than one socket.

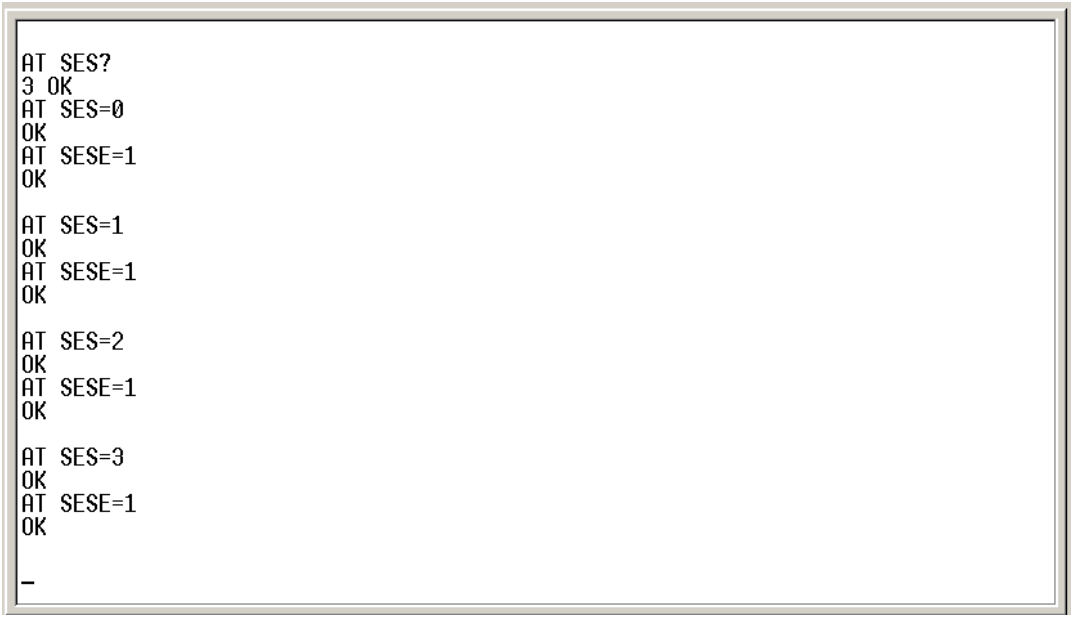
SES

Configure and display current session. Range: 0-3, total 4 sessions, default is 0.

SESE

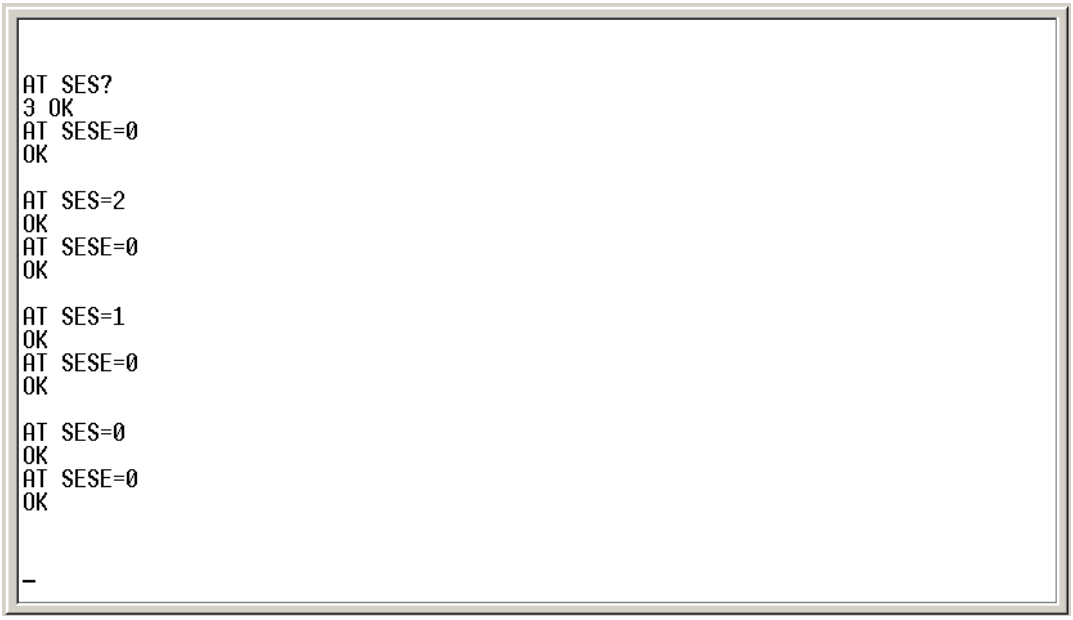
Set or display session, can just set the session when session enable. 0 means session enable valid, 1 means session enable invalid

As figure 8, open the 4 road session.



(Figure 8)

As figure 9, close the 4 road session.


AT SES?
3 OK
AT SESE=0
OK
AT SES=2
OK
AT SESE=0
OK
AT SES=1
OK
AT SESE=0
OK
AT SES=0
OK
AT SESE=0
OK

(Figure 9)

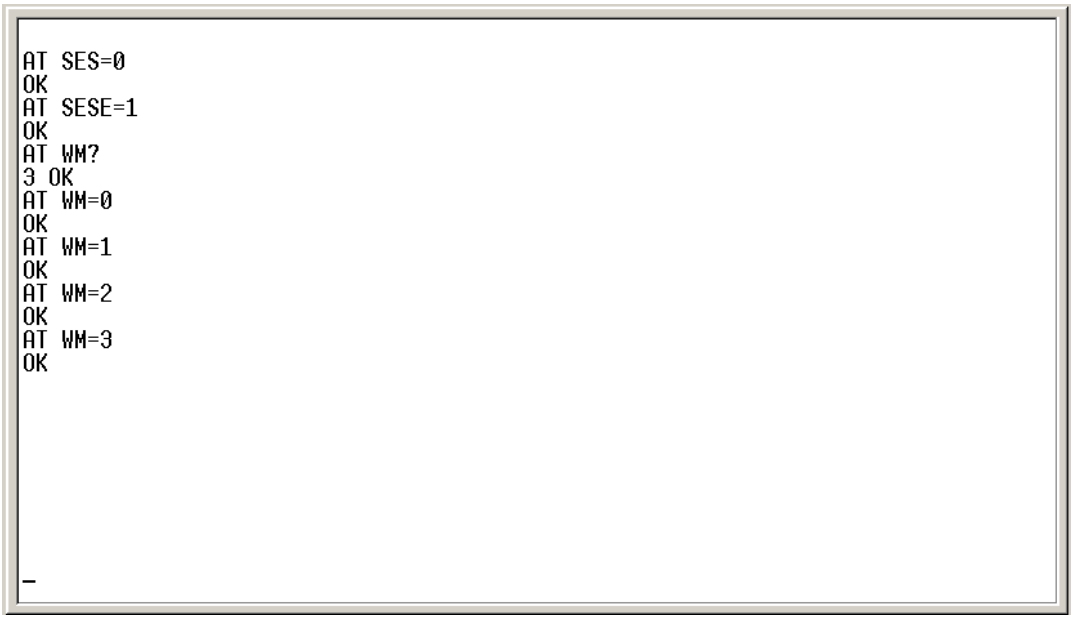
4 Work Mode Settings

Each session of serial port server can support 4 kinds of work mode selection, respectively is UDP model, TCP Server model, TCP Client model and TCP Auto model.

WM

The setting is available in Real COM, SOCKET and Pair Connection. 0 is UTP mode, 1is TCP Server mode, 2 is TCP Client mode, 3 is TCP Auto mode display current working mode.

As figure 10, four kinds of work mode selection.



(Figure 10)

4.1 UDP

Under the UDP work mode. NP301 is server and also client, the relevant setting is “Local port”, “Destination address” and “Destination port”. It can support point to point and multicast UDP, setting method is the same as TCP.

LP

Set or display Destination port information（1~65535）;

DAF

Set or display the current IP address format of current session. 0 means current is IP address, 1 means current is domain name address.

DIP

Set or display the current IP address of current session;

DP

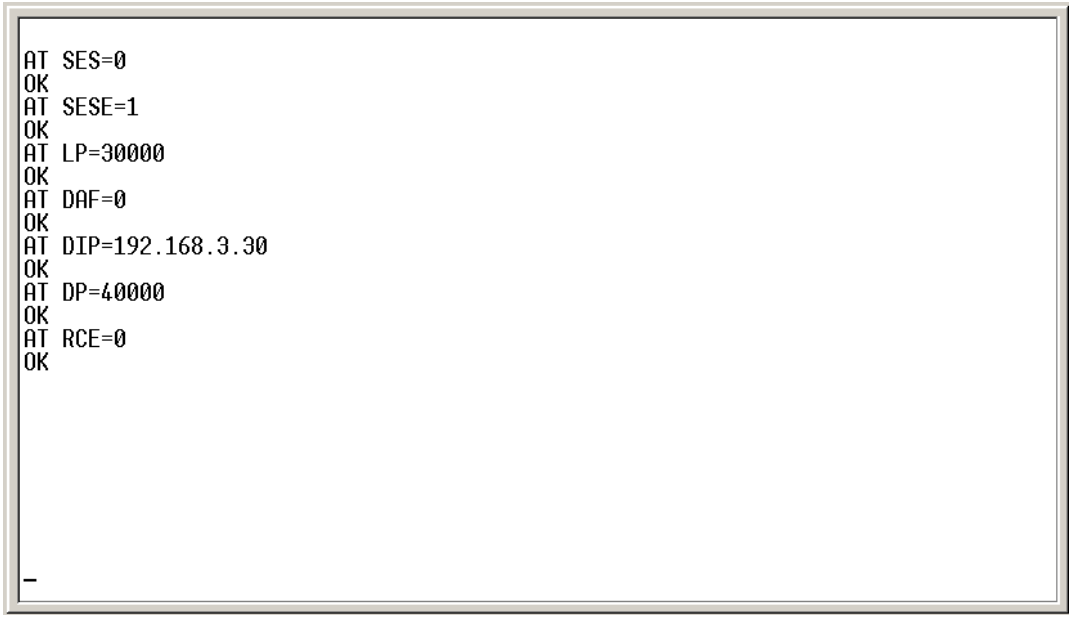
Set or display the information of destination port number（1~65535）;

RCE

Set or display RealCom working mode. 0 means RealCom close, 1 means RealCom open.

RealCom Mode support TCP Server、UDP and TCP Auto these 3 types.

As shown in Figure 11, is open 0 way session working mode is related to configure UDP, ReaCom off.



(Figure 11)

4.2 TCP Server

TCP Server, Passive connect, one pivotal parameter is [Local port], have relationship with other setting, need combine setting.

Figure 12 for the open road first session, the working mode is the TCP server mode, local port 30001, opens the RealCom function.

(Figure 12)

4.3 TCP Client

As TCP Client side, serial device server will connect forwardly to TCP/IP network equipment, such as PC. It need to setup to tell serial device server to connect which network address and TCP port number when conditions is matched. After creating socket, serial device server will sent the data received from each serial port through socket On the contrary, the data received from socket will be sent to the corresponding serial port.

TCP Client setting option: [Destination address], [Destination port], [Connection mode] and [Keep-alive].

SES

Configure and display current session. Range: 0-3, total 4 sessions, default is 0.

SESE

Set or display session, can just set the session when session enable. 0 means session enable valid, 1 means session enable invalid

WM

The setting is available in Real COM, SOCKET and Pair Connection. 0 is UTP mode, 1is TCP Server mode, 2 is TCP Client mode, 3 is TCP Auto mode display current working mode.

LP

Set or display Destination port information（1~65535）;

DAF

Set or display the current IP address format of current session. 0 means current is IP address, 1 means current is domain name address.

DIP

Set or display the current IP address of current session;

DP

Set or display the information of destination port number（1~65535）;

CM

Set or display the information of the connection mode. 0 means connect immediately (power on, connect), 1 means “trigger mode” (It is available once working mode in TCP client or PPPOE mode, if 0, keep connection)

KAT

Set or display the time of keep-live. (1~65535)

RCE

Set or display RealCom working mode. 0 means RealCom close, 1 means RealCom open.

As shown in Figure 13 below for the open road second number of sessions, the working mode is a TCP client, local port 30002, to IP 192.168.3.30, the destination port 40002, immediately connected, connection keep alive time 300, close the RealCom function.

```
AT SES=2
OK
AT SESE=1
OK
AT WM=2
OK
AT LP=30002
OK
AT DAF=0
OK
AT DIP=192.168.3.30
OK
AT DP=40002
OK
AT CM=0
OK
AT KAT=300
OK
AT RCE=0
OK
```

(Figure 13)

4.4 TCP Auto

In this Mode, serial device server can act as server or client. Before setting this Mode, please ensure related parameters are correct when you turn on the server mode, client mode is automatically disconnected.

As shown in Figure 14 below for the open road third number of sessions, the working mode is TCPAuto, the local port 30003, to IP 192.168.3.30, the destination port 40003, immediately connected, connection keep-alive time 3000, close the RealCom function.

(Figure 14)

5 Serial port setting

Some items related with serial settings： [Serial Mode]、[Baud Rate]、[Parity]、[Data Bits]、[Stop bits]、[Max Data Packets Lenth] and [Character Delay], CtrlBreak Default Output Time.

COMM

Set or display serial working mode. 0 is half-duplex, 1 is full-duplex.

BR

Set, display serial baud rate 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bit/s；

DB

Set or display the length of the serial data bit. Use how many bits indicate data. If in 5bit, can transfer maximum decimal is 31, hexadecimal is 1F, if in 6 bit, can transfer maximum decimal is 63, hexadecimal is 3F, if in 7 bit, can transfer maximum decimal is 127, hexadecimal is 7F, if in 8 bit, can transfer maximum decimal is 255, hexadecimal is FF.

PT

Set, display parity: (0:none 1:even 2:odd 3:space 4:mark)

SB

Set or display stop bit (0-1bit, 2-2bit)

LEN

Set or display the information of serial data frame. The length of character string, range is 1~1024

DLY

Set or display the space of character. The length of character string, range is 1~500ms.

As shown in Figure 15, set the serial parameters: 115200 baud rate, data bits to 8 bits, no parity checking, 1 stop bit, data frame length 500bit, character spacing 20ms.


AT BR=115200
OK
AT DB=8
OK
AT PT=0
OK
AT SB=0
OK
AT LEN=500
OK
AT DLY=20
OK

(Figure 15)

6 User name and password

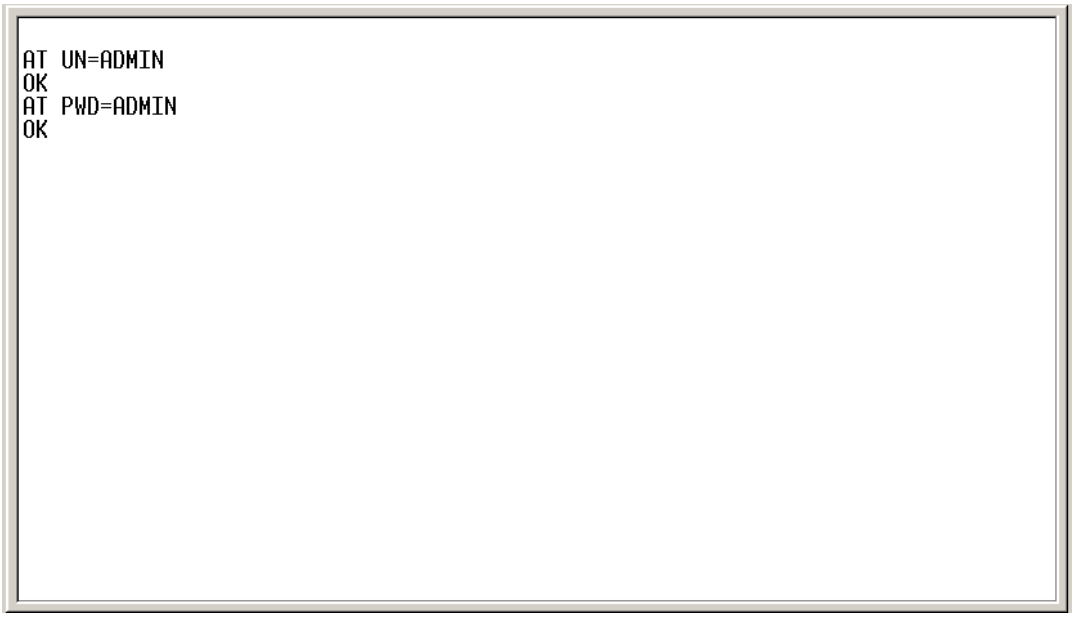
As shown in Figure 16 below, to set the serial port server username and password are ADMIN.

UN

Set user name. User name, it consist of 26 English letters and 10 Arabic numerals, it is case sensitive.

PWD

Set password. It consist of 26 English letters and 10 Arabic numerals, it is case sensitive.



(Figure 16)

Appendix A AT Command Table

Table 1

No.	AT command	Operation description	Parameters description	Function description
1	LOGIN	At +Space+login=“N”	N is consist of 26 English letters and 10 Arabic numerals and the length is less than 30, it is Case insensitive	User name and password is correct, can enter into AT command
2	QUIT	AT+Space+QUIT	Quit AT operation, if did not restart device, operation disable	Use to query the parameter
3	SES	AT+Space+SES=“N”	N means sessions, range:0-3, total 4 sessions, default is 0	Configure and display current session
		AT+Space+SES?	display current session	
4	ECHO	AT+Space+ECHO=“N”	N is 0, 1. N is 1, support Echo, it is 0, did not support echo	Set AT command echo or not
		AT+Space+ECHO?	display support echo or not	
5	DEF	AT+Space+DEF	No parameter	Default factory
6	RBT	AT+Space+RBT	No parameter	Device restart
7	SAVE	AT+Space+SAVE	No parameter	Save current parameter and write into flash or eeprom
8	VER	AT+Space+VER	No parameter	Display the version of software and hardware
9	TYPE	AT+Space+TYPE=“N”	N is characters include letters, digits, dash ('-') and underscore ('_') and no more than 30, it is Case insensitive	Set or display description information
		AT+Space+TYPE?	display description information	

10	NAME	AT+Space+NAME=“N”	N is characters include letters, digits, dash ('-') and underscore ('_') and no more than 30, it is Case insensitive	Set or display name information
		AT+Space+NAEM?	display name information	
11	MAC	AT+Space+MAC?	Display MAC address	Please did not modify MAC address
12	IPM	AT+Space+IPM= “N”	N is 0,1, 0 is dynamic IP, 1 is static IP	Set or display dynamic or static IP mode
		AT+Space+IPM?	display current IP mode	
13	IP	AT+Space+IP= “N”	N is a legal IP address, can set as octonary, decimal or hexadecimal, but display is decimal	Set or display IP address, save it as configure address. Effect or not, it is up to IP mode
		AT+Space+IP?	display current IP address	
14	MASK	AT+Space+MASK=“N”	N is a legal Mask address, can set as octonary, decimal or hexadecimal, but display is decimal	Set or display MASK address, save it as configure address. Effect or not, it is up to IP mode
		AT+Space+MASK?	display current MASK address	
15	GATE	AT+Space+GATE= “N”	N is a legal Mask address, can set as octonary, decimal or hexadecimal, but display is decimal	Set or display gateway address, save it as configure address. Effect or not, it is up to IP mode
		AT+Space+GATE?	display current gateway address	
16	DNSM	AT+Space+DNSM=“N”	N is 0, 1. 0 means DNS working mode is static, 1 means DNS working mode is dynamic	Set or display DNS address, save it as configure address. Effect or not, it is up to IP mode
		AT+Space+DNSM?	display current DNS working mode	

17	DNSA	AT+Space+DNSA=“N”	N is a legal DNS address, can set as octonary, decimal or hexadecimal, but display is decimal	Set or display DNS address, save it as configure address. Effect or not, it is up to IP mode
		AT+Space+DNSA?	display current DNS address	
18	SYSWM	AT+Space+DNSA=“N”	N is 0, 1. 0 is in low consumption, 1 is in high consumption	Set or display system working mode
		AT+Space+DNSA?	display system working mode	
19	SESE	AT+Space+SESE=“N”	N is 0,1,. 0 means session enable valid, 1 means session enable invalid	Set or display session, can just set the session when session enable
		AT+Space+SESE?	display the status of session enable	
20	WM	AT+Space+WM=“N”	N is 0,1,2,3. 0 is UTP mode, 1is Tcp Server mode, 2 is Tcp Client mod, 3Tcp Auto mode	The setting is available in Real COM, SOCKET. Pair Connection
		AT+Space+WM?	display current working mode	
21	SESS	AT+Space+SESS?	display is 0, disconnect, 1, connect	display the information after session connection
22	LP	AT+Space+LP=“N”	N is a integer in “1—65535”, include 1 and 65535	Set or display Destination port information
		AT+Space+LP?	display Destination port information	
23	DAF	AT+Space+DAF=“N”	N is 0,1. 0 means current is IP address, 1 means current is domain name address	Set or display the current IP address format of current session
		AT+Space+DAF?	display current the format of destination address (IP address, domain name address	

24	DIP	AT+Space+DIP=“N”	DAF=0, can set DIP value, N is a legal IP address	Set or display the current IP address of current session
		AT+Space+DIP?	Display destination IP address, display current IP address N is a legal Mask address, can set as octonary, decimal or hexadecimal, but display is decimal	
25	DDN	AT+Space+DDN=“N”	DAF=1, can set DDN value, N is a legal domain name address, include letters, digits, dash ('-') and underscore ('_') and no more than 30, it is Case insensitive	Set or display the current domain name address of current session
		AT+Space+DDN?	Display current domain name address	
26	DP	AT+Space+DP=“N”	N is a integer in “1—65535”, include 1 and 65535	Set or display the information of destination port number
		AT+Space+DP?	Display port number information	
27	CM	AT+Space+CM=“N”	N is 0,1. 0 means connect immediately(power on, connect), 1 means “trigger mode”(It is available once working mode in TCP client or PPPOE mode, if 0, keep connection)	Set or display the information of the connection mode
		AT+Space+CM?	Display session’s connection mode(Trigger or connect immediately)	
28	KAT	AT+Space+KAT=“N”	N is a integer in “1—65535”, include 1 and 65535	Set or display the time of keep-live
		AT+Space+KAT?	Display keep-live time	

29	COMM	AT+Space+COMM=“N”	N is 0,1. 0 is half-duplex, 1 is full-duplex	Set or display serial working mode
		AT+Space+COMM?	Display serial working mode(half or full duplex)	
30	RCE	AT+Space+RCE=“N”	N is 0,1,0 means RealCom close, 1 means RealCom open	Set, display RealCom working mode
		AT+Space+RCE?	display RealCom information	
31	BR	AT+BR?	display baud rate	Set, display serial baud rate
		AT+BR=N	Set baud rat, N is 300,600,1200,2400, 4800,9600,.19200,38400, 57600,115200	
32	DB	AT+Space+DB=“N”	N is 5,6,7,8. Use how many bits indicate data. If in 5bit, can transfer maximum decimal is 31, hexadecimal is 1F, if in 6 bit, can transfer maximum decimal is 63, hexadecimal is 3F, if in 7 bit, can transfer maximum decimal is 127, hexadecimal is 7F, if in 8 bit, can transfer maximum decimal is 255, hexadecimal is FF	Set or display the length of the serial data bit
		AT+Space+DB?	Display serial data bit	
33	PT	AT+Space+PT=“N”	N is 0,1,2,3. 0:none 1:even 2:odd 3:space 4:mark	Set, display parity: (0:none 1:even 2:odd 3:space 4:mark)
		AT+Space+PT?	Display parity	
34	SB	AT+Space+SB=“N”	N is 0, 2. 0-1bit 2-2bit	Set or display stop bit (0-1bit, 2-2bit)
		AT+Space+SB?	Display stop bit	

35	LEN	AT+Space+LEN=“N”	N is the length of character string, range is 1~1460 include 1, 1460	Set or display the information of serial data frame
		AT+Space+LEN?	Display the length of serial data frame	
36	DLY	AT+Space+DLY=“N”	N is the length of character string, range is 1~500 include 1, 500	Set or display the space of character
		AT+Space+DLY?	Display the space of character	
37	UN	AT+Space+UN=“N”	N is user name, it consist of 26 English letters and 10 Arabic numerals, it is Case sensitive	Set user name
38	PWD	AT+Space+PWD=“N”	N is password, it consist of 26 English letters and 10 Arabic numerals, it is Case sensitive	Set password
39	AIMC	AT+Space+AIMC=“N”	N is 0,1. 0 means CtrlBreak un-active, 1 mean CtrlBreak active. Just N is 1, press “Ctrl+Break”, can enter into hyper terminal	Set or display the information of CtrlBreak
		AT+Space+AIMC?	Display the status of CtrlBreak	
40	AIMS	AT+Space+AIMS= “0/1+Space+xx-xx-xx”	Xx value is 01-1F, if format is “0+Space+xx-xx-xx” and just require to close this function, format can simple to”0+Space+0” , if want to zero clear, can set all xx to 0(must be 0), if format is”1+Space+xx-xx-xx”, means to open the trigger mode of character string, and set the character string.	Set or display the trigger mode of character string
		AT+Space+AIMS?	Display the information of character string	

41	CRB	AT+Space+CRB=“N”	N is CtrlBreak default output time, range is 0-60000	Set or display CtrlBreak default output time
		AT+Space+CRB?	Display CtrlBreak default output time	
42	OTM	AT+Space+OTM =“N”	The N value is 0,1, the value is 0, the advanced mode is not enabled, and the value is 1 for the advanced trigger	Set up and display advanced mode trigger status information
		AT+ Space + OTM?	Read advanced mode trigger state	
43	ADWM	AT+Space+ADWM =“N”	The N value is 0,1, the value is 0 for UDP mode, and the value is 1 for server TCP	Set up and display advanced mode status information
		AT+Space+ADWM?	Read advanced mode trigger state	
44	TNUM	AT+Space+TNUM =“N”	The N value is 0, 1, 2, 3, 4, and the number of sessions of the session under TCP Server is 0 - 4.	Set up, display advanced mode Server TCP information
		AT+Space+TNUM?	Session number of TCP Server under the advanced mode state	
45	TLP	AT+Space+TLP =“N”	Set the local port values for the advanced mode state TCP Server	Set up, display advanced mode Server TCP information
		AT+Space+TLP?	The local port values for the TCP Server are read from the advanced mode state	
46	TKAT	AT+ Space + TKAT =“N”	N for the "1 - 65535" integer between 1 and 65535	Set up, display advanced mode Server TCP information
		AT+ Space+ TKAT?	The timeout value of the timeout for the TCP Server is read from the advanced mode state	

47	TRCE	AT+ Space + TRCE = “N”	The N value is 0, 1, the value is 0 indicates the RealCom is off, the value is 1 indicates the RealCom is open.	Set up, display advanced mode Server TCP information
		AT+Space+ TRCE?	RealCom function of TCP Server under advanced mode state	
48	THBT	AT+ Space + THBT = “N”	N for the "1 - 65535" integer between 1 and 65535	Set up, display advanced mode Server TCP information
		AT+Space+ THBT?	Read the heartbeat time under the advanced mode state TCP Server	
49	UNUM	AT+Space + UNUM = “N”	The N value is 0, 1, 2, 3, 4, and the number of sessions of the session under UDP is 0 to 4.	Set up, display advanced mode Server UDP information
		AT+Space+UNUM?	The number of sessions under the advanced mode state UDP	
50	ULPx	AT+ Space + ULPx= “N”	X is 0, 1, 2, 3 N is the integer between 1 - 65535, including 1 and 65535, and the default is 30000+x, and the local port value is set for the advanced mode state UDP	Set up, display advanced mode Server UDP information
		AT+ Space + ULPx?	X is 0, 1, 2, 3 Read the local port values for the advanced mode state UDP	
51	UDAFx	AT+Space+UDAFx = “N”	X is 0，1，2，3 N value is 0,1, Value 0 indicates IP, Value 1 means domain name	Set up, display advanced mode Server UDP information
		AT+Space+UDAFx?	X was 0, 1, 3, 2 Read the advanced mode under UDP, IP format.	

52	UDIPSx	AT+Space+UDIPSx =str	X was 0, 1, 2, 3 STR: the point divided into 10 numbers, IP address settings need to pay attention to multicast address, Broadcast address and reserved IP address cannot be set Default 192.168.1.254 is IP Sets the starting address for the destination address	Set up, display advanced mode Server UDP information
		AT+Space+UDIPSx?	X was 0, 1, 2, 3 Display the starting address for the destination address for the IP format	
53	UDIPEx	AT+Space+UDIPEx=str	X was 0, 1, 2, 3 STR: the point divided into 10 numbers, IP address settings need to pay attention to multicast address, Broadcast address and reserved IP address cannot be set Default 192.168.1.254 is IP Sets the end address of the destination address	Set up, display advanced mode Server UDP information
		AT+Space+UDIPEx?	X was 0, 1, 2, 3 Display end address of destination address for IP format	
54	UDDNx	AT+ Space+UDDNx =str	X was 0, 1, 2, 3 Set up the corresponding domain address	Set up, display advanced mode Server UDP information
		AT+Space+UDDNx?	X was 0, 1, 2, 3 Get IP for domain name address	

55	UDEPx	AT+Space + UDEPx = “N”	X was 0, 1, 2, 3 N for the "1 - 65535" integer between 1 and 65535, the default is 31000+x Sets the value of the destination port	Set up, display advanced mode Server UDP information
		AT+Space+UDEPx?	X was 0, 1, 2, 3 Gets the corresponding destination port values	
56	URCEx	AT+Space+URCEx = “N”	X was 0, 1, 2, 3 The N value is 0, 1, the value is 0 indicates the RealCom is off, the value is 1 indicates that RealCom is open, and the corresponding RealCom function is set.	Set up, display advanced mode Server UDP information
		AT+Space+UDEPx?	X was 0, 1, 2, 3 Gets the corresponding destination port values	
57	URCEx	AT+Space+ URCEx = “N”	X was 0, 1, 2, 3 The N value is 0,1, the value is 0 indicates the RealCom is off, the value is 1 indicates that RealCom is open, and the corresponding RealCom function is set.	Set up, display advanced mode Server UDP information
		AT+Space+URCEx?	X was 0, 1, 2, 3 Get the corresponding RealCom function state	

Table 2

Type	Condition	Return Value
Incorrect information	No Login	No Login! ERROR
	Command was not “AT’ ahead	Not Supported! ERROR
	“AT+LOGIN” Login, password incorrect	ERROR
	Command non-existent	Not Supported! ERROR
	When configure parameters, if parameter type is incorrect(need number, but input letter) or input parameter was out of range (Input value less than 256, but input more than 256)	ERROR
	Input parameters quantity less than in need parameters	ERROR
	Configure the display-only parameters	Not Supported! ERROR
Correct information	Query command, display the current value	display the correct parameter, OK
	Parameters configure successful	OK