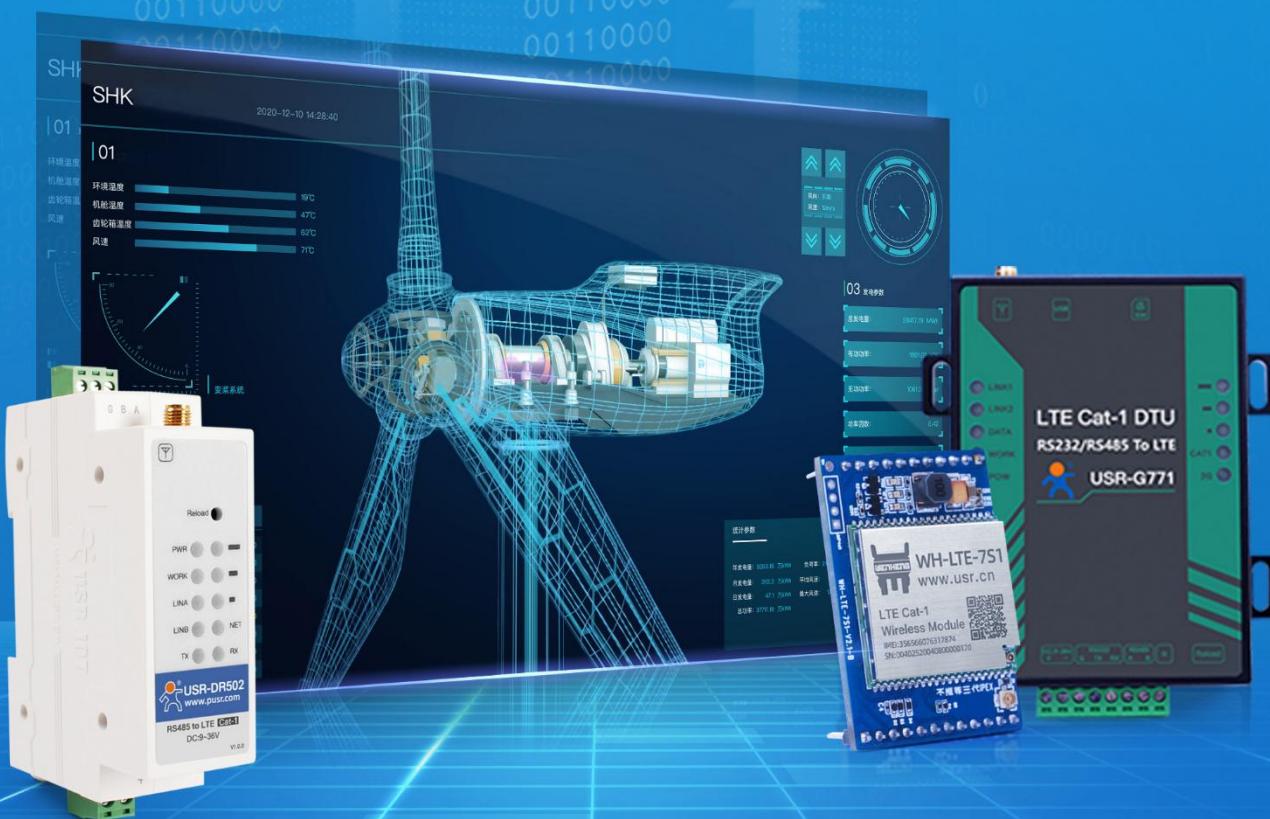


4G CAT1 AT Command Manual

Version: V1.0.0



Features:

- Uplink peak rate 5Mbps,downlink peak rate 10Mbps,medium-low speed,meets most of data transmission scenarios
- Basing on 4G LTE network, high coverage,low latency, millisecond level experience
- DIP form factor,easy to fit and substitute
- Support multi-mode,LTE CAT1 and fallback to GPRS
- High reliability and stability
- Two-way data transparent transmission between serial and network,easy to use
- 20 packages caches each socket,4K byte each package;
- Support network,serial,SMS AT commands, facilitates configuration
- Support FTP and FOTA upgrading
- Support Base station location, NTP update time online
- Modbus RTU/Modbus TCP protocol conversion for industrial SCADA systems and field devices(Coming soon)
- Supports login security certification of configuration

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1. Introduction

This document provides a detailed specification and a comprehensive listing as a reference for the whole set of AT commands for the CAT 1 Series cellular modem. This document applies to DR502,G771,7S1 models.

2. Overview

After the module starts and prints the boot message, the module will be able to receive and process AT instructions if the module is in AT command mode or CMD mode.

The AT or at prefix must be set at the beginning of each command line. Entering <CR> will terminate a command line. Commands are usually followed by a response that includes <CR><LF><response><CR><LF>. Throughout this document, only the responses are presented, <CR><LF> are omitted intentionally.

Note: The characters in the commands are all uppercase.

Table 1 Definitions

Strings	Meaning
<>	Name enclosed in angle brackets is a syntactical element, they must be included. Angle brackets do not appear on command line.
[]	Optional parameter of a command or an optional part of AT information response. Square brackets do not appear on command line.
{}	The contents in the parentheses are strings with special meaning
CMD	Command code
OP	Operator
PARA	Parameters
CR	Carriage return character,0x0D in hexadecimal
LF	Linefeed character,0x0A in hexadecimal

2.1. AT Command Syntax

Basic syntax:<AT+><CMD>[OP][PARA]<CR>

Table 2 Definitions

Characters	Definition	Required
AT+	AT command header	Yes
CMD	Command code	Yes
OP	Operator e.g. =,?,=?	No
PARA	Parameters	No
CR	Carriage return character,command line terminator character	Yes

Types of AT Commands

Table 3 Syntax

	Syntax	Description
0	<AT+><CMD>?<CR>	Inquires the currently value of the parameter or parameters.
1	<AT+><CMD><CR>	Executes the action of the command code or queries the current parameter value
2	<AT+><CMD>=?<CR>	Queries for the range or type of the parameter in the instruction
3	<AT+><CMD>=<PARA><CR>	Sets the parameters for this instruction

2.2. AT Command Responses

Note: The response to the command is divided into two types: with echo and without echo. The meaning of echo is that when sending a command, the module will return the command first, and then respond to the command. No echo means that the module will not return the command, but only respond to the command. In the following description, the no-echo mode is taken as an example.

Basic syntax: [CR][LF][+CMD][OP][PARA][CR][LF]<CR><LF>[OK]<CR><LF>

Table 4 Definitions

Characters	Definition	Required
CR	Carriage return character	Yes
LF	Linefeed character	Yes
+CMD	AT command header	No
OP	Operator e.g. ‘:’	No
PARA	Parameters	No
CR	Carriage return character	No
LF	Linefeed character	No
CR	Carriage return character	Yes
LF	Linefeed character	Yes
OK	Success	No
CR	Carriage return character	Yes
LF	Linefeed character	Yes

3. AT command set

Table 5 AT command

No.	Instruction	Description
General commands		
1	AT	Test

2	AT+Z	Restart the module
3	AT+S	Save the configuration and restart
4	AT+CLEAR	Reset all AT command settings to factory settings
5	AT+E	Query/set echo mode
6	AT+ENTM	Exit AT command mode
7	AT+WKMOD	Query/set working mode
8	AT+CMDPW	Query/set the command password
9	AT+STMSG	Query/set startup message
10	AT+RSTIM	Query/set the no-data restart time
11	AT+SDPEN	Query/Set the socket distribution protocol status
12	AT+NATEN	Query/set the network AT command status
13	AT+UATEN	Query/set the serial AT command status
14	AT+CACHEN	Query/set serial data cache status
15	AT+CSQ	Query Signal quality
16	AT+SYSINFO	Query Network Registration Status

Information Inquiry

1	AT+VER	Request firmware version
2	AT+BUILD	Request firmware building time
3	AT+SN	Request SN code
4	AT+IMEI	Request international mobile equipment identity
5	AT+ICCID	Show ICCID
6	AT+CIP	Query local IP
7	AT+CNUM	Query SIM card number
8	AT+LBS	Query cell base station information
9	AT+LBSN	Query the base station information of the neighboring cell
10	AT+CCLK	Query time

Security command

1	AT+SAFEATEN	Query/set the security mechanism mode
2	AT+SIGNINAT	Query/set the login password

Serial interface

1	AT+UART	Query/set serial port parameters
2	AT+UARTFL	Query/set the serial port packaging length
3	AT+UARTFT	Query/set the serial port packaging time

Network connection

1	AT+APN	Query/set APN information
2	AT+SOCKA	Query/set the socket A parameter
3	AT+SOCKB	Query/set the socket B parameter
4	AT+SOCKC	Query/set the socket C parameter
5	AT+SOCKD	Query/set the socket D parameter
6	AT+SOCKAEN	Query/set socket A status
7	AT+SOCKBEN	Query/set socket B status
8	AT+SOCKCEN	Query/set socket C status
9	AT+SOCKDEN	Query/set socket D status
10	AT+SOCKALK	Query socket A connection status

11	AT+SOCKBLK	Query socket B connection status
12	AT+SOCKCLK	Query socket C connection status
13	AT+SOCKDLK	Query socket D connection status
14	AT+SOCKASL	Query/set Socket A connection mode
15	AT+KEEPALIVEA	Query/set socket A keepalive parameter
16	AT+KEEPALIVEB	Query/set socket B keepalive parameter
17	AT+KEEPALIVEC	Query/set socket C keepalive parameter
18	AT+KEEPALIVED	Query/set socket D keepalive parameter
19	AT+SHORTATM	Query/set Socket A short-lived connection timeout
20	AT+SOCKRSNUM	Query/set the maximum times of socket reconnections
21	AT+SOCKRSTIM	Query/set the socket reconnecting interval
Socket backup		
1	AT+SOCKABK	Query/set Socket A backup parameters
2	AT+SOCKBBK	Query/set Socket B backup parameters
3	AT+SOCKCBK	Query/set Socket C backup parameters
4	AT+SOCKDBK	Query/set Socket D backup parameters
5	AT+SOCKABKEN	Query/set Socket A backup status
6	AT+SOCKBBKEN	Query/set Socket B backup status
7	AT+SOCKCBKEN	Query/set Socket C backup status
8	AT+SOCKDBKEN	Query/set Socket D backup status
Registration packet		
1	AT+REGEN	Query/Set registration packet status
2	AT+REGTP	Query/set registration packet type
3	AT+REGDT	Query/set custom registration information
4	AT+REG SND	Query/set the sending method of registration packet
5	AT+CLOUD	Query/set PUSR cloud device ID and password
Heartbeat packet		
1	AT+HEARTEN	Query/set heartbeat packet status
2	AT+HEARTTP	Query/set the sending method of the heartbeat packet
3	AT+HEARTDT	Query/set heartbeat packet data
4	AT+HEARTTM	Query/set the heartbeat packet sending interval
5	AT+HEARTSORT	Query/set the heartbeat packet type
6	AT+HEART	Query/set heartbeat packet parameters
HTTPD client command		
1	AT+HTPTP	Query / Set HTTP request methods
2	AT+HTTPURL	Query/set URL
3	AT+HTTPHD	Query/set HTTP Header information
4	AT+HTTPSV	Query/set server parameters of HTTP request
5	AT+HTTPPK	Query/set filtering packet header status
6	AT+HTPTIM	Query/set the timeout of HTTP requests
SMS command		
1	AT+DSTNUM	Query/set the target phone number
2	AT+SMSFLT	Query/set SMS filtering status

SNTP command		
1	AT+NTPSVR	Query/set the NTP server address
2	AT+NTPEN	Query/Set NTP switch
3	AT+NTPTM	Query/set the NTP calibration period
GPS command		
1	AT+GPS	Set/query GPS enabled status
2	AT+GPSDT	Query GPS location information
3	AT+GPSOUT	Query/set the GPS heartbeat content

3.1. Response instruction syntax

Table 6 Description

Patterns	Instruction format	description
1	<CR><LF><OK><CR><LF>	success
2	<CR><LF><+CMD:><PARA><CR><LF><CR><OK><CR><LF>	Return current parameter

3.2. Error code

If an invalid command is entered,ERROR will be returned.

The command result codes "+CME ERROR: <err>" and "+CMS ERROR: <err>" indicate errors related to mobile equipment or network functionality.

Table 7 Error Code Overview

Error code	Description
3	Incorrect parameter type or missing parameter
50	Command execution failed
53	Wrong parameter or number of arguments
58	Invalid command or ill-formed command
73	No login or wrong login password

4. Detailed AT command

4.1. AT

	Description	Example
Function	Test	
Instruction	/	
Query	AT{CR}{LF} {CR}{LF}OK{CR}{LF}	AT OK
Setup	/	

Parameters	/	
------------	---	--

4.2. AT+Z

	Description	Example
Function	Restart the module	
Instruction	/	
Query	AT+Z{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+Z OK
Setup	/	
Parameters	/	

4.3. AT+S

	Description	Example
Function	Save the configuration and restart	
Instruction	/	
Query	AT+S{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+S OK
Setup	/	
Parameters	/	

4.4. AT+CLEAR

	Description	Example
Function	Reset all AT command settings to factory settings	
Instruction	/	
Query	AT+CLEAR{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CLEAR OK
Setup	/	
Parameters	/	

4.5. AT+E

	Description	Example
Function	Query/set echo status	

Instruction	AT+E=?{CR}{LF} {CR}{LF}+E:<ON,OFF>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+E=? +E:<ON,OFF> OK
Query	AT+E{CR}{LF} or AT+E?{CR}{LF} {CR}{LF}+E:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+E? +E:ON OK
Setup	AT+E=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+E=ON OK
Parameters		
sta	Status: ON: enable OFF: disable	Default:ON

4.6. AT+ENTM

	Description	Example
Function	Exit AT command mode	
Instruction	/	
Query	AT+ENTM{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+ENTM OK
Setup	/	
Parameters	/	

4.7. AT+WKMOD

	Description	Example
Function	Query/set working mode	
Instruction	AT+WKMOD=?{CR}{LF} {CR}{LF}+WKMOD:<mode>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+WKMOD=? +WKMOD:<CMD,NET,HTTPD, SMS> OK
Query	AT+WKMOD{CR} or AT+WKMOD?{CR} {CR}{LF}+WKMOD:<mode>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+WKMOD? +WKMOD:NET OK
Setup	AT+WKMOD=<mode>{CR} {CR}{LF}OK{CR}{LF}	AT+WKMOD=NET OK
Parameters		

mode	Work mode CMD: AT command mode NET: Network transmission mode HTTPD: HTTPD mode SMS: SMS transmission mode	Default:NET
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4.8. AT+CMDPW

	Description	Example
Function	Query/set the command password	
Instruction	AT+CMDPW=?{CR}{LF} {CR}{LF}+CMDPW:<password>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CMDPW=? +CMDPW:<1~10 bytes> OK
Query	AT+CMDPW{CR} or AT+CMDPW?{CR} {CR}{LF}+CMDPW:<password>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CMDPW? +CMDPW:usr.cn# OK
Setup	AT+CMDPW=<password>{CR} {CR}{LF}OK{CR}{LF}	AT+CMDPW=usr.cn# OK
Parameters		
password	The command password is 10 characters at most	Default:usr.cn#

4.9. AT+STMSG

	Description	Example
Function	Query/set startup message	
Instruction	AT+STMSG=?{CR}{LF} {CR}{LF}+STMSG:<message>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+STMSG=? +STMSG:<1~20 bytes> OK
Query	AT+STMSG{CR} or AT+STMSG?{CR} {CR}{LF}+STMSG:<message>{CR} {LF}{CR}{LF}OK{CR}{LF}	AT+STMSG? +STMSG: WH-LTE-7S1 OK
Setup	AT+STMSG=<message>{CR} {CR}{LF}OK{CR}{LF}	AT+STMSG= WH-LTE-7S1 OK
Parameters		
message	Boot information is up to 20 bytes	Default:WH-LTE-7S1

4.10. AT+RSTIM

	Description	Example
Function	Query/set the no-data restart time	
Instruction	AT+RSTIM=?{CR}{LF} {CR}{LF}+RSTIM:<0,60~65535(s)>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+RSTIM=? +RSTIM:<0,60~65535(s)> OK
Query	AT+RSTIM{CR} or AT+RSTIM?{CR} {CR}{LF}+RSTIM:<num>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+RSTIM? +RSTIM:1800 OK
Setup	AT+RSTIM=<num>{CR} {CR}{LF}OK{CR}{LF}	AT+RSTIM=1800 OK
Parameters		
num	Trigger restart time, range: <0,60~65535(s)>	Default:1800

Note: This function is turned off when the parameter is set to 0.

4.11. AT+SDPEN

	Description	Example
Function	Query/Set the socket distribution protocol status	
Instruction	AT+SDPEN=?{CR}{LF} {CR}{LF}+SDPEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SDPEN=? +SDPEN:<ON,OFF> OK
Query	AT+SDPEN{CR}{LF} or AT+SDPEN?{CR}{LF} {CR}{LF}+SDPEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SDPEN? +SDPEN:OFF OK
Setup	AT+SDPEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SDPEN=ON OK
Parameters		
sta	Status: ON: enable OFF: disable	Default:OFF

4.12. AT+NATEN

	Description	Example
Function	Query/set the network AT command status	
Instruction	AT+NATEN=?{CR}{LF} {CR}{LF}+NATEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NATEN=? +NATEN:<ON,OFF> OK
Query	AT+NATEN{CR}{LF} or AT+NATEN?{CR}{LF} {CR}{LF}+NATEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NATEN? +NATEN:OFF OK
Setup	AT+NATEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NATEN=ON OK
Parameters		
sta	Status: ON: enable OFF: disable	Default:ON

4.13. AT+UATEN

	Description	Example
Function	Query/set the serial AT command status	
Instruction	AT+UATEN=?{CR}{LF} {CR}{LF}+UATEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+UATEN=? +UATEN:<ON,OFF> OK
Query	AT+UATEN{CR}{LF} or AT+UATEN?{CR}{LF} {CR}{LF}+UATEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+UATEN? +UATEN:OFF OK
Setup	AT+UATEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+UATEN=ON OK
Parameters		
sta	Status: ON: enable OFF: disable	Default:ON

4.14. AT+CACHEN

	Description	Example
Function	Query/set serial data cache status	
Instruction	AT+CACHEN=?{CR}{LF} {CR}{LF}+CACHEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CACHEN=? +CACHEN:<ON,OFF> OK
Query	AT+CACHEN{CR}{LF} or AT+CACHEN?{CR}{LF} {CR}{LF}+CACHEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CACHEN? +CACHEN:OFF OK
Setup	AT+CACHEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CACHEN=ON OK
Parameters		
sta	Status: ON: enable OFF: disable	Default:ON

4.15. AT+CSQ

	Description	Example
Function	Query Signal quality	
Instruction	/	
Query	AT+CSQ{CR}{LF} {CR}{LF}+CSQ:<rssi>,<ber>{CR} {LF}{CR}{LF}OK{CR}{LF}	AT+CSQ +CSQ: 27,99 OK
Setup	/	
Parameters		
rssi	Signal quality: 0 : 113 dBm or less 1 : 111 dBm 2...30 : 109...53 dBm 31: 51 dBm or greater 99 : not known or not detectable	Bigger ,stronger
ber	Bit error rate	

Note: RSSI =CSQ *2-113

4.16. AT+SYSINFO

	Description	Example
Function	Query Network Registration Status	
Instruction	/	
Query	AT+SYSINFO{CR}{LF} AT+SYSINFO?{CR}{LF} {CR}{LF}+SYSINFO:{CR}{LF}<n>,<mode>{C R}{LF} {CR}{LF}OK{CR}{LF}	AT+SYSINFO? +SYSINFO:4,LTE OK
Setup	/	
Parameters		
n	Network mode number: 0: No service 2: GPRS/GSM 4: LTE	
mode	mode: No Network GSM/GPRS LTE	

4.17. AT+VER

	Description	Example
Function	Request firmware version	
Instruction	/	
Query	AT+VER{CR}{LF} or AT+VER?{CR}{LF} {CR}{LF}+VER:<version>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+VER? +VER:V1.1.01.000000.0000 OK
Setup	/	
Parameters		
version	firmware version	

4.18. AT+BUILD

	Description	Example
Function	Request firmware building time	
Instruction	/	

Query	AT+BUILD{CR}{LF} or AT+BUILD?{CR}{LF} {CR}{LF}+BUILD:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+BUILD? +BUILD:2020-3-16 18:22:25 OK
Setup	/	
Parameters		
time	Firmware compilation time	

4.19. AT+SN

	Description	Example
Function	Request SN code	
Instruction	/	
Query	AT+SN{CR}{LF} or AT+SN?{CR}{LF} {CR}{LF}+SN:<code>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SN? +SN: 00402420011300024522 OK
Setup	/	
Parameters		
code	SN code	

4.20. AT+IMEI

	Description	Example
Function	Request international mobile equipment identity	
Instruction	/	
Query	AT+IMEI{CR}{LF} or AT+IMEI?{CR}{LF} {CR}{LF}+IMEI:<code>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+IMEI? +IMEI:864333040712457 OK
Setup	/	
Parameters		
code	IMEI code	

4.21. AT+ICCID

	Description	Example
Function	Show ICCID	
Instruction	/	
Query	AT+ICCID{CR}{LF} or AT+ICCID?{CR}{LF}	AT+ICCID?

	{CR}{LF}+ICCID:<code>{CR}{LF} {CR}{LF}OK{CR}{LF}	+ICCID:8986003615195A57131 4 OK
Setup	/	
Parameters		
code	ICCID code	

4.22. AT+CIP

	Description	Example
Function	Query local IP	
Instruction	/	
Query	AT+CIP{CR}{LF} or AT+CIP?{CR}{LF} {CR}{LF}+CIP: <IP>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CIP? +CIP:10.1.167.22 OK
Setup	/	
Parameters		
IP	IP address	

4.23. AT+CNUM

	Description	Example
Function	Query SIM card number	
Instruction	/	
Query	AT+CNUM{CR}{LF} or AT+CNUM?{CR}{LF} {CR}{LF}+CNUM:<number>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CNUM? +CNUM: "", "15112341234", 129 OK
Setup	/	
Parameters		
number	Sim card number	

Note: Not all cards can find the phone number. The card dealer must write the number into the SIM card when issuing the card, otherwise the phone number cannot be found.

4.24. AT+LBS

	Description	Example
Function	Query cell base station information	
Instruction	/	
Query cell base	AT+LBS{CR}{LF} or AT+LBS?{CR}{LF}	AT+LBS?

station information	{CR}{LF}+LBS: LAC=<LAC/TAC>,CID=<CID>{CR}{LF} {CR}{LF}OK{CR}{LF}	+LBS: LAC = 333e, CID = 3357906 OK
Query latitude and longitude, time information	AT+LBS=1{CR}{LF} {CR}{LF}+LBS: LNG=<LNG>,LAT=<LAT>,TIME=<TIME>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+LBS=1 +LBS: LNG = 114.43350220, LAT = 30.49159431, TIME = 2020-12-11 15:45:36 OK
Query latitude and longitude time geographic description information	AT+LBS=2{CR}{LF} {CR}{LF}+LBS: LNG=<LNG>,LAT=<LAT>,TIME=<TIME>,ADDI NFO=<ADDINFO>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+LBS=2 +LBS: LNG = 114.43350220, LAT = 30.49159431, TIME = 2020-12-11 15:45:39, ADDINFO: 426 Gaoxin Avenue, Wuhan OK
Setup	/	
Parameters		
LAC/TAC	Cell number, 2G is LAC, cat-1 is TAC	
CID	cell identity	
LNG	longitude	
LAT	latitude	
TIME	time	
ADDINFO	Geographic Information (UTF-8 format)	

4.25. AT+LBSN

	Description	Example
Function	Query the base station information of the neighboring cell	
Instruction	/	
Query	AT+LBSN{CR}{LF} or AT+LBSN?{CR}{LF} {CR}{LF}+LBSN:{CR}{LF} TAC1=<tac/lac>,CellID1=<cid>{CR}{LF} TAC2=<tac/lac>,CellID2=<cid>{CR}{LF} ... {CR}{LF}OK{CR}{LF}	AT+LBSN? +LBSN: TAC1 = 5a30, CellID1 = b2114b1 TAC2 = 5a30, CellID2 = 5d7e404 OK
Setup	/	
Parameters		
tac/lac	Cell number, 2G is LAC, cat-1 is TAC	Range: 1~65535
cid	cell identity	range: 2G: (1-65535)

3G/4G (1~268435455)

4.26. AT+CCLK

	Description	Example
Function	Query time	
Instruction	/	
Query	AT+CCLK{CR}{LF} or AT+CCLK?{CR}{LF} {CR}{LF}+CCLK: " date,time"{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CCLK? +CCLK: "20/06/19,20:05:19+32" OK
Setup	AT+CCLK=<date>,<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CCLK=20/12/01,10:47:46 +32 OK
Parameters		
date	date	
time	time	

4.27. AT+SAFEATEN

	Description	Example
Function	Query/set the security mechanism mode	
Instruction	AT+SAFEATEN=?{CR}{LF} {CR}{LF}+SAFEATEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SAFEATEN=? +SAFEATEN:<ON,OFF> OK
Query	AT+SAFEATEN{CR}{LF} or AT+SAFEATEN?{CR}{LF} {CR}{LF}+SAFEATEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SAFEATEN? +SAFEATEN:OFF OK
Setup	AT+SAFEATEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SAFEATEN=ON OK
Parameters		
sta	status: ON: enable OFF: disable	Default:OFF

4.28. AT+SIGNINAT

	Description	Example
Function	Query/set the login password	
Instruction	Login command before login Change the login password after login Only supports letters, numbers and underscores	
Query	/	
Setup	AT+SIGNINAT=<password>{CR} {CR}{LF}OK{CR}{LF}	AT+SIGNINAT=usr_cn OK
Parameters		
password	Login password up to 10 bytes	Default:usr_cn

4.29. AT+UART

	Description	Example
Function	Query/set serial port parameters	
Instruction	AT+UART=?{CR}{LF} {CR}{LF}+UART: <baud>,<data>,<stop>,<parity>,<flow>{CR}{L F}{CR}{LF}OK{CR}{LF}	AT+UART=? +UART:<1200~921600>,<8>,<1 ,>,<NONE,ODD,EVEN>,<NON E> OK
Query	AT+UART{CR}{LF} or AT+UART?{CR}{LF} {CR}{LF}+UART:<baud>,<data>,<stop>,<pari ty>,<flow>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+UART? +UART:115200,8,1,NONE,N E OK
Setup	AT+UART=<baud>,<data>,<stop>,<parity>,<f low>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+UART=115200,8,1,NONE,N ONE OK
Parameters		
baud	Baud rate 1200~921600	Default:115200
data	Data bits 8: 8 digits	Default:8
stop	Stop bits 1: One stop bit 2: Two stop bits	Default:1
parity	NONE: no parity	Default:NONE

	ODD: Odd Parity Check EVEN: even parity check	
flow	Flow Control NONE: have no flow control	Default;NONE

4.30. AT+UARTFL

	Description	Example
Function	Query/set the serial port packaging length	
Instruction	AT+UARTFL=?{CR}{LF} {CR}{LF}+UARTFL:<5~4096>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+UARTFL=? +UARTFL:<5~4096> OK
Query	AT+UARTFL{CR} or AT+UARTFL?{CR} {CR}{LF}+UARTFL:<len>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+UARTFL? +UARTFL:1024 OK
Setup	AT+UARTFL=<len>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+UARTFL=1024 OK
Parameters		
len	Packaging length, range 5~4096	Default 1024

4.31. AT+UARTFT

	Description	Example
Function	Query/set the serial port packaging time	
Instruction	AT+UARTFT=?{CR}{LF} {CR}{LF}+UARTFT:<50~500(ms)>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+UARTFT=? +UARTFT:<10~500(ms)> OK
Query	AT+UARTFT{CR} or AT+UARTFT?{CR} {CR}{LF}+UARTFT:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+UARTFT? +UARTFT:50 OK
Setup	AT+UARTFT=<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+UARTFT=50 OK
Parameters		
time	Packaging time, range 10~500(ms)	Default 50ms

4.32. AT+APN

	Description	Example
Function	Query/set APN information	
Instruction	AT+APN=?{CR}{LF} {CR}{LF}+APN:<apn>,[username],[password] ,[auth] {CR}{LF} {CR}{LF}OK{CR}{LF}	AT+APN=? +APN:<APN>,[USERNAME],[P ASSWORD],[0,1,2] OK
Query	AT+APN{CR}{LF} or AT+APN?{CR}{LF} {CR}{LF}+APN:<apn>,[username],[password] ,[auth] {CR}{LF} {CR}{LF}OK{CR}{LF}	AT+APN? +APN:CMNET,,0 OK
Setup	AT+APN=<apn>,[username],[password],[auth]]{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+APN=CMNET,,0 OK
Parameters		
apn	APN, range:0~50 bytes	Default:CMNET
username	User name, can be empty, range: 0~50bytes	Default:null
password	Password, can be empty, up to 50 bytes	Default:null
auth	Authentication: 0,1,2	Default:0

4.33. AT+SOCKA

	Description	Example
Function	Query/set the socket A parameter	
Instruction	AT+SOCKA=?{CR}{LF} {CR}{LF}+SOCKA:<protocol>,<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKA=? +SOCKA:<TCP,UDP>,<1~100 bytes>,<1~65535> OK
Query	AT+SOCKA{CR} or AT+SOCKA?{CR} {CR}{LF}+SOCKA:<protocol>,<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKA? +SOCKA:TCP,test.usr.cn,2317 OK
Setup	AT+SOCKA=<protocol>,<address>,<port>{CR} {CR}{LF}OK{CR}{LF}	AT+SOCKA=TCP,test.usr.cn,23 17 OK
Parameters		
protocol	TCP: TCP protocol UDP: UDP protocol	Default:TCP
address	Target address, supported domain name, range: 1~100 bytes	Default:test.usr.cn

port	Target port, range 1 to 65535	Default:2317
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4.34. AT+SOCKB

	Description	Example
Function	Query/set the socket B parameter	
Instruction	AT+SOCKB=?{CR}{LF} {CR}{LF}+SOCKB:<protocol>,<address>,<port>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+SOCKB=? +SOCKB:<TCP,UDP>,<1~100 bytes>,<1~65535> OK
Query	AT+SOCKB{CR} or AT+SOCKB?{CR} {CR}{LF}+SOCKB:<protocol>,<address>,<port>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+SOCKB? +SOCKB:TCP,test.usr.cn,2317 OK
Setup	AT+SOCKB=<protocol>,<address>,<port>{CR}{LF}OK{CR}{LF}	AT+SOCKB=TCP,test.usr.cn,2317 OK
Parameters		
protocol	Target address, supported domain name, range: 1~100 bytes	Default:test.usr.cn
address	Target port, range 1 to 65535	Default:2317
port	Target address, supported domain name, range: 1~100 bytes	Default:test.usr.cn

4.35. AT+SOCKC

	Description	Example
Function	Query/set the socket C parameter	
Instruction	AT+SOCKC=?{CR}{LF} {CR}{LF}+SOCKC:<protocol>,<address>,<port>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+SOCKC=? +SOCKC:<TCP,UDP>,<1~100 bytes>,<1~65535> OK
Query	AT+SOCKC{CR} or AT+SOCKC?{CR} {CR}{LF}+SOCKC:<protocol>,<address>,<port>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+SOCKC? +SOCKC:TCP,test.usr.cn,2317 OK
Setup	AT+SOCKC=<protocol>,<address>,<port>{CR}{LF}OK{CR}{LF}	AT+SOCKC=TCP,test.usr.cn,2317

		OK
Parameters		
protocol	Target address, supported domain name, range: 1~100 bytes	Default:test.usr.cn
address	Target port, range 1 to 65535	Default:2317
port	Target address, supported domain name, range: 1~100 bytes	Default:test.usr.cn

4.36. AT+SOCKD

	Description	Example
Function	Query/set the socket D parameter	
Instruction	AT+SOCKD=?{CR}{LF} {CR}{LF}+SOCKD:<protocol>,<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKD=? +SOCKD:<TCP,UDP>,<1~100 bytes>,<1~65535> OK
Query	AT+SOCKD{CR} or AT+SOCKD?{CR} {CR}{LF}+SOCKD:<protocol>,<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKD? +SOCKD:TCP,test.usr.cn,2317 OK
Setup	AT+SOCKD=<protocol>,<address>,<port>{CR} {CR}{LF}OK{CR}{LF}	AT+SOCKD=TCP,test.usr.cn,2317 OK
Parameters		
protocol	Target address, supported domain name, range: 1~100 bytes	Default:test.usr.cn
address	Target port, range 1 to 65535	Default:2317
port	Target address, supported domain name, range: 1~100 bytes	Default:test.usr.cn

4.37. AT+SOCKAEN

	Description	Example
Function	Query/set socket A status	
Instruction	AT+SOCKAEN=?{CR}{LF} {CR}{LF}+SOCKAEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKAEN=? +SOCKAEN:<ON,OFF> OK

Query	AT+SOCKAEN{CR} or AT+SOCKAEN?{CR} {CR}{LF}+SOCKAEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKAEN? +SOCKAEN:ON OK
Setup	AT+SOCKAEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKAEN=ON OK
Parameters		
sta	Socket A status ON: enable OFF: disable	Default:ON

4.38. AT+SOCKBEN

	Description	Example
Function	Query/set socket B status	
Instruction	AT+SOCKBEN=?{CR}{LF} {CR}{LF}+SOCKBEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBEN=? +SOCKBEN:<ON,OFF> OK
Query	AT+SOCKBEN{CR} or AT+SOCKBEN?{CR} {CR}{LF}+SOCKBEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBEN? +SOCKBEN:OFF OK
Setup	AT+SOCKBEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBEN=OFF OK
Parameters		
sta	Socket B status ON: enable OFF: disable	Default:OFF

4.39. AT+SOCKCEN

	Description	Example
Function	Query/set socket C status	
Instruction	AT+SOCKCEN=?{CR}{LF} {CR}{LF}+SOCKCEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKCEN=? +SOCKCEN:<ON,OFF> OK
Query	AT+SOCKCEN{CR} or AT+SOCKCEN?{CR}	AT+SOCKCEN?

	{CR}{LF}+SOCKCEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	+SOCKCEN:ON OK
Setup	AT+SOCKCEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKCEN=ON OK
Parameters		
sta	Socket C status ON: enable OFF: disable	Default:OFF

4.40. AT+SOCKDEN

	Description	Example
Function	Query/set socket D status	
Instruction	AT+SOCKDEN=?{CR}{LF} {CR}{LF}+SOCKDEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKDEN=? +SOCKDEN:<ON,OFF> OK
Query	AT+SOCKDEN{CR} or AT+SOCKDEN?{CR} {CR}{LF}+SOCKDEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKDEN? +SOCKDEN:OFF OK
Setup	AT+SOCKDEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKDEN=OFF OK
Parameters		
sta	Socket D status ON: enable OFF: disable	Default:OFF

4.41. AT+SOCKALK

	Description	Example
Function	Query socket A connection status	
Instruction	/	
Query	AT+SOCKALK{CR} or AT+SOCKALK?{CR} {CR}{LF}+SOCKALK:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKALK? +SOCKALK:Connected OK
Setup	/	
Parameters		

sta	Socket A connection status Connected: Network connected Disconnected: no connection	
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4.42. AT+SOCKBLK

	Description	Example
Function	Query socket B connection status	
Instruction	/	
Query	AT+SOCKBLK{CR} or AT+SOCKBLK?{CR} {CR}{LF}+SOCKBLK:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBLK? +SOCKBLK:Connected OK
Setup	/	
Parameters		
sta	Socket B connection status Connected: Network connected Disconnected: no connection	

4.43. AT+SOCKCLK

	Description	Example
Function	Query socket C connection status	
Instruction	/	
Query	AT+SOCKCLK{CR} or AT+SOCKCLK?{CR} {CR}{LF}+SOCKCLK:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKCLK? +SOCKCLK:Connected OK
Setup	/	
Parameters		
sta	Socket C connection status Connected: Network connected Disconnected: no connection	

4.44. AT+SOCKDLK

	Description	Example
Function	Query socket D connection status	
Instruction	/	
Query	AT+SOCKDLK{CR} or AT+SOCKDLK?{CR} {CR}{LF}+SOCKDLK:<sta>{CR}{LF}	AT+SOCKDLK? +SOCKDLK:Connected

	{CR}{LF}OK{CR}{LF}	OK
Setup	/	
Parameters		
sta	Socket D connection status Connected: Network connected Disconnected: no connection	

4.45. AT+SOCKASL

	Description	Example
Function	Query/set Socket A connection mode	
Instruction	AT+SOCKASL=?{CR}{LF} {CR}{LF}+SOCKASL:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKASL=? +SOCKASL:<LONG,SHORT> OK
Query	AT+SOCKASL{CR} or AT+SOCKASL?{CR} {CR}{LF}+SOCKASL:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKASL? +SOCKASL:LONG OK
Setup	AT+SOCKASL=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKASL=LONG OK
Parameters		
sta	Connection mode SHORT: short-lived connection LONG: persistent connection	Default:LONG

4.46. AT+KEEPALIVEA

	Description	Example
Function	Query / set the Keepalive parameters of Socket A	
Instruction	AT+KEEPALIVEA=?{CR}{LF} {CR}{LF}+KEEPALIVEA:<enable>,<idle>,<int erval>,<count>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+KEEPALIVEA=? +KEEPALIVEA:<0,1>,<1~6553 5>,<1~100>,<1~10> OK
Query	AT+KEEPALIVEA{CR}{LF} or AT+KEEPALIVEA?{CR}{LF} {CR}{LF}+KEEPALIVEA:<enable>,<idle>,<int erval>,<count>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+KEEPALIVEA? +KEEPALIVEA:1,60,15,3 OK

Setup	AT+KEEPALIVEA=<enable>,<idle>,<interval>,<count>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+KEEPALIVEA=1,60,15,3 OK
Parameters		
enable	Enable or not, scope: 0,1	Default:1
idle	Idle time before TCP send the initial keepalive probe ,range: 1~65535s	Default:60s
interval	Interval time between keepalive probe retransmission , range: 1~100s	Default:15s
count	Number of retries, range: 1~10	Default:3

4.47. AT+KEEPALIVEB

	Description	Example
Function	Query / set the Keepalive parameters of Socket B	
Instruction	AT+KEEPALIVEB=?{CR}{LF}{CR}{LF}+KEEPALIVEB:<enable>,<idle>,<interval>,<count>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+KEEPALIVEB=? +KEEPALIVEB:<0,1>,<1~65535>,<1~100>,<1~10> OK
Query	AT+KEEPALIVEB{CR}{LF} or AT+KEEPALIVEB?{CR}{LF}{CR}{LF}+KEEPALIVEB:<enable>,<idle>,<interval>,<count>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+KEEPALIVEB? +KEEPALIVEB:1,60,15,3 OK
Setup	AT+KEEPALIVEB=<enable>,<idle>,<interval>,<count>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+KEEPALIVEB=1,60,15,3 OK
Parameters		
enable	Enable or not, scope: 0,1	Default:1
idle	Idle time before TCP send the initial keepalive probe ,range: 1~65535s	Default:60s
interval	Interval time between keepalive probe retransmission , range: 1~100s	Default:15s
count	Number of retries, range: 1~10	Default:3

4.48. AT+KEEPALIVEC

	Description	Example
Function	Query / set the Keepalive parameters of Socket C	

Instruction	AT+KEEPALIVEC=?{CR}{LF} {CR}{LF}+KEEPALIVEC:<enable>,<idle>,<interval>,<count>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+KEEPALIVEC=? +KEEPALIVEC:<0,1>,<1~65535>,<1~100>,<1~10> OK
Query	AT+KEEPALIVEC{CR}{LF} or AT+KEEPALIVEC?{CR}{LF} {CR}{LF}+KEEPALIVEC:<enable>,<idle>,<interval>,<count>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+KEEPALIVEC? +KEEPALIVEC:1,60,15,3 OK
Setup	AT+KEEPALIVEC=<enable>,<idle>,<interval>,<count>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+KEEPALIVEC=1,60,15,3 OK
Parameters		
enable	Enable or not, scope: 0,1	Default:1
idle	Idle time before TCP send the initial keepalive probe ,range: 1~65535s	Default:60s
interval	Interval time between keepalive probe retransmission , range: 1~100s	Default:15s
count	Number of retries, range: 1~10	Default:3

4.49. AT+KEEPALIVED

	Description	Example
Function	Query / set the Keepalive parameters of Socket D	
Instruction	AT+KEEPALIVED=?{CR}{LF} {CR}{LF}+KEEPALIVED:<enable>,<idle>,<interval>,<count>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+KEEPALIVED=? +KEEPALIVED:<0,1>,<1~65535>,<1~100>,<1~10> OK
Query	AT+KEEPALIVED{CR}{LF} or AT+KEEPALIVED?{CR}{LF} {CR}{LF}+KEEPALIVED:<enable>,<idle>,<interval>,<count>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+KEEPALIVED? +KEEPALIVED:1,60,15,3 OK
Setup	AT+KEEPALIVED=<enable>,<idle>,<interval>,<count>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+KEEPALIVED=1,60,15,3 OK
Parameters		
enable	Enable or not, scope: 0,1	Default:1
idle	Idle time before TCP send the initial keepalive probe ,range: 1~65535s	Default:60s
interval	Interval time between keepalive probe	Default:15s

	retransmission , range: 1~100s	
count	Number of retries, range: 1~10	Default:3

4.50. AT+SHORTATM

	Description	Example
Function	Query/set Socket A short-lived connection timeout	
Instruction	AT+SHORTATM=?{CR}{LF} {CR}{LF}+SHORTATM:<1~600(s)>{CR}{LF}{CR}{LF}OK{CR}{LF}	AT+SHORTATM=? +SHORTATM:<1~600(s)> OK
Query	AT+SHORTATM{CR} AT+SHORTATM?{CR} {CR}{LF}+SHORTATM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SHORTATM? +SHORTATM:10 OK
Setup	AT+SHORTATM=<time>{CR} {CR}{LF}OK{CR}{LF}	AT+SHORTATM=10 OK
Parameters		
time	socket A short-lived connection timeout, range: 1~600s	Default:10s

4.51. AT+SOCKRSNUM

	Description	Example
Function	Query/set the maximum times of socket reconnections	
Instruction	AT+SOCKRSNUM=?{CR}{LF} {CR}{LF}+SOCKRSNUM:<num>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKRSNUM=? +SOCKRSNUM:<1~65535> OK
Query	AT+SOCKRSNUM{CR} AT+SOCKRSNUM?{CR} {CR}{LF}+SOCKRSNUM:<num>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKRSNUM? +SOCKRSNUM:60 OK
Setup	AT+SOCKRSNUM=<num>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKRSNUM=60 OK
Parameters		
num	Maximum times of socket reconnections, range 1~65535	Default:60

4.52. AT+SOCKRSTIM

	Description	Example
Function	Query/set the socket reconnecting interval	
Instruction	AT+SOCKRSTIM=?{CR}{LF} {CR}{LF}+SOCKRSTIM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKRSTIM=? +SOCKRSTIM:<10~65535(s)> OK
Query	AT+SOCKRSTIM{CR} or AT+SOCKRSTIM?{CR} {CR}{LF}+SOCKRSTIM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKRSTIM? +SOCKRSTIM:10 OK
Setup	AT+SOCKRSTIM=<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKRSTIM=60 OK
Parameters		
time	Socket reconnecting interval, range10~65535s	Default:10s

4.53. AT+SOCKABK

	Description	Example
Function	Query/set Socket A backup parameters	
Instruction	AT+SOCKABK=?{CR}{LF} {CR}{LF}+SOCKABK:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKABK=? +SOCKABK:<1~100 bytes>,<1~65535> OK
Query	AT+SOCKABK{CR} or AT+SOCKABK?{CR} {CR}{LF}+SOCKABK:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKABK? +SOCKABK:test.usr.cn,2317 OK
Setup	AT+SOCKABK=<address>,<port>{CR}{LF}OK{CR}{LF}	AT+SOCKABK=test.usr.cn,2317 OK
Parameters		
address	Target address, supported domain name, range: 1~100 bytes	Default: null
port	Target port, range 1~65535	Default:1

4.54. AT+SOCKBBK

	Description	Example
Function	Query/set Socket B backup parameters	
Instruction	AT+SOCKBBK=?{CR}{LF} {CR}{LF}+SOCKBBK:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBBK=? +SOCKBBK:<1~100 bytes>,<1~65535> OK
Query	AT+SOCKBBK{CR} or AT+SOCKBBK?{CR} {CR}{LF}+SOCKBBK:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBBK? +SOCKBBK:test.usr.cn,2317 OK
Setup	AT+SOCKBBK=<address>,<port>{CR}{LF}OK{CR}{LF}	AT+SOCKBBK=test.usr.cn,2317 OK
Parameters		
address	Target address, supported domain name, range: 1~100 bytes	Default: null
port	Target port, range 1~65535	Default:1

4.55. AT+SOCKCBK

	Description	Example
Function	Query/set Socket C backup parameters	
Instruction	AT+SOCKCBK=?{CR}{LF} {CR}{LF}+SOCKCBK:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKCBK=? +SOCKCBK:<1~100 bytes>,<1~65535> OK
Query	AT+SOCKCBK{CR} or AT+SOCKCBK?{CR} {CR}{LF}+SOCKCBK:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKCBK? +SOCKCBK:test.usr.cn,2317 OK
Setup	AT+SOCKCBK=<address>,<port>{CR}{LF}OK{CR}{LF}	AT+SOCKCBK=test.usr.cn,231 7 OK
Parameters		
address	Target address, supported domain name, range: 1~100 bytes	Default: null
port	Target port, range 1~65535	Default:1

4.56. AT+SOCKDBK

	Description	Example
Function	Query/set Socket D backup parameters	
Instruction	AT+SOCKDBK=?{CR}{LF} {CR}{LF}+SOCKDBK:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKDBK=? +SOCKDBK:<1~100 bytes>,<1~65535> OK
Query	AT+SOCKDBK{CR} or AT+SOCKDBK?{CR} {CR}{LF}+SOCKDBK:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKDBK? +SOCKDBK:test.usr.cn,2317 OK
Setup	AT+SOCKDBK=<address>,<port>{CR}{LF}OK{CR}{LF}	AT+SOCKDBK=test.usr.cn,2317 OK
Parameters		
address	Target address, supported domain name, range: 1~100 bytes	Default: null
port	Target port, range 1~65535	Default:1

4.57. AT+SOCKABKEN

	Description	Example
Function	Query/set Socket A backup status	
Instruction	AT+SOCKABKEN=?{CR}{LF} {CR}{LF}+SOCKABKEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKABKEN=? +SOCKABKEN:<ON,OFF> OK
Query	AT+SOCKABKEN{CR} or AT+SOCKABKEN?{CR} {CR}{LF}+SOCKABKEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKABKEN? +SOCKABKEN:ON OK
Setup	AT+SOCKABKEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKABKEN=ON OK
Parameters		
sta	Socket A backup status ON: enable OFF: disable	Default:OFF

4.58. AT+SOCKBBKEN

	Description	Example
Function	Query/set Socket B backup status	
Instruction	AT+SOCKBBKEN=?{CR}{LF} {CR}{LF}+SOCKBBKEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBBKEN=? +SOCKBBKEN:<ON,OFF> OK
Query	AT+SOCKBBKEN{CR} AT+SOCKBBKEN?{CR} {CR}{LF}+SOCKBBKEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBBKEN? +SOCKBBKEN:ON OK
Setup	AT+SOCKBBKEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKBBKEN=ON OK
Parameters		
sta	Socket B backup status ON: enable OFF: disable	Default:OFF

4.59. AT+SOCKCBKEN

	Description	Example
Function	Query/set Socket C backup status	
Instruction	AT+SOCKCBKEN=?{CR}{LF} {CR}{LF}+SOCKCBKEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKCBKEN=? +SOCKCBKEN:<ON,OFF> OK
Query	AT+SOCKCBKEN{CR} AT+SOCKCBKEN?{CR} {CR}{LF}+SOCKCBKEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKCBKEN? +SOCKCBKEN:ON OK
Setup	AT+SOCKCBKEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKCBKEN=ON OK
Parameters		
sta	Socket C backup status ON: enable OFF: disable	Default:OFF

4.60. AT+SOCKDBKEN

	Description	Example
Function	Query/set Socket D backup status	
Instruction	AT+SOCKDBKEN=?{CR}{LF} {CR}{LF}+SOCKDBKEN:<ON,OFF>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKDBKEN=? +SOCKDBKEN:<ON,OFF> OK
Query	AT+SOCKDBKEN{CR} AT+SOCKDBKEN?{CR} {CR}{LF}+SOCKDBKEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKDBKEN? +SOCKDBKEN:ON OK
Setup	AT+SOCKDBKEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SOCKDBKEN=ON OK
Parameters		
sta	Socket D backup status ON: enable OFF: disable	Default:OFF

4.61. AT+REGEN

	Description	Example
Function	Query/Set registration packet status	
Instruction	AT+REGEN=?{CR}{LF} {CR}{LF}+REGEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGEN=? +REGEN:<ON,OFF> OK
Query	AT+REGEN{CR} or AT+REGEN?{CR} {CR}{LF}+REGEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGEN? +REGEN:OFF OK
Setup	AT+REGEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGEN=OFF OK
Parameters		
sta	registration packet status ON: enable OFF: disable	Default:OFF

4.62. AT+REGTP

	Description	Example
Function	Query/set registration packet type	
Instruction	AT+REGTP=?{CR}{LF} {CR}{LF}+REGTP:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGTP=? +REGTP:<ICCID,IMEI,SN,USER,CLOUD> OK
Query	AT+REGTP{CR}{LF} AT+REGTP?{CR}{LF} {CR}{LF}+REGTP:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGTP? +REGTP:USER OK
Setup	AT+REGTP=<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGTP=USER OK
Parameters		
type	registration packet type ICCID: ICCID code IMEI: IMEI code SN: SN code USER: User-defined data CLOUD: PUSR™ cloud	Default:USER

4.63. AT+REGDT

	Description	Example
Function	Query/set custom registration information	
Instruction	AT+REGDT=?{CR}{LF} {CR}{LF}+REGDT:<data>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGDT=? +REGDT:<1~300 bytes> OK
Query	AT+REGDT{CR} or AT+REGDT?{CR} {CR}{LF}+REGDT:<data>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGDT? +REGDT:7777772E7573722E6 36E OK
Setup	AT+REGDT=<data>{CR} {CR}{LF}OK{CR}{LF}	AT+REGDT=7777772E757372 2E636E OK
Parameters		
data	Custom registered packet data, up to 300	Default:7777772E7573722E636

	bytes, HEX input	E in hex, www.usr.cn in ASCII
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4.64. AT+REGSND

	Description	Example
Function	Query/set the sending method of registration packet	
Instruction	AT+REGSND=?{CR}{LF} {CR}{LF}+REGSND:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGSND=? +REGSND:<LINK,DATA,LINK&DATA> OK
Query	AT+REGSND{CR} or AT+REGSND?{CR} {CR}{LF}+REGSND:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGSND? +REGSND:LINK OK
Setup	AT+REGDT=<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGSND=LINK OK
Parameters		
type	sending method of registration packet LINK: Send packet once building connection DATA: Send package as the prefix of every data LINK&DATA: Support both of above	Default:LINK

4.65. AT+CLOUD

	Description	Example
Function	Query/set PUSR cloud device ID and password	
Instruction	AT+CLOUD=?{CR}{LF} {CR}{LF}+CLOUD:<data>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+CLOUD=? +CLOUD:<20 bytes>,<8 bytes> OK
Query	AT+CLOUD{CR} or AT+CLOUD?{CR} {CR}{LF}+CLOUD:<id>,<password>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+REGDT? +CLOUD:, OK
Setup	AT+CLOUD=<id>,<password>{CR} {CR}{LF}OK{CR}{LF}	AT+CLOUD=123456789012345 67890,12345678

		OK
Parameters		
<id>	Device ID number, 20 bytes	
<password>	Device password, 8 bytes	

4.66. AT+HEARTEN

	Description	Example
Function	Query/set heartbeat packet status	
Instruction	AT+HEARTEN=?{CR}{LF} {CR}{LF}+HEARTEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTEN=? +HEARTEN:<ON,OFF> OK
Query	AT+HEARTEN{CR} or AT+HEARTEN?{CR} {CR}{LF}+HEARTEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTEN? +HEARTEN:ON OK
Setup	AT+HEARTEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTEN=ON OK
Parameters		
sta	heartbeat packet status ON: enable OFF: disable	Default:ON

4.67. AT+HEARTTP

	Description	Example
Function	Query/set the sending method of the heartbeat packet	
Instruction	AT+HEARTTP=?{CR}{LF} {CR}{LF}+HEARTTP:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTTP=? +HEARTTP:<COM,NET> OK
Query	AT+HEARTTP{CR} or AT+HEARTTP?{CR} {CR}{LF}+HEARTTP:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTTP? +HEARTTP:NET OK
Setup	AT+HEARTTP=<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTTP=NET OK

Parameters		
type	sending method of the heartbeat packet COM: Send data to network NET: Send data to serial port	Default:NET

4.68. AT+HEARTDT

	Description	Example
Function	Query/set heartbeat packet data	
Instruction	AT+HEARTDT=?{CR}{LF} {CR}{LF}+HEARTDT:<data>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTDT=? +HEARTDT:<1~300bytes> OK
Query	AT+HEARTDT{CR} or AT+HEARTDT?{CR} {CR}{LF}+HEARTDT:<data>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTDT? +HEARTDT:7777772E7573722 E636E OK
Setup	AT+HEARTDT=<data>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTDT=7777772E7573 722E636E OK
Parameters		
data	Custom heartbeat packet data, up to 300 bytes, HEX input	Default:7777772E7573722E636E in hex, www.usr.cn in ASCII

4.69. AT+HEARTTM

	Description	Example
Function	Query/set the heartbeat packet sending interval	
Instruction	AT+HEARTTM=?{CR}{LF} {CR}{LF}+HEARTTM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTTM=? +HEARTTM:<1~65535(s)> OK
Query	AT+HEARTTM{CR} or AT+HEARTTM?{CR} {CR}{LF}+HEARTTM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTTM +HEARTTM:30 OK
Setup	AT+HEARTTM=<time>{CR} {CR}{LF}OK{CR}{LF}	AT+HEARTTM=30 OK

Parameters		
time	Heartbeat packet interval time, range : 1~65535s	Default: 30s

Note: when setting the heartbeat packet data type to LBS, if the heartbeat packet sending interval is set to be less than 5 seconds, it should be sent in 5 seconds

4.70. AT+HEARTSORT

	Description	Example
Function	Query/set the heartbeat packet type	
Instruction	AT+HEARTSORT=?{CR}{LF} {CR}{LF}+HEARTSORT:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTSORT=? +HEARTSORT:<ICCID,IMEI,SN ,USER,LBS> OK
Query	AT+HEARTSORT{CR}{LF} or AT+HEARTSORT?{CR}{LF} {CR}{LF}+HEARTSORT:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTSORT? +HEARTSORT:USER OK
Setup	AT+HEARTSORT=<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEARTSORT=USER OK
Parameters		
type	heartbeat packet type ICCID: ICCID code IMEI: IMEI code SN: SN code USER: User-defined data LBS: geographical location information	Default:USER

4.71. AT+HEART

	Description	Example
Function	Query/set heartbeat packet parameters	
Instruction	AT+HEART=?{CR}{LF} {CR}{LF}+HEART:<hearten>,[hearttp],[heartsort],[hearttm],[heartdt]{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HEART=? +HEART:<ON,OFF>,<NET/COM>,<ICCID/IMEI/SN/LBS/USER>,<time>,[USER_DATA] OK
Query	AT+HEART{CR} or AT+HEART?{CR} {CR}{LF}+HEART:<hearten>,<hearttp>,<hea	AT+HEART +HEART:ON,NET,USER,30,777

	rtsort>,<hearttm>,<heartsdt>{CR}{LF} {CR}{LF}OK{CR}{LF}	7772E7573722E636E OK
Setup	AT+HEART=<hearten>,[hearttp,[heartsdt,[hearttm,[heartsdt]{CR}{LF}OK{CR}{LF}	AT+HEART=ON,NET,USER,30, 7777772E7573722E636E OK
Parameters		
hearten	heartbeat packet status: <ON,OFF>	Default:ON
hearttp	sending method of the heartbeat packet: <COM,NET>	Default: NET
heartsdt	heartbeat packet type: <ICCID,IMEI,SN,LBS,USER>	Default: USER
hearttm	heartbeat packet sending interval: 1~65535s	Default: 30s
heartsdt	heartbeat packet data: <1~300bytes>	Default:7777772E7573722E636E E in hex, www.usr.cn in ASCII

4.72. AT+HTPTP

	Description	Example
Function	Query / Set HTTP request methods	
Instruction	AT+HTPTP=?{CR}{LF} {CR}{LF}+HTPTP:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPTP=? +HTPTP:<GET,POST> OK
Query	AT+HTPTP{CR} or AT+HTPTP?{CR} {CR}{LF}+HTPTP:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPTP? +HTPTP:GET OK
Setup	AT+HTPTP=<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPTP=GET OK
Parameters		
type	HTTP request methods GET: get POST: post	Default:GET

4.73. AT+HTPURL

	Description	Example
Function	Query/set URL	
Instruction	AT+HTPURL=?{CR}{LF} {CR}{LF}+HTPURL:<url>{CR}{LF}	AT+HTPURL=? +HTPURL:<1~100 bytes>

	{CR}{LF}OK{CR}{LF}	OK
Query	AT+HTPURL{CR} or AT+HTPURL?{CR} {CR}{LF}+HTPURL:<url>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPURL? +HTPURL:/1.php? OK
Setup	AT+HTPURL=<url>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPURL=/1.php? OK
Parameters		
url	HTTP URL,length: <1~100bytes>	Default:/1.php?

4.74. AT+HTPHD

	Description	Example
Function	Query/set HTTP Header information	
Instruction	AT+HTPHD=?{CR}{LF} {CR}{LF}+HTPHD:<head>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPHD=? +HTPHD:<1~200 bytes> OK
Query	AT+HTPHD{CR} or AT+HTPHD?{CR} {CR}{LF}+HTPHD:<head>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPHD? +HTPHD:Accept:text/html[0D][0A] OK
Setup	AT+HTPHD=<head>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPHD=Accept:text/html[0D][0A] OK
Parameters		
head	HTTP Header information , length : <1~200 bytes>	Default:Accept:text/html[0D][0A]

4.75. AT+HTPSV

	Description	Example
Function	Query/set server parameters of HTTP request	
Instruction	AT+HTPSV=?{CR}{LF} {CR}{LF}+HTPSV:<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPSV=? +HTPSV:<1~100 bytes>,<1~65535> OK
Query	AT+HTPSV{CR} or AT+HTPSV?{CR} {CR}{LF}+HTPSV:<address>,<port>{CR}{LF}	AT+HTPSV? +HTPSV:test.usr.cn,80

	{CR}{LF}OK{CR}{LF}	OK
Setup	AT+HTPSV=<address>,<port>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPSV=test.usr.cn,80 OK
Parameters		
address	server address, supported domain name, length: 1~100 bytes	test.usr.cn
port	Target port, range:1~65535	80

4.76. AT+HTPPK

	Description	Example
Function	Query/set filtering packet header status	
Instruction	AT+HTPPK=?{CR}{LF} {CR}{LF}+HTPPK:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPPK=? +HTPPK:<ON,OFF> OK
Query	AT+HTPPK{CR} or AT+HTPPK?{CR} {CR}{LF}+HTPPK:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPPK? +HTPPK:ON OK
Setup	AT+HTPPK=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPPK=ON OK
Parameters		
sta	filter headers for HTTP request response messages ON: enable OFF:disable	Default:ON

4.77. AT+HTPTIM

	Description	Example
Function	Query/set the timeout of HTTP requests	
Instruction	AT+HTPTIM=?{CR}{LF} {CR}{LF}+HTPTIM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPTIM=? +HTPTIM:<1~65535(s)> OK
Query	AT+HTPTIM{CR} or AT+HTPTIM?{CR} {CR}{LF}+HTPTIM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+HTPTIM? +HTPTIM:10 OK
Setup	AT+HTPTIM=<time>{CR}{LF}	AT+HTPTIM=10

	{CR}{LF}OK{CR}{LF}	OK
Parameters		
time	Request timeout , range1~65535(s)	Default:10

4.78. AT+DSTNUM

	Description	Example
Function	Query/set the target mobile phone number for SMS transparent transmission	
Instruction	AT+DSTNUM=?{CR}{LF} {CR}{LF}+DSTNUM:<type>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+DSTNUM=? +DSTNUM:<1~20bytes> OK
Query	AT+DSTNUM{CR} or AT+DSTNUM?{CR} {CR}{LF}+DSTNUM:<number>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+DSTNUM? +DSTNUM:1008610010 OK
Setup	AT+DSTNUM=<number>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+DSTNUM=1008610010 OK
Parameters		
number	Target mobile phone number, length : 1~20bytes	1008610010

4.79. AT+SMSFLT

	Description	Example
Function	Query/set SMS filtering status	
Instruction	AT+SMSFLT=?{CR}{LF} {CR}{LF}+SMSFLT:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SMSFLT=? +SMSFLT:<ON,OFF> OK
Query	AT+SMSFLT{CR} or AT+SMSFLT?{CR} {CR}{LF}+SMSFLT:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SMSFLT? +SMSFLT:ON OK
Setup	AT+SMSFLT=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+SMSFLT=ON OK
Parameters		
sta	SMS filtering status ON: enable OFF: disable	Default:ON

4.80. AT+NTPSVR

	Description	Example
Function	Query/set NTP server parameters	
Instruction	AT+NTPSVR=?{CR}{LF} {CR}{LF}+NTPSVR:<SVR1>,[<SVR2>,<SVR3>,<SVR4>]{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPSVR=? +NTPSVR:<SVR1>,[<SVR2>,<SVR3>,<SVR4>] OK
Query	AT+NTPSVR{CR} or AT+NTPSVR?{CR} {CR}{LF}+NTPSVR:<SVR1>,[<SVR2>,<SVR3>,<SVR4>]{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPSVR? +NTPSVR:cn.ntp.org.cn,us.ntp.org.cn OK
Setup	AT+NTPSVR=<SVR1>,[<SVR2>,<SVR3>,<SVR4>]{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPSVR=cn.ntp.org.cn OK
Parameters		
SVR1/SVR2/SVR3/S VR4	Server address, support domain name, range: 1~100 bytes, up to 4	Default:cn.ntp.org.cn,us.ntp.org.cn

4.81. AT+NTPEN

	Description	Example
Function	Query/Set NTP switch	
Instruction	AT+NTPEN=?{CR}{LF} {CR}{LF}+NTPEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPEN=? +NTPEN:<ON,OFF> OK
Query	AT+NTPEN{CR} or AT+NTPEN?{CR} {CR}{LF}+NTPEN:<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPEN? +NTPEN:OFF OK
Setup	AT+NTPEN=<sta>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPEN=ON OK
Parameters		
sta	NTP switch ON: open OFF: close	Default:OFF

4.82. AT+NTPTM

	Description	Example
Function	Query/set the NTP calibration period	
Instruction	AT+NTPTM=?{CR}{LF} {CR}{LF}+NTPTM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPTM=? +NTPTM:<1~65535(m)> OK
Query	AT+NTPTM{CR} or AT+NTPTM?{CR} {CR}{LF}+NTPTM:<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPTM? +NTPTM:60 OK
Setup	AT+NTPTM=<time>{CR}{LF} {CR}{LF}OK{CR}{LF}	AT+NTPTM=60 OK
Parameters		
time	NTP update period, range 1~65535(mins)	Default:60mins

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7. Revision History

Rev.	Comments	Date
V1.0.0	Initial release	2021-7-13