

# N11V2

## AT Commands Manual

Issue 1.6 Date 2020-12-25



**Copyright © Neoway Technology Co., Ltd 2020. All rights reserved.**

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Neoway Technology Co., Ltd.

**neoway** is the trademark of Neoway Technology Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

**Notice**

This document provides guide for users to use N11V2.

This document is intended for system engineers (SEs), development engineers, and test engineers.

THIS GUIDE PROVIDES INSTRUCTIONS FOR CUSTOMERS TO DESIGN THEIR APPLICATIONS. PLEASE FOLLOW THE RULES AND PARAMETERS IN THIS GUIDE TO DESIGN AND COMMISSION. NEOWAY WILL NOT TAKE ANY RESPONSIBILITY OF BODILY HURT OR ASSET LOSS CAUSED BY IMPROPER OPERATIONS.

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE DUE TO PRODUCT VERSION UPDATE OR OTHER REASONS.

EVERY EFFORT HAS BEEN MADE IN PREPARATION OF THIS DOCUMENT TO ENSURE ACCURACY OF THE CONTENTS, BUT ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS DOCUMENT DO NOT CONSTITUTE A WARRANTY OF ANY KIND, EXPRESS OR IMPLIED.

Neoway provides customers complete technical support. If you have any question, please contact your account manager or email to the following email addresses:

Sales@neoway.com

Support@neoway.com

**Website:** <http://www.neoway.com>

# Contents

<b>1 AT Syntax</b> .....	<b>12</b>
1.1 Symbols.....	12
1.2 Description .....	12
1.3 Command Types .....	13
<b>2 General Commands</b> .....	<b>14</b>
2.1 ATI - Querying the Manufacturer Information .....	14
2.2 AT+CGMR - Querying the Software Version .....	14
2.3 AT+CGSN - Querying IMEI .....	15
2.4 AT+CIMI - Querying IMSI.....	16
2.5 AT+CCID - Obtaining ICCID of SIM Card.....	17
2.6 AT+GMR - Querying Software Version .....	17
2.7 AT+CGMM - Querying Module Model.....	18
2.8 AT+CGMI - Querying Manufacturer .....	19
2.9 AT+SIGNAL - Setting Signal Indicator Status.....	19
<b>3 Mobile Device Control and Status Report</b> .....	<b>22</b>
3.1 AT+CPAS - Querying Module Status .....	22
3.2 AT+CREG - Querying the Network Registration Status .....	23
3.3 AT+CGREG - GPRS Network Registration .....	24
3.4 ATE1/ATE0 - Enabling & Disabling Terminal Display.....	26
3.5 ATQ - Setting Code Result Suppression Mode .....	27
3.6 ATV - Setting Response Format of the Device .....	28
3.7 ATZ-Resetting to Default Setting .....	29
3.8 AT&W- Saving Parameter Settings .....	30
3.9 AT&F - Resetting Module to Factory Settings.....	31
3.10 AT+CMUX - Activating Multiplexing Mode .....	32
3.11 AT+CFUN-Setting Module Functionality.....	34
3.12 AT+ENPWRSAVE - Enabling or Disabling Sleep Mode .....	35
3.13 AT+IPR-Setting Baud Rate.....	36
3.14 AT+CPIN - Entering PIN Codes .....	37
3.15 AT+CCLK - Clock.....	38
3.16 AT+CLCK - Enabling PIN and Querying MT and Network Device .....	39
3.17 AT+CPWD - Modifying PIN .....	40
<b>4 Network Service Commands</b> .....	<b>42</b>
4.1 AT+CSQ-Querying Signal Quality .....	42
4.2 AT+COPS - Selecting and Registering GSM Network .....	43
4.3 AT+POSI - Querying Base Station Information.....	45
<b>5 GPRS Commands</b> .....	<b>46</b>
5.1 AT+CGDCONT - Setting PDP Format .....	46

5.2 AT+CUUSD - Sending USSD Data .....	47
5.3 +++ - Switching Data Mode to Command Mode.....	49
5.4 ATO - Switching Command Mode to Data Mode .....	50
5.5 AT+NETAPN - Setting Network APN .....	51
5.6 AT+XIIC - Setting Up PPP Link.....	51
5.7 AT+CGATT - Setting GPRS Attach and Detach .....	52
5.8 AT&D - Setting the DTR Mode.....	54
5.9 AT+XGAUTH - PDP Authentication .....	55
<b>6 SMS Commands .....</b>	<b>56</b>
6.1 AT+CPMS - Setting Preferred SMS Storage .....	56
6.2 AT+CMGF - Setting SMS Inputting Mode.....	57
6.3 AT+CSCS - Setting TE Character Set .....	58
6.4 AT+CNMI - Setting SMS Indication Mode.....	59
6.5 AT+CMGR - Reading SMS Messages.....	61
6.6 AT+CMGL - SMS Message List.....	63
6.7 AT+CMGS - Sending SMS Messages .....	66
6.8 AT+CMGW - Writing SMS Messages .....	67
6.9 AT+CMSS - Sending Stored SMS Messages.....	68
6.10 AT+CMGD - Deleting SMS Message.....	70
6.11 AT+CSCA - Setting SMS Center Number.....	71
6.12 AT+CSMP - Setting Text Mode Parameters .....	72
6.13 AT+CSDH - Displaying Text Mode Parameters .....	73
6.14 AT+CSCB - Selecting Type of Cell Broadcast Messages.....	74
<b>7 Phonebook Commands .....</b>	<b>76</b>
7.1 AT+CPBS-Selecting Phonebook Storage .....	76
7.2 AT+CPBR - Reading Phonebook.....	77
7.3 AT+CPBF - Querying Phonebook.....	78
7.4 AT+CPBW - Writing Information to Phonebook .....	79
7.5 AT+CNUM - Reading My Number .....	80
<b>8 TCP Data Service .....</b>	<b>82</b>
8.1 AT+TCPSETUP - Setting Up TCP Connection.....	82
8.2 AT+TCPSEND - Sending TCP Data .....	83
8.3 +TCPRECV - Indicating Data Received from Server .....	85
8.4 AT+TCPCLOSE - Closing TCP Connection .....	86
8.5 AT+IPSTATUS - Querying TCP/UDP Socket Status.....	87
8.6 AT+TCPACK - Querying Status of Data Sent.....	88
8.7 AT+DATAFORMAT - Setting Data TX/RX Format .....	89
8.8 AT+TCPLPORT - Setting Local TCP Port.....	90
8.9 AT+TCPKEEPALIVE - Setting TCP Keepalive .....	91
8.10 AT+RECVMODE - Setting Receive Mode .....	93
8.11 A+TCPREAD - Reading TCP Data.....	94
<b>9 SSL TCP Data Service .....</b>	<b>95</b>
9.1 AT+SSLTCPCFG - Configuring SSL Parameters for TCP.....	95
9.2 AT+SSLTCPSETUP - Setting up TCP Connection over SSL.....	97

9.3 AT+SSLTCPCLOSE - Closing TCP Connection over SSL .....	98
9.4 AT+SSLTCPSEND - Sending TCP Data over SSL.....	99
9.5 +SSLTCPRECV - Report of Receiving SSLTCP Data.....	100
9.6 AT+SSLTCPREAD - Reading SSL TCP Data.....	101
<b>10 SSL Commands.....</b>	<b>103</b>
10.1 AT+CERTADD - Adding SSL Certificate .....	103
10.2 AT+CERTCHECK - Checking SSL Certificate .....	103
10.3 AT+CERTDEL - Deleting SSL Certificate .....	104
<b>11 UDP Data Service.....</b>	<b>106</b>
11.1 AT+UDPSETUP - Setting Up UDP Connection .....	106
11.2 AT+UDPSEND - Sending UDP Data .....	107
11.3 +UDPRECV - Indicating that UDP Data Has Been Received .....	109
11.4 AT+UDPREAD - Reading UDP Data .....	110
11.5 AT+UDPCLOSE - Closing UDP Link .....	110
11.6 AT+UDPLPORT - Setting Local UDP Port.....	111
<b>12 Transparent TCP/UDP .....</b>	<b>113</b>
12.1 AT+TCPTRANS - Setting Up Transparent TCP Connection .....	113
12.2 AT+UDPTRANS - Setting Up Transparent UDP Connection .....	114
12.3 AT+TRANCLOSE - Closing Transparent Connection .....	115
<b>13 TCP Server AT Commands.....</b>	<b>117</b>
13.1 AT+TCPLISTEN - Setting TCP Listening for Server.....	117
13.2 AT+CLOSELISTEN - Closing Listening Socket.....	118
13.3 AT+CLOSECLIENT - Closing Listening Socket.....	119
13.4 +TCPRECV(S) - Receiving Data from Client .....	120
13.5 AT+TCPSENDS - Sending Data to Client.....	120
13.6 AT+TCPACKS - Querying Status of Data Sent.....	122
<b>14 Unlimited UDP Server AT Commands .....</b>	<b>124</b>
14.1 AT+FUDPLISTEN - Setting UDP Listening on Server .....	124
14.2 +FUDPRECV(S) - Receiving Data from Client.....	125
14.3 AT+FUDPSENDS - Sending Data to Client.....	126
14.4 AT+CLOSEFUDPLISTEN - Closing Listening on UDP Server.....	127
<b>15 FTP AT Commands .....</b>	<b>129</b>
15.1 AT+FTPLLOGIN - Logging In to FTP Server .....	129
15.2 AT+FTPLGOUT - Logging out from FTP Server.....	130
15.3 AT+FTPGET - Downloading Data from FTP Server .....	131
15.4 AT+FTPPUT - Uploading data to FTP Server.....	133
15.5 AT+FTPSTATUS - Querying the FTP Connection Status .....	135
15.6 AT+FTPGETBUFF - Downloading Data in Buffer Mode from FTP Server .....	136
15.7 AT+FTPBUFFSTAT - Querying and Reporting the Download Status in FTP Buffer Mode ...	138
15.8 AT+FTPBUFFREAD - Reading Data from FTP Server in Buffer Mode.....	140
<b>16 HTTP Commands.....</b>	<b>141</b>
16.1 AT+HTTTPARA - Setting HTTP Parameters .....	141
16.2 AT+HTTPSETUP - Setting Up HTTP Connection .....	142

16.3 AT+HTTPACTION - HTTP Request.....	142
16.4 AT+HTTPCLOSE - Closing HTTP Connection.....	146
16.5 +HTTPRECV - Receiving HTTP Data.....	147
16.6 +HTTPCLOSED - Unsolicited Report of HTTP Connection Closing.....	147
<b>17 HTTPS Commands .....</b>	<b>149</b>
17.1 AT+HTTPSPARA - Setting HTTPS Parameters.....	149
17.2 AT+HTTPSETUP - Setting up HTTPS Connection.....	150
17.3 AT+HTTPSACTION - HTTPS Request.....	150
17.4 AT+HTTSCLOSE - Closing HTTPS Connection.....	153
17.5 +HTTSCLOSED - HTTPS Connection Closed Report.....	154
17.6 AT+HTTSCFG - Configuring HTTPS Parameters.....	154
<b>18 MQTT Commands .....</b>	<b>157</b>
18.1 AT+MQTTCONNPARAM - Setting User Parameter.....	157
18.2 AT+MQTTWILLPARAM - Setting Will.....	158
18.3 AT+MQTTCONN - Setting up Connection.....	158
18.4 AT+MQTTSUB - Subscribing Topic.....	159
18.5 AT+MQTTUNSUB - Canceling a Subscription.....	160
18.6 AT+MQTTPUB - Publishing Topic.....	161
18.7 AT+MQTTPUBIN - Publishing Topic (HEX).....	162
18.8 AT+MQTTPUBS - Publishing Topic with Long Message.....	162
18.9 AT+MQTTDISCONN - Disconnecting to MQTT Server.....	163
18.10 +MQTTSUB - Receiving Message.....	164
18.11 AT+MQTTSTATE - Querying MQTT Connection Status.....	165
18.12 AT+MQTTMODE - Setting MQTT Mode.....	166
18.13 AT+MQTTCFG - Setting MQTT Parameters.....	167
18.14 AT+MQTTAUTORECON - Setting MQTT Auto Reconnection.....	168
<b>19 Ali MQTT Commands .....</b>	<b>170</b>
19.1 AT+IMQTTMODE - Setting MQTT Mode.....	170
19.2 AT+IMQTTAUTH - Setting Device Authentication.....	170
19.3 AT+IMQTTPARA - Setting MQTT Parameters.....	171
19.4 AT+IMQTTCONN - Setting up MQTT Connection.....	172
19.5 AT+IMQTTPUB - Publishing Message.....	173
19.6 AT+IMQTTSUB - Subscribing to Topic.....	174
19.7 AT+IMQTTUNSUB - Canceling a Topic Subscription.....	175
19.8 +IMQTTTRCV PUB - Receiving Publish Message.....	176
19.9 AT+IMQTTSTATE - Querying MQTT Connection Status.....	177
19.10 AT+IMQTTDISCONN - Disconnecting to MQTT Server.....	178
19.11 AT+IMQTTPUBIN - Publishing Message (Sending HEX Data).....	179
19.12 AT+CLOUDPARA - Query Authentication Parameters.....	180
<b>20 OceanConnect Commands .....</b>	<b>182</b>
20.1 AT+NCDPOPEN - Connecting to Server.....	182
20.2 AT+NCDPCLOSE - Closing Connection to Server.....	183
20.3 AT+NMGS - Sending Data.....	183

20.4 AT+NMGR - Reading Data .....	184
20.5 AT+NNMI - Configuring Data Report Switch.....	185
<b>21 AMR Commands .....</b>	<b>186</b>
21.1 AT+AMRPLAY - Playing AMR Audio.....	186
21.2 AT+AMRPAUSE - Playing AMR Audio.....	187
21.3 AT+AMRRESUME - Resuming AMR Audio Playing.....	188
<b>22 File System Commands .....</b>	<b>189</b>
22.1 AT+FSWF - Writing Data to File.....	189
22.2 AT+FSRF - Reading Data from File.....	190
22.3 AT+FSFS - Obtaining File Size.....	191
22.4 AT+FSDF - Deleting File.....	192
<b>23 FOTA Commands .....</b>	<b>193</b>
23.1 AT+NEOFOTA - Upgrade Through Network.....	193
23.2 AT+UPDATE - Upgrade Through UART .....	194
<b>24 Extended AT Commands .....</b>	<b>195</b>
24.1 AT+CPWROFF - Shutting Down Module.....	195
24.2 AT+UPDATETIME - Updating Time .....	195
24.3 AT+DNS - Querying IP Address.....	198
24.4 AT+PING - PING Function.....	199
24.5 AT+CIPGSMLOC - Obtaining Location of the Module.....	200
24.6 AT+GLTS - Synchronizing Module Time with Base Station Time .....	202
24.7 AT+FLOWCALC - Statistics on Total Data Traffic.....	203
24.8 AT+RATECALC - Statistics on Transient Traffic .....	204
24.9 AT+DNSSERVER - Setting DNS Server .....	204
24.10 AT+SELFREGISTER - Setting Self-Register.....	205
24.11 AT+SIMORDER - Setting SIM Slot Order.....	206
24.12 AT+JAMMINGDETECT - Detecting Jamming .....	207
24.13 +JAMMINGDTURC - Report of Jamming Detection .....	208
24.14 AT+NGPCLASS - Setting Multislot Class .....	209
24.15 AT+SDMBS - Setting Anti-counterfeiting Base Station Function.....	210
<b>A Error Codes .....</b>	<b>211</b>
<b>B Reference Process of AT Command Programming .....</b>	<b>214</b>
B.1 Content of PDU SMS Messages .....	214
B.2 Flowchart of Sending Text SMS Messages (Through UART) .....	216
B.3 Flowchart of Sending PDU SMS Messages (Through UART) .....	217

# About This Document

## Scope

This document is applicable to N11V2.

## Audience

This document is intended for system engineers (SEs), development engineers, and test engineers.

## Change History

Issue	Date	Change	Changed By
1.0	2018-09	Initial draft	Zhang Xiaofeng
1.1	2018-11	Modified command syntax	Zhang Xiaofeng
1.2	2018-12	<ul style="list-style-type: none"> <li>Modified format of return codes to TCP commands</li> <li>Added AT+TCPLPORT, AT+UDPLPORT, AT+TCPKEEPALIVE, AT+FLOWCALC, AT+RATECALC</li> </ul>	Zhang Xiaofeng
1.3	2019-02	<ul style="list-style-type: none"> <li>Modified parameters of AT+TCPSSEND and AT+UDPSEND</li> <li>Added AT+SIMORDER, AT+SELFREGISTER, AT+MQTTAUTORECON</li> <li>Added Type to HTTPACTION/HTTPSACTION</li> </ul>	Zhang Xiaofeng
1.4	2019-06	<ul style="list-style-type: none"> <li>Added SSL TCP commands</li> <li>Added MQTTPUBIN and IMQTTPUBIN</li> <li>Added ARM commands</li> <li>Added JAMMINGDETECT and NGPCLASS</li> <li>Updated TCPSENDS and FUDPSENDS</li> <li>Updated MQTTPUB and IMQTTPUB</li> </ul>	Wang Yuxin
1.5	2020-5	<ul style="list-style-type: none"> <li>Modified format description of +IMQTTAUTH</li> <li>Modified parameter description of +HTTPPARA/+HTTPSPARA</li> </ul>	Wang Yuxin

- 
- Modified parameter description of +SIGNAL and added description of FTP BUFF mode.
  - Modified the parameters of AT+MQTTSTATE
  - Modified the return value of AT+TCPTRANS/AT+UDPTRANS
  - Added AT+HTTPSCFG
  - Modified the example of AT+SSLTCPCFG
  - Added the AT+CLOUDPARA and AT&D commands
  - Added AT+XGAUTH
  - Added the example of AT+MQTTPUBS
  - Modified the example of AT+JAMMINGDETECT
  - Added the example of +JAMMINGDTURC
  - Added the example of +TCPACKS
  - Added AT+SDMBS

---

1.6	2020-10	Modified the POSI parameter	Wang Yuxin
-----	---------	-----------------------------	------------

---

## Conventions

Symbol	Indication
	This warning symbol means danger. You are in a situation that could cause fatal device damage or even bodily damage.
	Means reader be careful. In this situation, you might perform an action that could result in module or product damages.
	Means note or tips for readers to use the module

## Related Documents

*Neoway\_N11V2\_Datasheet*

*Neoway\_N11V2\_Product\_Specifications*

*Neoway\_N11V2\_Hardware\_User\_Guide*

*Neoway\_N11V2\_EVK\_User\_Guide*

## Boot LOG Instruction

The UART outputs **+PBREADY** after the phonebook is available.

If the module is booted in automatic baudrate detection mode, send **AT** 10 seconds after the module is powered up to check if the AT function is initialized. The UART responds with **OK** if AT is initialized and outputs **+PBREADY** after the phonebook is available.



### Network indicator status

- Off: No network found.
  - On: the module finds a network and the PDP context is not activated.
  - Blinks (on for 0.2 seconds and off for 1.8 seconds): the PDP context is activated successfully.
-

# 1 AT Syntax

## 1.1 Symbols

- <CR>: carriage return character
- <LF>: linefeed character
- <.>: parameter name, the angle brackets do not appear in the command line.
- [..]: optional parameter, the square brackets do not appear in the command line.
- : space

## 1.2 Description

### Prefix

AT or at

### Command Line

Standard commands, in compliance with 3GPP 27007, 27005 and ITU-T Recommendation V.250.

Extended commands, defined by Neoway

### Joint Mark

+ or \$, used between the prefix and a command line

### Termination Character

<CR>, i.e. 0x0D

### Response Syntax

<CR><LF>response<CR><LF>

Response can be one or multiple messages.

## Result Syntax

<CR><LF>OK<CR><LF> indicates that a command is executed successfully.

<CR><LF>ERROR<CR><LF> indicates that a command fails to be executed.

For the error codes, see Appendix A.

## 1.3 Command Types

Type	Syntax	Response	Function
Set	AT+CMD=<VALUE><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>	Store a value or values for later use
Execute	AT+CMD[=<VALUE>]<CR>	[<CR><LF>response] <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>	Invoke a function of the module.
Test	AT+CMD=?<CR>	[<CR><LF>response] <CR><LF>OK<CR><LF>	Determine the range of parameter values or parameter lengths that are supported
Query	AT+CMD?<CR>	[<CR><LF>response] <CR><LF>OK<CR><LF>	Determine the current value or values stored
Unsolicited report	<CR><LF>+CMD: <VALUE><CR><LF>	N/A	Report the status change and data receiving
Remarks	Symbols are not displayed in AT commands. All commands comply with the rules in this chapter.		

## 2 General Commands

### 2.1 ATI - Querying the Manufacturer Information

To query the manufacturer information, including manufacture, model, and version.

#### Format

Type	Command	Response
Execute	ATI<CR>	<CR><LF><module_info> <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

**<module\_info>** Module manufacturer information

#### Example

```
ATI
NEOWAY
N11V2
REVISION V003
OK
```

### 2.2 AT+CGMR - Querying the Software Version

To query the software version.

## Format

Type	Command	Response
Execute	AT+CGMR<CR>	<CR><LF>+CGMR: <version> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<version>** software version

## Example

```
AT+CGMR
+CGMR: N11_1167_SQS63002_V003
OK
```

## 2.3 AT+CGSN - Querying IMEI

To query the International Mobile Equipment Identity (IMEI) of the module.

## Format

Type	Command	Response
Execute	AT+CGSN<CR>	<CR><LF>+CGSN: <IMEI> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<IMEI>** International Mobile Equipment Identity

IMEI is a character string of 15 digitals.

### Example

```
AT+CGSN
+CGSN:355910044336974
OK
```

## 2.4 AT+CIMI - Querying IMSI

To query the international mobile subscriber identification (IMSI).

### Format

Type	Command	Response
Execute	AT+CIMI<CR>	<CR><LF>+CIMI: <IMSI> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF> Or <CR><LF>+CME ERROR:<err><CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <IMSI>** International mobile subscriber identification  
IMSI is a character string of 15 digits and starts with 3-bits of MCC and 2-bits of MNC. It is used to authenticate the SIM card.
- <err>** Refer to Appendix A.

### Example

```
AT+CIMI           Query the IMSI.
+CIMI: 460022201575463  IMSI:460022201575463
OK
AT+CIMI           Query the IMSI.
```

ERROR No SIM card is installed.

## 2.5 AT+CCID - Obtaining ICCID of SIM Card

To obtain the integrated circuit card identifier (ICCID) of the SIM Card.

### Format

Type	Command	Response
Execute	AT+CCID<CR>	<CR><LF>+CCID: <ICCID> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<ICCID>** SIM card ID  
The ICCID number is a string of 20 digits.

### Example

```
AT+CCID                                Read command
+CCID: 89860002190810001367
OK
AT+CCID                                The SIM card is not inserted.
ERROR
```

## 2.6 AT+GMR - Querying Software Version

To obtain the module software version information.

## Format

Type	Command	Response
Execute	AT+GMR<CR>	<CR><LF>+GMR: <revision> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<revision>**      Module software version.

## Example

```
AT+GMR
+GMR:N11_1167_SQS63002_V003
OK
```

## 2.7 AT+CGMM – Querying Module Model

To query the module model.

## Format

Type	Command	Response
Execute	AT+CGMM<CR>	<CR><LF>+CGMM:<model> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<model>**      Module model

## Example

```
AT+CGMM
+CGMM: N11 V2
OK
```

## 2.8 AT+CGMI – Querying Manufacturer

To query the manufacturer information.

### Format

Type	Command	Response
Execute	AT+CGMI<CR>	<CR><LF>+CGMI:<manufacturer> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<manufacturer>** manufacturer information

## Example

```
AT+CGMI
+CGMI: Neoway Corp Ltd
OK
```

## 2.9 AT+SIGNAL – Setting Signal Indicator Status

To set the different blinking status of the signal indicator.

The settings except for the 8, 9, and 10 modes are saved after the module is powered off.

The default status setting is 7.

In sleep mode, the network indicator keeps off when there is an incoming call or SMS message after

<value> is set to a value ranging from 0 to 6.

### Format

Type	Command	Response
Set	AT+SIGNAL=<value>[,<low_interval>,<high_interval>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+SIGNAL?<CR>	<CR><LF>+SIGNAL: <value> <CR><LF>OK<CR><LF>
Test	AT+SIGNAL?<CR>	<CR><LF>+SIGNAL: (range of supported <value>), (range of supported <low_interval>), (range of supported <high_interval>) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<value>** integers, ranging from 0 to 11.

- 0: Blink once every second in normal situation. Being off or on if any abnormality occurs.
- 1: Blink once every second after the module is connected to the GPRS data service. Being off in any other situations.
- 2: Flash and blink. Flash every 250ms for the GPRS data service and blink every second in other normal situations.
- 3: Be on after the GPRS data service is connected and blink every second in other situations.
- 4: Be on after the GPRS data service is connected and being off in other situations.
- 5: Be off if the SIM card cannot be detected after the module is powered on, blink every second if the SIM card is detected, and be on after the GPRS data service is connected.
- 6: Four indicator states:  
If no SIM card is installed or the SIM card does not register network, the indicator blinks every one second and is on for 0.1 second.  
If the SIM card registered network, the indicator blinks every three second and is on for 0.1 second.  
If the GPRS data service is enabled, the indicator blinks every 250ms and is on for 0.1 second.

The indicator is always on during a call.

7: Four indicator states (default)

Off: No SIM card, not registered

On: registered network

On for 0.2 second and off for 1.8 second: Obtained the IP address

On for 1.8 second and off for 0.2 second: Connected to the server

8: constantly off

9: constantly on

10: customize the on and off time by setting <low\_interval> and <high\_interval>.

11: external dialing status:

Flashes (100ms on and 800ms off): searching the network

Blinks (100ms on/ 3000ms off): registered successfully.

Flashes (100ms on and 300ms off) data is being transmitted, supporting RMNET, RNDIS, ECM, and PPP dialing.

Constantly off: in flight mode, shutdown status, or error status (e.g. no SIM card, registration failed)

**<low\_interval>** Off time of the indicator, ranging from 10 to 65535ms.

**<high\_interval>** On time of the indicator, ranging from 10 to 65535ms.

## Example

```

AT+SIGNAL?                               The current signal indicator status is 2.
+SIGNAL: 2
OK
AT+SIGNAL=3                               Set current signal indicator status to 3.
OK
AT+SIGNAL=12                             The parameter is set to an incorrect value.
ERROR
AT+SIGNAL=?                               The available value of the signal indicator
+SIGNAL: (0-6) ,(10-65535),(10-65535)    status ranges from 0 to 11.
OK

```

## 3 Mobile Device Control and Status Report

### 3.1 AT+CPAS – Querying Module Status

To query the work status of the module.

#### Format

Type	Command	Response
Execute	AT+CPAS<CR>	<CR><LF>+CPAS: <pas> <CR><LF>OK<CR><LF> Or <CR><LF>+CME ERROR: <err>
Test	AT+CPAS=?<CR>	<CR><LF>+CPAS: (list of supported <pas>s) <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

<b>&lt;pas&gt;</b>	0: ready. The module is ready and is able to execute AT commands. 1: unavailable. The command is not allowed by the module terminal (MT). 2: unknown. The status is unknown. 3: ringing. There is an incoming call and the module is ringing. The module can execute AT commands. 4: call in progress. A call is going on and the module can execute AT commands.
<b>&lt;err&gt;</b>	Refer to Appendix A.

#### Example

```
AT+CPAS           Query the work status of the module.
+CPAS: 0         The module is ready to execute AT commands.
OK
```

```
AT+CPAS=?
+CPAS: (0,1,3,4)
OK
```

Query the value range of the module work status

## 3.2 AT+CREG - Querying the Network Registration Status

To query the network registration status of the module.

### Format

Type	Command	Response
Set	AT+CREG=[<n>]<CR> >	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF> Or <CR><LF>+CME ERROR:<err><CR><LF>
Query	AT+CREG?<CR>	<CR><LF>+CREG: <n>,<stat>[,<lac>,<ci>[,<Act>]] <CR><LF>OK<CR><LF>
Test	AT+CREG=?<CR>	<CR><LF>+CREG: (list of supported<n>s) <CR><LF>OK<CR><LF>
Unsolicited report	When n=1 +CREG: <stat> When n=2 +CREG: <stat>[,<lac>],<ci>[,<AcT>]]	

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <n>** Specified whether to enable unsolicited result codes for network registration.  
 0: Disable network registration unsolicited result codes (default setting).  
 1: Enable network registration unsolicited result codes +CREG: <stat>.  
 2: Enable network registration and location information (Cell ID, Local ID) unsolicited result code +CREG: <stat>[,<lac>],<ci>[,<AcT>]]
- <stat>** Network registration status  
 0: Not registered, the module is not currently searching an operator to register to  
 1: Registered the home network

	2: Not registered, but the module is currently trying to attach or searching an operator to register to
	3: Registration denied
	4: Unknown code
	5: Registered, roaming
<b>&lt;lac&gt;</b>	Character, 2-byte hexadecimal location area code
<b>&lt;ci&gt;</b>	Character, 4-byte hexadecimal cell number
<b>&lt;Act&gt;</b>	The access technology of the serving cell, integer type
	0: GSM
	1: GSM compact
	2: UTRAN
	3: GSM w/EGPRS
<b>&lt;err&gt;</b>	Refer to Appendix A.

## Example

```

AT+CREG=1           Enable network registration unsolicited codes.
OK
AT+CREG?           Query the network registration status of the module.
+CREG: 0,1
OK
AT+CREG=?         Query the value range of the network registration status
+CREG: (0-2)      parameter.
OK
AT+CMEE=0         Set AT+CMEE=0 (or not set), then send AT+CREG=5.
OK               Return error code.
AT+CREG=5
ERROR
AT+CMEE=1         Set AT+CMEE=1, then send AT+CREG=5.
OK               Return error code.
AT+CREG=5
+CME ERROR: 53
AT+CREG=2         Enable unsolicited CREG report.
OK
+CREG: 1,"286F","00000FCA"

```

## 3.3 AT+CGREG – GPRS Network Registration

To control the display of an unsolicited result code of the module's GPRS network registration status.

## Format

Type	Command	Response
Set	AT+CGREG=[<n>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CGREG?<CR>	<CR><LF>+CGREG: <n>,<stat> <CR><LF>OK<CR><LF> Or <CR><LF>+CGREG: <n>,<stat>[,<lac>,<ci>[,<Act>]] <CR><LF>OK<CR><LF>
Test	AT+CGREG=?<CR>	<CR><LF>+CGREG: (list of supported<n>s) <CR><LF>OK<CR><LF>
Unsolicited report	+CGREG: <stat>	

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <n>** Controls the network registration unsolicited result code display.  
 0: Disable network registration unsolicited result code (default setting)  
 1: Enable network registration unsolicited result code +CGREG: <stat> <stat>  
 2: Enable network registration unsolicited result code +CGREG: <stat> <stat>[,<lac>,<ci>[,<Act>]]
- <stat>** Network status  
 0: Not registered, the module is not currently searching an operator to register to  
 1: Registered the home network  
 2: Not registered, but the module is currently trying to attach or searching an operator to register to  
 3: Registration denied  
 4. Unknown code  
 5: Registered, roaming
- <lac>** Two-byte location area code in hexadecimal format, string type
- <ci>** Character, 4-byte hexadecimal cell number
- <Act>**  
 0: GSM  
 2: UTRAN  
 3: GSM w/EGPRS

### Example

AT+CGREG=1	Setting the Enable Network Registration Unsolicited Result Codes.
OK	
AT+CGATT=0	Setting GPRS separation.
OK	
+CGREG: 4	Unsolicited result code returned by the module
AT+CGREG=2	Setting the Enable Network Registration Unsolicited Result Codes.
OK	
AT+CGATT=1	Set the GPRS attachment.
+CGREG: 2, "286F", "00000FCA", 3	Unsolicited result code returned by the module
OK	GPRS attached successfully and return OK.
+CGREG: 1, "286F", "00000FCA", 3	Unsolicited result code returned by the module
AT+CGREG?	When the value of <n> is set to 1, the current GPRS network registration status is queried.
+CGREG: 0,1	
OK	
AT+CGREG?	When the value of <n> is set to 1, the current GPRS network registration status is queried.
+CGREG: 1,1	
OK	
AT+CGREG?	When the value of <n> is set to 2, the current GPRS network registration status is queried.
+CGREG: 2,1,"286F","00000FCA",3	
OK	
AT+CGREG=3	The setting parameter is outside the settable range and an ERROR is returned.
ERROR	
AT+CGREG=?	Query the parameters that the command can set.
+CGREG: (0,1,2)	
OK	

## 3.4 ATE1/ATE0 – Enabling & Disabling Terminal Display

To enable or disable the terminal display function of the AT commands. If the command is sent after dialing up to connect the network, terminal display is disabled automatically.

The settings by this command are not saved after the module is powered off. The terminal display function is enabled by default.

### Format

Type	Command	Response
Execute	ATE[<value>]<CR>	<CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<value>** Whether to enable the terminal display function of AT commands  
 0: enable  
 1: disable (default)



ATE is equal to ATE1.

## Example

```
ATE1          Turn on the terminal display function.
OK
AT           Send "AT"
OK          Serial tool displays "AT" and "OK"
ATE0        Turn off the terminal display function.
OK          Send "AT"
OK          Serial tools display only "OK".
```

## 3.5 ATQ - Setting Code Result Suppression Mode

To set whether to suppress the code result. After the module is set to the code result suppression mode, it does not output OK or ERROR.

The setting by this command is not saved after the module is powered off.

The setting is invalid for customized commands.

## Format

Type	Command	Response
Set	ATQ[<value>]<CR>	<CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <value>**
- 0: Output the code result (default)
  - 1: Suppress the code result



ATQ is equal to ATQ1.

## Example

```
ATQ1
AT+CSQ
+CSQ: 31,99
```

Set to code result suppression mode. (The module does not return OK after this command is executed successfully.)

After the mode is set, the return value for the AT+CSQ command does not contain OK.

```
ATQ0
OK
AT
OK
```

Set to the code result output mode.

Send "AT"

After the mode is set, the return value for the AT command contains OK.

## 3.6 ATV – Setting Response Format of the Device

To set the response format of the device.

The setting by this command is not saved after the module is powered off. The setting is invalid for customized commands.

### Format

Type	Command	Response
Set	ATV[<value>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <value>**
- 0: Set the response format to output with only some header, footer, and digit text.
  - 1: Set the response format to output with all headers, footers, and detailed response text (default).



ATV is equal to ATV1.

After ATV0 is executed, the return value for a command in correct format is 0 (default setting is OK) that follows the command; 4 for command in incorrect format (default setting is ERROR).

## Example

```

ATV1
OK                               Set the response format to output with all headers,
AT+CSQ                           footers, and detailed response text.
+CSQ: 31,99
OK
ATV0
0                               Set the response format to output with only some
AT+CSQ                           header, footer, and digit text. The module returns 0
+CSQ: 31,99                       after the format is set successfully.
0
    
```

## 3.7 ATZ—Resetting to Default Setting

To reset the module to the default settings.

### Format

Type	Command	Response
Execute	ATZ[<value>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<value>**      0 Reset to default settings

## Example

```
ATZ0
OK
```

Reset the module to the default setting.

## 3.8 AT&W– Saving Parameter Settings

To save parameter settings.

The following commands support parameter saving: ATE, +CMEE, ATV, ATQ, +CSCS, +COPS, +CCWA, +CREG, +CLIP, +ENPWRSAVE, +DATAFORMAT, +TRANMODE, +RINGOUT, +REMOTEAT, and so on.

AT&W0 is equal to AT&W. To restore to the default settings, execute AT&F or ATZ.

## Format

Type	Command	Response
Execute	AT&W<CR>	<CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

N/A.

## Example

```
AT+REMOTEAT?
```

Query the current parameter value. The value is 0.

```
+REMOTEAT: 0
OK
AT+REMOTEAT=1           Set commands that support parameter saving.
OK
AT&W                     Save parameter settings and restart the module.
OK
AT+REMOTEAT?
+REMOTEAT: 1           Query the current parameter value. The value is 1.
OK
AT&W0                     Save parameter settings. This command has the same
OK                       function as AT&W.
```

### 3.9 AT&F – Resetting Module to Factory Settings

To reset the module to factory settings. If the module is set to the code result suppression mode (ATQ1), reset it to factory settings by executing this command. This command is similar to the ATZ command in function.

#### Format

Type	Command	Response
Execute	AT&F[<value>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

**<value>**            0: Reset the module to factory settings.

#### Example

```
AT&F0                     Reset the module to factory settings.
OK
AT&F                     Reset the module to factory settings.
OK
```

### 3.10 AT+CMUX – Activating Multiplexing Mode

To activate multiplexing mode

In accordance with the multiplexing protocol, two or more virtual channels are set up on one physical port.

In general, three virtual channels are set up, among which one is used for dialing up to access the Internet, and two are used for AT command sending and receiving. AT+CMUX=0 is recommended to enable the multiplexing protocol control channel.

#### Format

Type	Command	Response
Execute	AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CMUX?<CR>	<CR><LF>+CMUX: <mode>,<subset>,<port_speed>,<N1>,<T1>,<N2>,<T2>,<T3>,<k><CR><LF> <CR><LF>OK<CR><LF>
Test	AT+CMUX=?<CR>	<CR><LF>+CMUX: (list of supported <mode>s),(0),(list of supported <port_speed>s),(list of supported <N1>s),(list of supported <T1>s),(list of supported <N2>s),(list of supported <T2>s),(list of supported <T3>s),(list of supported <k>s)<CR><LF> <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <mode>** The mode of MUX that is enabled, integer type.  
0: Basic option (default value)  
1: Advanced option (not supported)
- <subset>** Subset of frame format, integer type  
0: UIH frames used only (default value).  
1: UI frames used only (not supported currently)

- <port\_speed>** UART port rate, integer type
  - 1: 9600bit/s
  - 2: 19200bit/s
  - 3: 38400bit/s
  - 4: 57600bit/s
  - 5: 115200bit/s (default)
  - 6: 230400 bit/s (not supported currently)
- <N1>** Maximum frame size. Integer type, ranging from 1 to 32768. The range of 1 to 1509 is supported currently.  
The default value is 31. If Advanced option for mode is selected, the default value is 64.
- <T1>** Acknowledgement timer in unite of ten milliseconds, integer type, ranging from 1 to 255, where 10 is default (equal to 100ms).
- <N2>** Maximum number of re-transmissions, integer type, ranging from 0 to 5. The default value is 3.
- <T2>** response timer for the multiplexer control channel in units of ten milliseconds, integer type, ranging from 2 to 255, where 30 is default (300ms)
- <T3>** Wake up response timer in seconds, integer type, ranging from 1 to 255, where 10 is default (10s)  
If this parameter is not supported and the module returns 0 for it.
- <k>** window size, for Advanced option with Error-Recovery Mode, integer type, ranging from 1 to 7, where 2 is default If this parameter is not supported and the module returns 0 for it.



<T2> must be longer than <T1>.

## Example

<pre>AT+CMUX=0 OK</pre>	<p>The set value exceeds the parameter range and the module returns ERROR.</p>
<pre>AT+CMUX=2 ERROR</pre>	<p>The set value exceeds the parameter range and the module returns ERROR.</p>
<pre>AT+CMUX=0,0,,512,254,5,255 OK</pre>	<p>Basic option. Set successfully.</p>
<pre>AT+CMUX=1,0,,512,254,5,255 ERROR</pre>	<p>Query the available range of parameters.</p>
<pre>AT+CMUX=? +CMUX: (0,1),(0),(1-6),(1-2048),(1-255),(0-100),(2-255),(1-255),(1-7) OK</pre>	<p>Query the available range of parameters.</p>
<pre>AT+CMUX? +CMUX: 0,0,5,127,10,3,30,10,2 OK</pre>	<p>Query current settings of parameters.</p>

### 3.11 AT+CFUN—Setting Module Functionality

To select functions of the module by setting <fun>. <fun> support only certain values. The settings are not saved after the module is powered off.

#### Format

Type	Command	Response
Set	AT+CFUN=<fun>[,<rst>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF> Or <CR><LF>+CME ERROR: <err><CR><LF>
Query	AT+CFUN?<CR>	<CR><LF>+CFUN: <fun><CR><LF> <CR><LF>OK<CR><LF>
Test	AT+CFUN=?<CR>	<CR><LF>+CFUN: (list of supported <fun>s),(list of supported <rst>s) <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <fun>** 1: Full functionality (default)  
0: turn off radio and SIM power.
- <rst>** 0: Does not restart the receiver before setting the function mode.  
1: Restart the receiver before setting the function mode.
- <err>** See Appendix A.

#### Example

```

AT+CFUN=1,0           Set full functionality.
OK
AT+CFUN?             Query current function level.
+CFUN: 1             Full functionality
OK
AT+CFUN=?           Query available parameter value ranges.
+CFUN: (0-1),(0-1)
OK
    
```

```

AT+CMEE=0
OK                               Set AT+CMEE=0.
AT+CFUN
ERROR                             Send the AT+CFUN command and ERROR is returned.
AT+CMEE=1
OK                               Set AT+CMEE=1.
AT+CFUN
+CME ERROR: 3                     Send the AT+CFUN command and ERROR is returned.
    
```

## 3.12 AT+ENPWRSAVE – Enabling or Disabling Sleep Mode

To enable or disable sleep mode. The setting of the parameter <n> is not saved after the module is powered off.

The DTR signal of the module is at high level by default.

After the sleep mode is enabled and the DTR signal is at low (or high) level, the module can enter the sleep mode only when all circuits of the module allow the sleep mode.

High (or low) level at the DTR signal drive wakes up the module from sleep mode.

### Format

Type	Command	Response
Set	AT+ENPWRSAVE=<n><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+ENPWRSAVE?<CR>	<CR><LF>+ENPWRSAVE: <n> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <n>
- 0: Disable the sleep mode. (Default)
  - 1: Allow sleep mode (Low level at DTR triggers sleep mode)
  - 2: Allow sleep mode (High level at DTR triggers sleep mode)

### Example

```
AT+ENPWRSAVE=1           Set the module to allow sleep mode.
OK
AT+ENPWRSAVE?
+ENPWRSAVE: 1           Query current sleep mode status.
OK
```

## 3.13 AT+IPR–Setting Baud Rate

To set the baud rate of the module.

The module automatically detects baud rate by default.

The setting by this command is saved after the module is powered off.

### Format

Type	Command	Response
Set	AT+IPR=<baud rate><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+IPR?<CR>	<CR><LF>+IPR: <baud rate> <CR><LF>OK<CR><LF>
Test	AT+IPR=?<CR>	<CR><LF>+IPR:(list of supported<baud rate>s) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<baud rate>** 0,9600,19200,38400,57600,115200

### Example

```
AT+IPR=115200           Set the baud rate of the module to 115200.
OK
AT+IPR=100             Set the baud rate to 100 that is not a valid value.
ERROR                 ERROR is returned.
AT+IPR?                Query the current baud rate of the module.
```

```
+IPR: 115200
OK
AT+IPR=?                               Query the valid baud rate range of the module.
+IPR: 0,9600,19200,38400,57600,115200
OK
```

### 3.14 AT+CPIN – Entering PIN Codes

To query the PIN status and enter the PIN codes.

#### Format

Type	Command	Response
Execute	AT+CPIN=<pin>[,<newpin>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
	AT+CPIN=<PUK>,<PIN><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CPIN?<CR>	<CR><LF>+CPIN: <code> <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

**<pin>,<newpin>** string type with a pair of quotation marks ("")  
**<PUK>** PUK code of the SIM card  
**<PIN>** PIN code of the SIM card  
**<code>** READY: No password  
 SIM PIN: Enter PIN code.  
 SIM PUK: Enter PUK code.  
 SIM PIN2: Enter PIN2 code.  
 SIM PUK2: Enter PUK2 code.

#### Example

```
AT+CPIN?                               Query the PIN code status of the module.
```

```

+CPIN: READY
OK
AT+CPIN?
ERROR          No SIM card is installed.
AT+CPIN?
+CPIN: SIM PIN
OK            PIN code is required.
AT+CPIN="1245"
ERROR          PIN code is incorrect.
AT+CPIN="1234"
OK            The input PIN code is correct.
AT+CPIN?
+CPIN: SIM PUK
OK            PUK code is required.
AT+CPIN="78357381","0000"
OK            "78357381": Correct PUK code
              "0000": New PIN code

```

## 3.15 AT+CCLK – Clock

To set and query the real-time clock. The settings by this command are not saved after the module is powered off.

### Format

Type	Command	Response
Set	AT+CCLK=<time><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CCLK?<CR>	<CR><LF>+CCLK:<time> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<time>** String, in the format "yy/mm/dd, hh:mm:ss+TZ", indicating year, month, day, hour, minute, second.  
TZ: 2 digits indicate the difference between local time and GMT. This information is optional and is displayed only if the network supports it.

### Example

```

AT+CCLK="11/10/14,09:30:16"           Set the real-time clock of the module.
OK
AT+CCLK="11/10/14,09:30:"           The command format is incorrect.
ERROR
AT+CCLK?
+CCLK: "11/10/14,09:32:04"         Query the setting of the real-time clock.
OK
    
```

## 3.16 AT+CLCK – Enabling PIN and Querying MT and Network Device

To lock, unlock, or interrogate an MT or a network facility. The settings of this command take effect after the module is restarted.

### Format

Type	Command	Response
Set	AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]<CR>	<ul style="list-style-type: none"> <li>When &lt;mode&gt; = 2: &lt;CR&gt;&lt;LF&gt;+CLCK: &lt;status&gt;[,&lt;class1&gt;]&lt;CR&gt;&lt;LF&gt;+CLCK: &lt;status&gt;,&lt;class2&gt;[...] &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; Or &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</li> <li>When &lt;mode&gt; is not equal to 2: &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; Or &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</li> </ul>
Test	AT+CLCK=?<CR>	<CR><LF>("SC","FD","AO","OX","OI") <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <fac>** A pair of quotation marks is a must for the value.  
"OI": outgoing international calls

	"SC": SIM card
	"AO": all outgoing calls
	"OX": all outgoing international calls except to the home country
	"FD": fixed dialing of the SIM card
<b>&lt;mode&gt;</b>	0: Unlock
	1: Lock
	2: Query the status
<b>&lt;status&gt;</b>	0: not active
	1: active
<b>&lt;passwd&gt;</b>	Password or code, string type. A pair of quotation marks is a must for the value.
<b>&lt;classx&gt;</b>	1: Voice service
	2: Data service
	4: Fax service
	8: SMS
	16: Synchronous data service
	32: Asynchronous data service
	64: Dedicated packet access
	128: Dedicated PAD access

### Example

```

AT+CLCK="SC",2
+CLCK: 0
OK
AT+CLCK=?
+CLCK: ("SC","FD","AO","OX","OI")           Query the network facilities of the module.
OK
AT+CLCK="SC",1,"1234"                         Lock the current SIM card. "1234" is the PIN code of
OK                                             the current SIM card.
AT+CLCK="SC",0,"1234"                         Unlock the current SIM card. "1234" is the PIN code
OK                                             of the current SIM card.
    
```

## 3.17 AT+CPWD – Modifying PIN

To modify the password of the lock function of the module.

### Format

Type	Command	Response
Set	AT+CPWD=<fac>,<oldp wd>,<newpwd><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF> Or

		<CR><LF>+CME ERROR: <err><CR><LF>
Test	AT+CPWD=?<CR>	<CR><LF>+CPWD: (list of supported (<fac>,<pwdlength>)s) <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <fac>** A pair of quotation marks is a must for the value.  
"P2": SIM PIN2  
"SC": SIM card
- <oldpwd>** Old password or code, string type. A pair of quotation marks is a must for the value.
- <newpwd>** New password or code, string type. A pair of quotation marks is a must for the value.
- <err>** See Appendix A.

## Example

AT+CPWD=? +CPWD: ("SC",8),("P2",8) OK	Query the service range of the PIN password allowed by the module.
AT+CPWD="SC","1234","0000" OK	Modify the PIN code of the current SIM card. "1234" is the old PIN code and "0000" is the new PIN code.
AT+CPWD=SC,1234,0000 ERROR	The command format is incorrect. A pair of quotation marks (") is required for each parameter.



To modify the PIN code and to lock the SIM card (running AT+CLCK="SC",1,"1234").

## 4 Network Service Commands

### 4.1 AT+CSQ—Querying Signal Quality

To query the receiving signal strength indication (RSSI) and bit error ratio (BER).

#### Format

Type	Command	Response
Execute	AT+CSQ<CR>	<CR><LF>+CSQ: <signal>,<ber> <CR><LF>OK<CR><LF>
Test	AT+CSQ=?<C R>	<CR><LF>+CSQ: (list of supported<signal>s),(list of supported <ber>s) <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

##### <signal>

The following table shows the relationship between the signal and the RSSI.

	signal	rsi
0	<4 or 99	<-107dBm or unknown
1	<10	<-93dBm
2	<16	<-81dBm
3	<22	<-69dBm
4	<28	<-57dBm
5	>=28	>=-57dBm

##### <ber>

0...7	Refer to the value of RXQUAL in the table of GSM 05.08 8.2.4.
99	Not known or not detectable.

### Example

```
AT+CSQ
+CSQ: 1,99                                Query the current signal quality.
OK
AT+CSQ=?
+CSQ: (0-31,99),(0-7,99)                  Query the range of the module signal strength.
OK
```

## 4.2 AT+COPS - Selecting and Registering GSM Network

To select and register a GSM network.

### Format

Type	Command	Response
Set	AT+COPS=[<mode>[,<format> >[,<oper>>[,<AcT>]]]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+COPS?<CR>	<CR><LF>+COPS: <mode>[,<format>,<oper> [,<AcT>]] <CR><LF>OK<CR><LF>
Test	AT+COPS=?<CR>	<CR><LF>+COPS: [[list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>[,<AcT>])s][,.(list of supported<mode>s),(list of supported <format>s)]<CR><LF> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 10mins.

### Parameter

- <mode>** To set automatic network selection or manual selection:  
 0: Automatic selection (ignore the parameter <oper>)  
 1: Manual selection  
 2: De-register from the network  
 3: Set <format> only  
 4: Manual/automatic selection (if the manual selection fails, automatic mode starts)
- <format>** 0: Short alphanumeric <oper>  
 2: Numeric <oper> (default value)

- <oper>** It is given in <format>. This field may be in 16-character long alphanumeric format, 8-characters short alphanumeric format, or 5-character numeric format (MCC/MNC).
- <AcT>** indicates the radio access technology and its value can be 0, 1, and 2.  
 0: GSM  
 1: GSM compact  
 2: UTRAN
- <stat>** 0: unknown network  
 1: networks can be registered with  
 2: network registered with  
 3: Forbidden networks can be registered with



- <AcT> is displayed only during the query of the current network selection parameters if the device supports UMTS.
- <AcT> indicates the access technology of the manual attach procedure if GSM/UMTS is set dual mode and select network manually.
- Ignore the parameter <AcT> if automatic network selection is enabled.

## Example

```

AT+COPS=0,0           Automatic network selection is enabled.
OK                   Long alphanumeric mode.
AT+COPS=0,2           Set to digital mode
OK
AT+COPS?
+COPS: 0,0,"China Mobile"   China Mobile
OK
AT+COPS?
+COPS: 0,2,"46000"         If it is set to digital mode, get the
OK                           number 46000.
AT+COPS?
+COPS: 0,0,"China Unicom"   China Unicom
OK
AT+COPS?
+COPS: 0,2,"46001"         If it is set to digital mode, get the
OK                           number 46001.
AT+COPS=?             Query the value range of the network
                           selection.
+COPS: (2,"CU-GSM","CU-GSM","46000"),(3,"CU-
GSM","CU-GSM","46001")
OK
AT+COPS=2             De-register the network.
OK
    
```

## 4.3 AT+POSI – Querying Base Station Information

To query the base station information.

If no cell is found, the module returns OK.

If there are multiple pieces of base station information, the data circulates between MCC and ENDED.

The smaller the value of RxLev, the better the signal. (The inverted is the signal level, unit: dBm).

### Format

Type	Command	Response
Execute	AT+POSI=<mode><CR>	<CR><LF>+POSI:MODE,MCC,MNC,LAC,CI,BSIC, RxLev,ENDED[...] <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<b>MODE</b>	1, indicates that all base station information will be read
<b>MCC</b>	Country code (460 indicates China)
<b>MNC</b>	mobile network code, hexadecimal. China Mobile is 0 or 2.
<b>LAC</b>	area code, hexadecimal
<b>CI</b>	Cell ID, hexadecimal
<b>BSIC</b>	base station ID (hexadecimal format)
<b>RxLev</b>	Signal strength of the base station, expressed by 0 to 115
<b>ENDED</b>	end symbol. 0 indicates there is more base station information; 1 indicates that this is the last line of the base station information.

### Example

AT+POSI=1 +POSI: 1,460,00,27A8,EA7,1D,7,1 OK AT+POSI=1	Obtain the information of one base station.
+POSI: 1,460,00,91A2,0000409F,3A,85,0,460,00,91A2,0000409 E,27,97,0,460,00,91A2,0000409D,26,100,0,460,00,90F 3,00006F93,1E,109,1 OK	Obtain the information of multiple base stations

## 5 GPRS Commands

### 5.1 AT+CGDCONT - Setting PDP Format

To set the packet data protocol (PDP) format of the GPRS.

#### Format

Type	Command	Response
Set	AT+CGDCONT=[<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>[,<pd1> [,...[,pdN]]]]]]]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CGDCONT?<CR>	<CR><LF>+CGDCONT: [<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[, <d_comp>[,<h_comp>[,<pd1> [,...[,pdN]]]]]]]]] <CR><LF>OK<CR><LF>
Test	AT+CGDCONT=?<CR>	<CR><LF>+CGDCONT:(range of supported <cid>),(list of supported <PDP_type>),(range of supported <PAN>),(range of supported <PDP_addr>),(range of supported <d_comp>),(range of supported <h_comp>) <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <cid>** (PDP Context Identifier) a numeric parameter that specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.
- <PDP\_type>** (Packet Data Protocol type) a string parameter. IP Internet Protocol (IETF STD 5)
- <APN>** (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted,

- then the subscription value is requested.
- <PDP\_addr  
ss>** a string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address is requested. The read form of the command continues to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.
  - <d\_comp>** a numeric parameter that controls PDP data compression (applicable for SNDCP only)
  - <h\_comp>** a numeric parameter that controls PDP header compression  
0: off (default if the value is omitted)
  - <pd1>**, ... **<pdN>** zero to N string parameters whose meanings are specific to the <PDP\_type>

### Example

```

AT+CGDCONT=1,"IP","CMNET"           Set APN.
OK
                                     The parameter format is incorrect (lack of quotation
AT+CGDCONT=1,IP,CMNET                marks).
ERROR                                  ERROR is returned.
AT+CGDCONT?                           Query the current parameter value.
+CGDCONT: 1,"IP","CMNET","0.0.0.0",0,0
OK
AT+CGDCONT=?                           Query the value range of parameters.
+CGDCONT: (1-7),(IP,IPV6,PPP),(0-3),(0-4)
OK
    
```



Only one APN is supported currently.

## 5.2 AT+CUSD – Sending USSD Data

To send Unstructured Supplementary Service Data (USSD).

### Format

Type	Command	Response
Set	AT+CUSD=<n>,<str>,<dcs><CR>	<ul style="list-style-type: none"> <li>• The operator supports the service.</li> </ul>

		<pre>&lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; &lt;CR&gt;&lt;LF&gt;+CUSD: &lt;m&gt; Or &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</pre> <ul style="list-style-type: none"> <li>The operator does not support the service.</li> </ul> <pre>&lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; &lt;CR&gt;&lt;LF&gt;+CUSD: &lt;m&gt; Or &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</pre>
Query	AT+CUSD?<CR>	<pre>&lt;CR&gt;&lt;LF&gt;+CUSD: &lt;m&gt; &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt;</pre>
Test	AT+CUSD=?<CR>	<pre>&lt;CR&gt;&lt;LF&gt;+CUSD: (List of supported &lt;n&gt;) &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt;</pre>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <n>**
  - 0: Do not display the return code
  - 1: Display the return code
  - 2: Cancel the request
- <str>** string type USSD string
- <dcs>** 3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default 0)
- <m>**
  - 0: no further user action required
  - 1: further user action required
  - 2: USSD terminated by the network
  - 3: other local client has responded
  - 4: operation not supported
  - 5: network time out

## Example

```
AT+CUSD=1,"*100#",15
OK
+CUSD:
1,"0031795D798F4E0B8F7D000A00325F694FE18D3A536100
0A0033665A95F465B095FB000A003480A1796867E58BE2000
A003586816BD2000A003675377F5153CB5F008F665E265979
53BB65C56E38000A00378BDD8D3967E58BE2000A00387FFB9
875", 72
AT+CUSD=1,"*121#",15
OK
```

The operator supports this service.

The operator does not support the service  
+CUSD:4 is returned.

```
+CUSD: 4
AT+CUSD=?
+CUSD: (0,1,2)           Query the value range of parameters.
OK
AT+CUSD?
+CUSD: 0                 Query the current parameter value.
OK
```

### 5.3 +++ – Switching Data Mode to Command Mode

To switch the module from data mode to command mode.

#### Format

Type	Command	Response
Execute	+++	<CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

N/A.

#### Example

```
+++           Used in external protocol stacks. No return values.
+++
OK           Return value in the transparent TCP/UDP transmission.
+++
OK           Return value in the server transparent transmission.
+++
OK           Return value in the server transparent transmission.
```



This command can be used in the transparent transmission of external/internal protocol stack and CSD function.  
This command should not end with \r or \n.

## 5.4 ATO - Switching Command Mode to Data Mode

To switch the module from command mode to data mode.

### Format

Type	Command	Response
		<CR><LF>CONNECT<CR><LF> Or <CR><LF>OK<CR><LF>
Execute	ATO<CR>	Or <CR><LF>CONNECT<CR><LF> Or <CR><LF>NO CARRIER<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

N/A.

### Example

ATO	<b>CONNECT</b> is returned in TCP/UDP transparent transmission mode and TCP server
CONNECT	transparent transmission mode.
ATO	<b>OK</b> is returned after the mode is switched to data mode successfully in external
CONNECT	protocol dialing.
ATO	<b>ERROR</b> is returned because no transparent transmission link is set up or no external
ERROR	protocol is used for dial-up internet access.



- This command is used to switch the command mode to the data mode for dial-up connection through external protocol stack and transparent transmission through internal protocol stack.
- Commands mode is switched to data mode during the operation of CSD function.

## 5.5 AT+NETAPN – Setting Network APN

To set the network APN.

### Format

Type	Command	Response
Set	AT+NETAPN="APN","username","password"<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+NETAPN?<CR>	<CR><LF>+NETAPN:<APN>,<user name>,<username> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <APN>** GPRS network access point.
- <username>** GPRS user name.
- <password>** GPRS password.

### Example

```
AT+NETAPN="CMNET","",""      Set GPRS APN to CMNET and leave user account and password blank.
OK
AT+NETAPN=CMNET,,          Pair of quotation marks is required for each parameter.
ERROR
AT+NETAPN?
+NETAPN:"","",""          Query the current APN settings.
OK
```

## 5.6 AT+XIIC – Setting Up PPP Link

To set up a PPP link.

Ensure that the module registers the network before using the AT+XIIC=1 command to set up PPP links. Use AT+GREG? to check whether the module registers the network or not. If +CREG: 0,1 or

+CREG: 0,5 is returned, the module is not registered with the network.

### Format

Type	Command	Response
Execute	AT+XIIC=<n><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+XIIC?	<CR><LF>+XIIC: <PDP_type>,<IP_adrr> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <n>**
  - 1: Activate PPP link
  - 0: Deactivate PPP link
- <IP\_adrr>** The IP address that is allocated after the PPP link is activated.

### Example

```

AT+XIIC=1           The module is required to set up a PPP link.
OK
AT+XIIC=0           Disconnect the PPP link.
OK
AT+XIIC?            The PPP link is set up successfully and the IP address is
+XIIC:  1,10.232.165.29  10.232.165.29.
OK                 There are four spaces before 1.
AT+XIIC?            The PPP link is not set up successfully.
+XIIC:0,0.0.0.0      There are four spaces before 0.
OK
GPRS DISCONNECTION  PPP link is disconnected.
    
```

## 5.7 AT+CGATT – Setting GPRS Attach and Detach

To set GPRS attach and detach.

By default, the module can automatically perform GPRS attach. Ensure that the GPRS attach is set before the PPP connection is set up.

Add the AT+CGATT? command to the process to query the GPRS status. If the module returns 1, set up PPP connection directly; otherwise, set GPRS attach manually by executing the command AT+CGATT=1.

### Format

Type	Command	Response
Set	AT+CGATT=<state><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>GPRS DISCONNECTION<CR><LF> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CGATT?<CR>	<CR><LF>+CGATT: <state> <CR><LF>OK<CR><LF>
Test	AT+CGATT=?<CR>	<CR><LF>+CGATT:(list of supported <state> s) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<state>**      0: indicates detach  
                  1: indicates attach

### Example

```
AT+CGATT=1          GPRS attach is set successfully.
OK
AT+CGATT=0          GPRS detach is set successfully.
OK
AT+CGATT=0
GPRS DISCONNECTION GPRS DISCONNECTION is returned if this command is executed after a PPP
link is set up (AT+XIIC=1).
OK
AT+CGATT=0          No SIM card is installed, so the module returns ERROR.
ERROR
AT+CGATT?           Query the GPRS status.
+CGATT: 0
OK
AT+CGATT=?          Query the valid parameter values for the command.
+CGATT: (0,1)
OK
```

## 5.8 AT&D – Setting the DTR Mode

To set the module to DTR mode.

This command is used in data mode; the TA response status when circuit108/2 (DTR) is changed from ON to OFF.

### Format

Type	Command	Response
Set	AT&D[<value>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<value>** integers, ranging from 0 to 2.  
 0: TA, ignores the DTR status  
 1: DTR is changed from ON to OFF  
 TA is switched to command mode while maintaining the current data call  
 2: DTR is changed from ON to OFF; TA releases the data call and switches to command mode. When DTR-OFF, auto- answer is off.

### Example

```
AT&D0      DTR is changed from ON to OFF
OK
AT&D1      TA is switched to command mode while maintaining the current data call
OK
AT&D3      DTR is changed from ON to OFF
ERROR      TA is switched to command mode while maintaining the current data call
ERROR      Illegal input.
```



- The value can be ignored; AT&D is equal to AT&D1.
- TA ignores the DTR state by default at startup.

## 5.9 AT+XGAUTH – PDP Authentication

PDP authentication.

Execute this command after AT+CGDCONT. Add this command execution operation into your code when using the internal protocol stack since the PDP authentication is required for the application that uses the private network.

### Format

Type	Command	Response
Set	AT+XGAUTH=<cid> ,<auth>[,<name>,<p wd>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Test	AT+XGAUTH=?	<CR><LF>+XGAUTH: (list of supported <cid>),(range of supported <auth>),<name>,<pwd><CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<b>&lt;cid&gt;</b>	(PDP Context Identifier) a numeric parameter that specifies a particular PDP context definition.
<b>&lt;auth&gt;</b>	Authentication type 0: NONE 1: PAP (default) 2: CHAP 3: PAP or CHAP (not supported currently)
<b>&lt;name&gt;</b>	User name
<b>&lt;pwd&gt;</b>	Password

### Example

```
AT+XGAUTH=1,1,"gsm","1234"           Set the first PDP authentication.
OK
AT+XGAUTH=?
+XGAUTH: (1),(0-3),32,32             Query the value range of the parameters.
OK
```



- This <cid> parameter corresponds to the <cid> parameter of the +CGDCONT command.
- When the PDP authentication typeb is NONE, the command contains the <name> and <pwd> parameters.

## 6 SMS Commands

### 6.1 AT+CPMS - Setting Preferred SMS Storage

To set preferred SMS storage.

The settings by this command are saved after the module is powered off.

SIM card is a preferred memory to store SMS messages.

#### Format

Type	Command	Response
Set	AT+CPMS=<mem1><CR>	<CR><LF>+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CPMS?<CR>	<CR><LF>+CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> <CR><LF>OK<CR><LF>
Test	AT+CPMS=?<CR>	<CR><LF>+CPMS: (list of supported <mem1>s),(list of supported <mem2>s), (list of supported <mem3>s) <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

<mem1>	String type, for example, "SM", "ME", "MT"
<used>	Used quantity.
<total>	Total capacity of the storage.
<mem1>	"SM": SIM only "ME": ME only "MT": any of storages associated with ME (SIM first)

### Example

```

AT+CPMS="SM"
+CPMS: 50,50,50,50,50,50
OK
AT+CPMS?
+CPMS: "SM",50,50,"SM",50,50,"SM",50,50
OK
AT+CPMS=?
+CPMS:
("SM","ME","MT"),("SM","ME","MT"),("SM","ME","MT")
OK
    
```

Set the SMS storage to "SM", that is, store SMS messages in SIM card.

Query the capacity of current SMS storage.

Query the available storage.

## 6.2 AT+CMGF - Setting SMS Inputting Mode

To set the SMS inputting mode.

### Format

Type	Command	Response
Set	AT+CMGF=<mode><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CMGF?<CR>	<CR><LF>+CMGF:<mode> <CR><LF>OK<CR><LF>
Test	AT+CMGF=?<CR>	<CR><LF>+CMGF:(list of supported <mode>s) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <mode> 0: PDU mode (default)
- 1: Text mode

### Example

```

AT+CMGF=1
    
```

Set the SMS to text mode.

```

OK
AT+CMGF?
+CMGF: 1           Query the current mode of SMS message input.
OK
AT+CMGF=?
+CMGF: (0,1)      Query the value range of SMS mode setting.
OK
    
```

## 6.3 AT+CSCS – Setting TE Character Set

To set the format of the TE character set.

### Format

Type	Command	Response
Set	AT+CSCS=[<chset>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CSCS?<CR>	<CR><LF>+CSCS:<chset> <CR><LF>OK<CR><LF>
Test	AT+CSCS=?<CR>	<CR><LF>+CSCS:(list of supported <chset>) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<chset>**

- "GSM": Default GSM alphabet (GSM03.38.6.2.1)
- "HEX": Character string consisting of hexadecimal numbers from 0x00 to 0xFF. E.g. 032FE6 is 3 8-bit characters, which are respectively 3, 47, and 230. Conversion is not required between these characters and the source MT character set.
- "PCCP936": PC Set Chinese character
- "UCS2": 16-bit universal multiple-octet coded character set (USO/IEC10646).
- "UCS2": 16-bit universal multiple-octet coded character set (USO/IEC10646). The UCS2 character string is converted into a hexadecimal number (ranging from 0x0000 to 0xFFFF). UCS2 encoding is used only in some character string of the statement.

### Example

```

AT+CSCS="HEX"                               Set HEX character set.
OK
AT+CSCS?
+CSCS: "HEX"                                 Query the format of the current character set.
OK
AT+CSCS=?
+CSCS: ("GSM","HEX","PCCP936","UCS2")      Query the character set formats that the module
OK                                           supports.
                                           The list of the character set formats is returned.
    
```

## 6.4 AT+CNMI – Setting SMS Indication Mode

To set how the module informs users of new SMS messages received from the network.

### Format

Type	Command	Response
Set	AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CNMI?<CR>	<CR><LF><mode>, <mt>, <bm>, <ds>, <bfr> <CR><LF>OK<CR><LF>
Test	AT+CNMI=?<CR>	<CR><LF>+CNMI: (range of supported <mode>), (range of supported <mt>), (range of supported <bm>), (range of supported <ds>), (range of supported <bfr>) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <mode>** Set the instruction mode after receiving SMS messages.
  - 0: SMS instruction codes can be saved in the buffer of the module. If the TA is full, the old codes can be saved in other place or replaced with new codes.
  - 1: When the module is online, it discards saved SMS instruction codes and reject new codes. In other situations, the codes are displayed on the end device.
  - 2: When the module is online, the SMS instruction codes are saved in the buffer of the

module. After the connection is released, the SMS instruction codes are output through UART. In other situations, codes are directly displayed on the end device.

3: When the module is online, SMS instruction codes are transmitted with other data and displayed on the end device.

**<mt>** Set the format of the new SMS instruction codes. The default value is 1.  
 0: SMS instruction codes are not sent to the end device.  
 1: The format of the new SMS instruction codes is +CMTI: "MT" ,<index>. The SMS message is stored rather than directly displayed.  
 2: The format of the new SMS instruction codes is <oa>,<scts>,<toa>,<lang>,<encod>,<priority> [<cbn>],<length><CR><LF><data> (text mode). SMS messages are directly displayed rather than stored.  
 3: Use the report codes defined by <mt>=2 to transmit SMS instruction codes to the end device. The SMS instruction codes in other modes are the same as that of <mt>=1.

**<bm>** Set the format of the new cell broadcast codes. The default value is 0.  
 0: Do Not send the instruction information of new cell broadcast. The cell broadcast is not stored.  
 1: The cell broadcast instruction code is +CBMI: " BC" ,<index> and the cell broadcast is stored.  
 2: The format of the new cell broadcast instruction codes is <oa>,<alpha>,<scts> [<toa>,<length>] <CR><LF><data>(text mode). The cell broadcast is directly displayed rather than stored.<CR><LF><data> (text mode). SMS messages are directly displayed rather than stored.  
 3: The CBM of the third-type information is displayed on the end device using the report codes defined by <bm>=2. For other type SMS messages that support CBM storage, the instruction codes are the same as that of <bm>=1.

**<ds>** Report status of SMS message sending. The default value is 0.  
 0: No status report of SMS message sending  
 1: The format of the SMS sending status report is +CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>(text mode).

**<bfr>** The default value is 0.  
 0: When <mode> is set to 1 or 2, codes defined by this command and stored in TA are sent to TE. The module returns OK before transmitting the codes.  
 1: When <mode> is set to 1 or 2, the codes defined by this command and stored in TA are cleared.

### Example

```
AT+CNMI=1,1,0,0,0           Set SMS message indication mode.
OK
AT+CNMI=?
+CNMI: (0-3), (0-3), (0,2), (0-1), (0,1)  Query the value range of parameters.
OK
AT+CNMI?                       Query the value ranges of the parameters.
```

```
+CNMI: 1,1,0,0,0
OK
```



- The default settings of this command are 2, 1, 0, 0, 0.
- The recommended setting is +CNMI: 2,1,0,0,0 (new messages are stored on the SIM card rather than displayed directly) or +CNMI: 2,2,0,0,0 (new messages are displayed directly rather than stored on the SIM card).
- MS messages are classified into four classes based on the storing:
  - Class 0: displayed only
  - Class 1: Stored in the ME memory
  - Class 2: Stored in the SIM memory
  - Class 3: Directly transmitted to TE

## 6.5 AT+CMGR – Reading SMS Messages

To read SMS messages stored in current memory (use the AT+CPMS command to specify the current memory).

### Format

Type	Command	Response
		Text mode (+CMGF = 1)
		<ul style="list-style-type: none"> <li>• The command is executed successfully and the command is SMS-DELIVER:                      &lt;CR&gt;&lt;LF&gt;+CMGR:                      &lt;stat&gt;,&lt;oa&gt;,[&lt;alpha&gt;],&lt;scts&gt;[,&lt;toa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</li> <li>• The command is executed successfully and the command is SMS-SUBMIT:                      &lt;CR&gt;&lt;LF&gt;+CMGR:                      &lt;stat&gt;,&lt;da&gt;,[&lt;alpha&gt;][,&lt;toda&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,[&lt;vp&gt;],&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</li> <li>• The command is executed successfully and the command belongs to SMS-STATUS-REPORT:                      &lt;CR&gt;&lt;LF&gt;+CMGR:                      &lt;stat&gt;,&lt;fo&gt;,&lt;mr&gt;,[&lt;ra&gt;],[&lt;tora&gt;],&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;</li> <li>• The command is executed successfully and the command is SMS-COMMAND:                      &lt;CR&gt;&lt;LF&gt;+CMGR:</li> </ul>
Execute	AT+CMGR=<index><CR>	

<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]

- The command is executed successfully and the command supports CBM storage:

<CR><LF>+CMGR:

<stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>

PDU mode (+ CMGF = 0) and the command is executed successfully:

<CR><LF>+CMGR:

<stat>,[<alpha>],<length><CR><LF><pdu>

Fail to execute this command:

<CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;index&gt;</b>	location value <index> from preferred message storage <mem1> to the TE.
<b>&lt;stat&gt;</b>	Character string type or numeric type <ul style="list-style-type: none"> <li>• When AT+CMGF=1:                 <ul style="list-style-type: none"> <li>“REC UNREAD”: Unread message received</li> <li>“REC READ”: The read message has been received</li> <li>“STO UNSENT”: Unsent messages have been stored</li> <li>“STO SENT”: Sent messages have been stored</li> </ul> </li> <li>• When AT+CMGF=0:                 <ul style="list-style-type: none"> <li>0: Unread message received</li> <li>1: The read message has been received</li> <li>2: Unsent messages have been stored</li> <li>3: Sent messages have been stored</li> </ul> </li> </ul>
<b>&lt;alpha &gt;</b>	The number of characters to represent
<b>&lt;length&gt;</b>	The number of octets of the given TP-level data unit (octets that do not contain the service center address)
<b>&lt;pdu&gt;</b>	PDU data

### Example

```
+CMGF=1
+CMGR: "REC READ","66421",,"2011/09/13 16:37:59+32"
050003140401E27778592EA7E7EBE9373C3C279BCF68F59AADC78FED62779BA596D7EBAEB5B91EBD16A5D46C35F9840
6A744E311A95C32594DA75688B50EADACA6D689150EADF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375C0E16
93CD6835DB0D9783A15C91D2E06BDAA558AC1F60C52B937CADCD2B747AA9021BDEC627E8E9441BD42655DEF446
OK
AT+CMGF=0
OK
AT+CSCS="UCS2"                Set to PDU mode
OK
AT+CMGR=39
+CMGR: 0,,23
0891683110501905F0240BA18177377949F500004130623125032304    Read SMS messages
68341A0D
OK
AT+CMGF=1
OK
AT+CSCS="GSM"                Set to text mode.
OK
AT+CMGR=40
+CMGR:"REC UNREAD","18777397945",,"14/03/26,13:57:58+32"    Read SMS messages
hello world
OK
AT+CMGR=10
ERROR                        The tenth message does not exist.
```



If the status of the message is received unread, the status in the storage changes to received read.

## 6.6 AT+CMGL - SMS Message List

To read one type of SMS message from memory specified by +CPMS.

### Format

Type	Command	Response
Execute	AT+CMGL[=<stat>]<CR>	Text mode (+CMGF = 1) <ul style="list-style-type: none"> <li>The command is executed successfully and the command is SMS-SUBMITs and/or SMS-DELIVERs:</li> </ul>

```
<CR><LF>+CMGL:
<index>,<stat>,<oa/da>,[<alpha>],[<scts>],[<t
ooa/toda>,<length>]<CR><LF><data>[<CR>
<LF>+CMGL:
<index>,<stat>,<da/oa>,[<alpha>],[<scts>],[<t
ooa/toda>,<length>]<CR><LF><data>[...]]
```

Text mode (+CMGF = 1)

- The command is executed successfully and the command belongs to SMS-STATUS-REPORTs:

```
<CR><LF>+CMGL:
<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<sc
ts>,<dt>,<st>[<CR><LF>+CMGL:<index>,<st
at>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st
>[...]]
```

Text mode (+CMGF = 1)

- The command is executed successfully and the command belongs to SMS-COMMANDs:

```
<CR><LF>+CMGL:
<index>,<stat>,<fo>,<ct><CR><LF>
<CR><LF>+CMGL:
<index>,<stat>,<fo>,<ct>[...]]
```

Text mode (+CMGF = 1)

- The command is executed successfully and the command supports CBM storage:

```
<CR><LF>+CMGL:
<index>,<stat>,<sn>,<mid>,<page>,<pages>
<CR><LF><data><CR><LF>
<CR><LF>+CMGL:
<index>,<stat>,<sn>,<mid>,<page>,<pages>
<CR><LF><data>[...]]
```

PDU mode (+CMGF = 0)

- The command is executed successfully:

```
<CR><LF>+CMGL:
<index>,<stat>,[<alpha>],<length><CR><LF>
<pdu><CR><LF>
<CR><LF>+CMGL:<index>,<stat>,[<alpha>],
<length><CR><LF><pdu>[...]]
```

Test AT+CMGL=?<CR>

- Text mode CMGF = 1  
+CMGL: "REC UNREAD", "REC READ", "STO UNSENT", "STO SENT", "ALL"

- `<CR><LF>OK<CR><LF>`
- PDU mode CMGF = 0  
`<CR><LF>+CMGL: (listof supported<stat>s)`  
`<CR><LF>OK<CR><LF>`

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;stat&gt;</b>	Character string type or numeric type <ul style="list-style-type: none"> <li>• When AT+CMGF=1:                     <ul style="list-style-type: none"> <li>“REC UNREAD”: Unread SMS messages received</li> <li>“REC READ”: Read SMS messages received</li> <li>“STO UNSENT”: Stored unsent SMS messages</li> <li>“STO SENT”: Stored sent SMS messages</li> <li>"ALL": All SMS messages</li> </ul> </li> <li>• When AT+CMGF=0:                     <ul style="list-style-type: none"> <li>0: Unread SMS messages received</li> <li>1: Read SMS messages received</li> <li>2: Stored unsent SMS messages</li> <li>3: Stored sent SMS messages</li> <li>4: All SMS messages</li> </ul> </li> </ul>
<b>&lt;alpha&gt;</b>	The number of characters to represent
<b>&lt;length&gt;</b>	The number of octets of the given TP-level data unit (octets that do not contain the service center address)
<b>&lt;pdu&gt;</b>	PDU data

## Example

```
AT+CMGL="ALL"
+CMGL: 1,"REC READ","66421",,"2011/09/13 16:37:59+32"
050003140401E27778592EA7E7EBE9373C3C279BCF68F59AADC78FED62779BA596D7EBAEB5B91EBD16A5D46C35F9840
6A744E311A95C32594DA75688B50EADACA6D689150EADF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375C0E16
93CD6835DB0D9783A15C91D2E06BDAA558AC1F60C52B937CADCD2B747AA9021BDEC627E8E9441BD42655DEF446
+CMGL: 14,"STO SENT","66045",,
050003010401E27778592EA7E7EBE9373C3C279BCF68F59AADC78FED62779BA596D7EBAEB5B91EBD16A5D46C35F9840
6A744E311A95C32594DA75688B50EADACA6D689150EADF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375C0E16
93CD6835DB0D9783A15C91D2E06BDAA558AC1F60C52B937CADCD2B747AA9021BDEC627E8E9441BD42655DEF446
+CMGL: 44,"REC UNREAD","8615719556937",,"2011/09/30 03:00:55+32"
5E7F4E1C79FB52A863D0919260A8003A4E2D536B75286237003100350037003100390035003500360039003300377ED
960A86765753500326B21002C6700540E4E006B21572800320039002F00300039002000320030003A00340038002C60
A853EF6309901A8BDD952E621690099879952E76F463A556DE62E8
OK
```

```

AT+CMGL=?
+CMGL: ("REC UNREAD", "REC READ", "STO UNSENT", "STO SENT", "ALL")      Query in Text mode (AT+CMGF=1)
OK
AT+CMGL=?
+CMGL: (0-4)      Query in PDU mode (AT+CMGF=0)
OK
AT+CMGL=ALL      Wrong parameter format; miss double quotes
ERROR
AT+CMGF=1
OK
AT+CMGL=4      The parameter should be set to 0.
ERROR
AT+CMGF=1
OK
AT+CMGL=4      The parameter should be set to 1.
ERROR
    
```

## 6.7 AT+CMGS – Sending SMS Messages

To send an SMS message from the module to the network.

The network returns reference value <mr> to the module after the SMS message is sent successfully.

### Format

Type	Command	Response
Execute	<ul style="list-style-type: none"> <li>AT+CMGS=&lt;da&gt;[,&lt;tda&gt;]&lt;CR&gt;text is entered&lt;Ctrl+Z/ESC&gt; (Text mode)</li> <li>AT+CMGS=&lt;length&gt;&lt;CR&gt;PDU is given&lt;Ctrl+Z/ESC&gt; (PDU mode)</li> </ul>	<ul style="list-style-type: none"> <li>Text mode (+CMGF = 1) &lt;CR&gt;&lt;LF&gt;+CMGS: &lt;mr&gt;[,&lt;scts&gt;] &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; Or &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</li> <li>PDU mode (+CMGF = 0) &lt;CR&gt;&lt;LF&gt;+CMGS: &lt;mr&gt;[,&lt;ackpdu&gt;] &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; Or &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</li> </ul>

### Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;da&gt;</b>	The destination number to which the SMS message is sent in text mode.
<b>&lt;text&gt;</b>	SMS message content in text mode.
<b>&lt;length&gt;</b>	The byte length of the SMS message content in PDU mode.
<b>&lt;mr&gt;</b>	The storage location.
<b>&lt;CR&gt;</b>	End character.
<b>&lt;Ctrl+Z&gt;</b>	indicates the end of the input message, “→” in the example.
<b>&lt;ESC&gt;</b>	indicates giving up the input message.

## Example

```

AT+CMGS="66358"<CR>
> This is the text                               Text mode(+CMGF=1)
+CMGS: 171                                       "" is the symbol after you press Ctrl+Z.
OK
AT+CMGS="15889758493"<CR>
> This is the text                               AT+CMGF=1 is probably not executed.
ERROR
AT+CMGS=33<CR>
>0891683108705505F001000B815118784271F2000
8146DF157335E025B9D5B89533A59276D6A80545EF    PDU mode (+CMGF=0)
A
+CMGS: 119
OK
    
```



- If UART debugging tool is used to send PDU SMS message, enter \r behind the AT+CMGS command manually or send <CR> in hexadecimal system.
- For details about PDU, see the A.1 Content of PDU SMS Messages.

## 6.8 AT+CMGW – Writing SMS Messages

To write an SMS message into the memory. The location information <index> is returned after the message is saved correctly. The message status is set to "stored unsent" by default. <stat> also supports other values such as "stored unsent" and "stored sent".

### Format

Type	Command	Response
Execute	AT+CMGW[=<oa/da>[,<toa/toda>],<stat	<CR><LF>+CMGW:<index>

>]]]<CR>text is entered<Ctrl-Z/ESC> (text mode)	<CR><LF>OK<CR><LF> Or
AT+CMGW=<length>[,<stat>]<CR>PDU is given<Ctrl-Z/ESC> (PDU mode)	<CR><LF>ERROR<CR><LF> Or <CR><LF>+CMS ERROR:<err><CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;da&gt;</b>	The destination number to which the SMS message is sent in text mode.
<b>&lt;text&gt;</b>	SMS message content in text mode.
<b>&lt;length&gt;</b>	The byte length of the SMS message content in PDU mode.
<b>&lt;index&gt;</b>	Location information
<b>&lt;CR&gt;</b>	End character.
<b>&lt;Ctrl+Z&gt;</b>	Indicates the end of the input message.
<b>&lt;ESC&gt;</b>	indicates giving up the input message.
<b>&lt;err&gt;</b>	See Appendix A.

## Example

```

AT+CMGW="091137880"<CR>
>"This is the text"<Ctrl+Z>
+CMGW: 15
OK
AT+CMGW=091137880
> "This is the text"<Ctrl+Z>
ERROR
AT+CMGW=31<CR>
>0891683108705505F001000B813124248536F300081
200400026002A535A53D153A653C1532052C7<Ctrl+Z>
+CMGW: 1
OK
    
```

Text mode (+CMGF=1)

A pair of quotation marks (") is required for the number.

PDU mode (+CMGF=0)

## 6.9 AT+CMSS – Sending Stored SMS Messages

To send an SMS message specified by <index> in the memory (SMS-SUBMIT).

The network returns reference value <mr> to the end device after the SMS message is sent successfully.

## Format

Type	Command	Response
Execute	AT+CMSS=<index>[,<da>[,<toda>]]<CR>	<ul style="list-style-type: none"> <li>Text mode (+CMGF = 1) &lt;CR&gt;&lt;LF&gt;+CMSS: &lt;mr&gt;[,&lt;scts&gt;] &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; Or &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</li> <li>PDU mode (+CMGF = 0) &lt;CR&gt;&lt;LF&gt;+CMSS: &lt;mr&gt;[,&lt;ackpdu&gt;] &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; Or &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</li> </ul>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<index>	Message location
<da>	The destination number to which the SMS message is sent in text mode.
<toda>	type of address
<mr>	The storage location.
<scts>	Service Center TimeStamp.
<ackpdu>	3GPP 23.040 RP-User-Data element of RP-ACK PDU

## Example

```

AT+CMSS=2
+CMSS: <mr>          Send the SMS messages stored in memory 2.
OK
AT+CMSS=2           No SMS message is stored in memory 2 or the SMS message number
ERROR              is incorrect.
AT+CMSS=6,"15889758495"
+CMSS: 6           Forward SMS message to 15889758495. 6 is the ID of the message
OK                stored successfully. Only text messages support this function.
    
```



Send the SMS message stored in <mem2>. If a new phone number is used when this command is being executed, send this message to the new phone number. Otherwise, send this message to the phone number stored.

## 6.10 AT+CMGD – Deleting SMS Message

To delete SMS messages from the current memory.

### Format

Type	Command	Response
Execute	AT+CMGD=<index>[,<delflag>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Test	AT+CMGD=?<CR>	<CR><LF> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <index>** The recording number of the stored SMS messages.
- <delflag>** Integer type
  - 0: Delete the SMS messages with the specified recording numbers.
  - 1: Delete all read SMS messages.
  - 2: Delete all read and sent SMS messages.
  - 3: Delete all read, sent, and unsent SMS messages.
  - 4: Delete all messages.

### Example

```
AT+CMGD=1,3           Delete all read, sent, and unsent SMS messages.
OK                    Delete successfully

AT+CMGD=?
+CMGD: (1-50), (0-4)  Query the value ranges of the parameters.
OK
```

```
AT+CMGD=5
ERROR
No message is to be deleted in storage record 5.
```



If <delflag> is set, ignore the parameter <index>.

## 6.11 AT+CSCA - Setting SMS Center Number

To set the SMS center number. SMS center number can be written into the SIM card by executing this command.

### Format

Type	Command	Response
Execute	AT+CSCA=<sca>[,<tosca>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CSCA?<CR>	<CR><LF>+CSCA:<sca>,<tosca> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <sca>** SMS center number. A pair of quotation marks is a must for the value.
- <tosca>** The format of the SMS center number. 129 indicates common number; 145 indicates international number (add + in front of the number automatically).

### Example

```
AT+CSCA="+8613800755500",145
OK
AT+CSCA?
+CSCA: "+8613800755500",145
OK
Set an international SMSC number.
Query the SMSC number.
```

## 6.12 AT+CSMP – Setting Text Mode Parameters

To select required values for the additional parameters in text mode, and set the validity period since the message is received from the SMSC, or the absolute time defining the end of the validity period. The default settings of this command are 17, 167, 0, 0.

### Format

Type	Command	Response
Set	AT+CSMP=[<fo>[,<vp>[,<pid>[,<dc>]]]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CSMP?<CR>	<CR><LF>+CSMP: <fo>,<vp>,<pid>,<dc> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<fo>** Determined by the command or the first 8 bits of the result code GSM 03.40 SMS-DELIVER; SMS-SUBMIT (default value: 17); or adopt the integer-type SMS-COMMAND (default value: 2)

<vp>	value	validity period
	0-143	(vp+1)*5mins, 12 hours at most
	144-167	12 hours +((vp-143)*30mins), 24 hours at most
	168-196	(vp-166) *1 day
	197-255	(vp-192) * 1 week

**<pid>** Integer-type TP-protocol-ID (default value: 0)

**<dc>** Encoding plan for integer-type cell broadcast data (default value: 0)

### Example

```
AT+CSMP=17,167,0,0           Set text mode parameters.
OK
AT+CSMP?                     Query the current settings of the text mode.
+CSMP: 17, 255, 0, 0
```

OK

## 6.13 AT+CSDH - Displaying Text Mode Parameters

To set whether the detailed header information is displayed in the result code in text mode.

This command is valid in text mode, which can be set by AT+CMGF=1.

### Format

Type	Command	Response
Set	AT+CSDH=[<show>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CSDH?<CR>	<CR><LF>+CSDH: <show> <CR><LF>OK<CR><LF>
Test	AT+CSDH=?<CR>	<CR><LF>+CSDH: (range of supported <show>) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<show>**      0: not display (default value)  
                  1: display

### Example

```

AT+CSDH=0
OK
AT+CMGR=14
+CMGR: "RECREAD", "+8613430981504", "", "2013/07/17,14:49:00+50"
7B5675655FAE5C0F65F65019
OK
AT+CSDH=1
OK
AT+CMGR=14
    
```

Set the header information to not display

Read the 14<sup>th</sup> message.

Set the detailed header information to display.

Read the 14<sup>th</sup> message.

```
+CMGR: "REC
READ", "+8613430981504", "", "2013/07/17,14:49:00+50", 145,4,0,8, "861
3800755500", 145,12
7B5675655FAE5C0F65F65019
OK
AT+CSDH?
+CSDH: 0
OK
AT+CSDH=?
+CSDH: (0,1)
OK
```

Query the current parameter setting of the command.

Query the value range of current parameters in the command.

## 6.14 AT+CSCB – Selecting Type of Cell Broadcast Messages

To set the cell broadcast message (CBM) type the ME receives.

### Format

Type	Command	Response
Set	AT+CSCB=[<mode>[,<mids>[,<dcss>]]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CSCB?<CR>	<CR><LF>+CSCB: <mode>,<mids>,<dcss>
Test	AT+CSCB=?<CR>	<CR><LF>+CSCB: (list of supported <mode>s),(list of supported <mids>s), (list of supported <dcss>s) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <mode>** 0: Receive the message type defined by <mids> and <dcss>. 1: Not receive the message type defined by <mids> and <dcss>.
- <mids>** Char type, for example, 0, 1, 5, 320 to 478, 922. All possible combination of CBM message IDs (refer to <mid>).
- <dcss>** Char type, for example, 0 to 3, 5. All possible combination of CBM data encoding plans (refer to <dc>) (the default value is empty character string)

## Example

```
AT+CSCB=0,"2","2"           Enable channel 2 and disable other channels.
OK
AT+CSCB?                     Query the current CBM type channel.
+CSCB:                         Channel 2 is enabled.
1,"50,4383,4356,4370,60","0,1,2,3,4,5,6,7,8,9,
10,11,12,13,14,32,33,34,35,36,15"
OK
AT+CSCB=?                     Query the value range of broadcast message
+CSCB: (0,1),(0,1,5,320-478,922),(0-3,5)
OK
```

## 7 Phonebook Commands

### 7.1 AT+CPBS—Selecting Phonebook Storage

To select phonebook storage.

#### Format

Type	Command	Response
Execute	AT+CPBS=<storage><CR>	<CR><LF>+CPBS: <storage>[,<used>,<total>] <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+CPBS?<CR>	<CR><LF>+CPBS: <storage>, <used>, <total> <CR><LF>OK<CR><LF>
Test	AT+CPBS=?<CR>	<CR><LF>+CPBS: (list of supported <storage>s) <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

**<storage>** A pair of quotation marks is a must for the value.  
 "ME": MT phonebook  
 "SM": SIM/UICC phonebook  
 "LD": last-dialing phonebook  
 "FD": SIM/USIM fixed dialing-phonebook  
 "ON": SIM own numbers (MSISDNs) list

#### Example

```
AT+CPBS="SM"           Set the phonebook storage to SIM card.
+CPBS: "SM",0,500
OK
```

```

AT+CPBS=SM                                A pair of quotation marks is required for SM.
ERROR
AT+CPBS?                                   Query the current storage of the phonebook.
+CPBS: "SM", 1, 250
OK
AT+CPBS=?                                  Query the value range of phonebook storage.
+CPBS: ("SM", "ON", "FD", "LD", "ME")
OK
    
```

## 7.2 AT+CPBR - Reading Phonebook

To read the phonebook information.

### Format

Type	Command	Response
Execute	AT+CPBR=<index1>[,<index2>]<CR>	<CR><LF>+CPBR: <index1>,<number>,<type>,<text><CR><LF>+CPBR: <index2>,<number>,<type>,<text> <CR><LF>+CPBR: <index1>,<number>,<type>,<text>[,<hidden>][[...]<CR><LF> >+CPBR: <index2>,<number>,<type>,<text>[,<hidden>]] <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Test	AT+CPBR=?<CR>	+CPBR: (range of supported <index>),[<nlength>],[<tlength>] <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <index1> Integer type, the sequence number of the phone number.
- <index2> Integer type, the sequence number of the phone number.
- <index1>,<index2>,<index> Integer type values in the range of location numbers of phonebook memory.
- <number> String type phone number of the format <type>
- <type> Type of address octet in integer format (refer TS 24.008 [8])

	subclause 10.5.4.7)
<b>&lt;text&gt;</b>	The phonebook entry name.
<b>&lt;nlength&gt;</b>	Integer type value, indicating the maximum length of field <number>.
<b>&lt;tlength&gt;</b>	Integer type value indicating the maximum length of field <text>.
<b>&lt;hidden&gt;</b>	indicates if the entry is hidden or not.
	0: phonebook entry, not hidden.
	1: phonebook entry, hidden.

### Example

```

AT+CPBR=1,3           Read the phone numbers from 1 to 3 in the phonebook.
+CPBR: 1,"091137880",129,"Comneon"
+CPBR: 2,"09113788223",129,"MMI"
+CPBR: 3, "09113788328",129,"Test-ro"
OK
AT+CPBR=5             No phone number with a sequence number 5 in the
OK                   phonebook.
AT+CPBR=?            Query the range of sequence number, number length, and
+CPBR: (1-500), 20, 14 text length.
OK
    
```

## 7.3 AT+CPBF – Querying Phonebook

To query the phonebook information.

### Format

Type	Command	Response
Execute	AT+CPBF=<findtext><CR>	<CR><LF>+CPBF: <index1>,<number>,<type>,<text> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Test	AT+CPBF=?<CR>	<CR><LF>+CPBF: 20,14 <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<b>&lt;findtext&gt;</b>	the phone book entry name
<b>&lt;index&gt;</b>	Integer type, contact index in the phonebook
<b>&lt;number&gt;</b>	String type phone number of format <type>
<b>&lt;type&gt;</b>	Type of address
<b>&lt;text&gt;</b>	The phone book entry name; character set as specified by command Select TE Character Set +CSCS.UCS2".

### Example

```

AT+CPBF="Comneon"           Query the phone number information of contact Comneon.
+CPBF: 1,"091137880",129,"Comneon"
OK
AT+CPBF=Comneon            A pair of quotation marks is a must for the contact name.
ERROR
AT+CPBF=?                  Query the length of phone number and text.
+CPBF: 20,14
OK
    
```

## 7.4 AT+CPBW – Writing Information to Phonebook

To write information to the phonebook Preconfigure the TE character set. Otherwise, names cannot be input successfully.

### Format

Type	Command	Response
Execute	AT+CPBW=<index>[,<number>,<type>,<text>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Test	AT+CPBW=?<CR>	<CR><LF>+CPBW: (range of supported <index>),<number>,(list of supported <type>s),(range of supported <text>)

### Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;index&gt;</b>	index in phonebook, integer type
<b>&lt;number&gt;</b>	string type phone number of the format <type>
<b>&lt;type&gt;</b>	type of address
<b>&lt;text&gt;</b>	the phone book entry name, string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS.UCS2".

## Example

AT+CPBW=1,"091137880",129,"Comneon"	Write a new contact to the phonebook.
OK	
AT+CPBW=1	Delete the record of number 1 from the phonebook.
OK	
AT+CPBW=5,"091137880",129,Comneon	A pair of quotation marks is required for both phone number and name
ERROR	
AT+CPBW=?	Query the value range of the parameters in this command.
+CPBW: (1-50),20,(129,145,161),14	
OK	

## 7.5 AT+CNUM – Reading My Number

To read my number.

Before reading "my number", use the AT+CPBS="ON" to set the storage of "my number" and use AT+CPBW to store "my number".

### Format

Type	Command	Response
Execute	AT+CNUM<CR>	<CR><LF>+CNUM: [<alpha>],<number>,<type> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;alpha&gt;</b>	The optional alphanumeric string related to <number>
<b>&lt;number&gt;</b>	Phone number
<b>&lt;type&gt;</b>	type of phone number

## Example

```
AT+CNUM                                Query my number.
+CNUM: "A","10086",129
OK
AT+CPBS="on"                            Store my number.
+CPBS: "ON",1,2
OK
AT+CPBW=1,"13651445684",129,"t"
OK
AT+CNUM
+CNUM: "t","13651445684",129
OK
```

## 8 TCP Data Service

### 8.1 AT+TCPSETUP - Setting Up TCP Connection

To set up a TCP connection. Use the AT+XIIC=1 command to set up a PPP link before running this command.

#### Format

Type	Command	Response
Execute	AT+TCPSETUP=<n>,<ip>,<port><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <n>** Socket number, ranging from 0 to 4.
- <ip>** Destination IP address, in xx.xx.xx.xx or domain name format.
- <port>** Destination port ID in decimal ASCII code.

#### Example

```
AT+TCPSETUP=0,220.199.66.56,6800
OK
+TCPSETUP:0,OK
Successfully.

AT+TCPSETUP=0,neowayjsr.oicp.net,60010
OK
+TCPSETUP:0,OK
Successfully.
```

+TCPCLOSE:0,Link Closed	The socket is closed.
AT+TCPSETUP=1,192.168.20.6,7000 OK	Fail to set up a connection to 192.168.20.6,7000 on socket 1. The server is probably not started, the IP address is incorrect, or the SIM card is out of credit.
+TCPSETUP: 1,FAIL	
AT+TCPSETUP=0,neowayjsr.oicp.net,60010 +TCPSETUP:0,ERROR1	A TCP/UDP connection is already set up on socket 0.
AT+TCPSETUP=5,192.168.20.6,7000 +TCPSETUP:ERROR	The socket number is incorrect.
AT+TCPSETUP=0.58.60.184.213.10012 +TCPSETUP:ERROR	The punctuations in the command are incorrect.
AT+TCPSET=0,58.60.184.213,10012 ERROR	The AT command is not complete.

## 8.2 AT+TCPSSEND - Sending TCP Data

To send TCP data.

This command support data sending in command mode and buffer mode as well as in ASCII and HEX format.

Ensure that a TCP connection is set up before sending TCP data.

Send AT+IPSTATUS to check the buffer size before sending data.

In command mode, at most 512 bytes can be sent in HEX format and at most 1024 bytes can be sent in ASCII format.

For how to send quotation marks and backslash in command mode, see the Example.

The mode parameter can be omitted. ASCII supports escape mode by default.

The mode setting is not saved. Set it when sending data.

In buffer mode, the module returns > after this command is sent. Send UDP data 50ms to 100ms later.

### Format

Type	Command	Response
Execute	AT+TCPSSEND=<n>[,<length>][[,<content>][,<mode>]]<CR>	Set Buffer mode <CR><LF>><content> <CR><LF>>OK<CR><LF> Or

Set Command mode  
 <CR><LF>OK<CR><LF>  
 Error codes  
 <CR><LF>+TCPSEND: <n>, OPERATION EXPIRED<CR><LF>  
 Or  
 <CR><LF>+TCPSEND: <err><CR><LF>  
 Or  
 <CR><LF>+TCPSEND:BUFFER NOT ENOUGH,<m><CR><LF>  
 Or  
 <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<n>** Socket number, ranging from 0 to 4. A TCP connection is set up on the socket.  
**<length>** Length of the data to be sent, ranging from 1 to 4096, unit: byte.  
**<content>** data sent in command mode, supporting escape characters.  
**<mode>** data format  
 0: ASCII, escape characters are supported (default)  
 1: HEX  
**<m>** Available buffer size  
**<err>** ERROR  
 OPERATION EXPIRED  
 SOCKET ID OPEN FAILED  
 DATA LENGTH ERROR  
 GPRS DISCONNECTION  
 MODE ERROR

## Example

```
AT+TCPSEND=0,1024,,1
> Send 1024-byte data in hexadecimal format
OK in buffer mode.

+TCPSEND:0,1024 Successfully
AT+TCPSEND=0,10,"SDFEGFREGR",0 In command mode, send data in ASCII mode.
OK Successfully
```

```

+TCPSEND: 0,10
AT+TCPSEND=0,27,"\"3~!@#$%\\^&* ()_+;'332\", \"32\""
OK                               Send data with escape characters in command
                                   mode.

+TCPSEND: 0,27                               Successfully

AT+TCPSEND=0,6,"313233343536",1
OK                               Send data in hexadecimal format in command
                                   mode.

+TCPSEND: 0,6                               Successfully

AT+TCPSEND=0,6,"313233343536",1
OK                               One-byte data fails to be sent on socket 0
                                   because the socket is not opened.

+TCPSEND: 0,6
AT+TCPSEND=0,4097                               4097-byte data fails to be sent on socket 0
+TCPSEND: DATA LENGTH ERROR                               because data length exceeds the limit.
AT+TCPSEND=0                               21-byte data is successfully sent through
>                               socket 0. The command ends with \r if no
OK                               data length is contained. The data length
                                   should not exceed 4096 bytes.

+TCPSEND:0,21

```

## 8.3 +TCPRECV - Indicating Data Received from Server

To indicate TCP data received from the TCP server.

### Format

Type	Command
Unsolicited report	+TCPRECV:<n>,<length>,<data><CR>

### Timeout

N/A.

### Parameter

**<n>** Socket ID, ranging from 0 to 4.  
**<length>** the length of data received

**<data>** The data received.  
Add 0x0d 0x0a to the end of the data. Identify the end based on <length>.

### Example

```
+TCPRECV:0,10,1234567890      10-byte data is successfully received on socket 0.
                               The data is 1234567890.

+TCPRECV: 0,10,31323334353637383930  10-byte of data is received on socket 0. The data
                                       is 31323334353637383930 in ASCII format.
                                       For how to set data in ASCII format. Send
                                       AT+DATAFORMAT=<n>,<m> (<m> is set to 0), or send
                                       AT+ASCII=0.
```

## 8.4 AT+TCPCLOSE – Closing TCP Connection

To close a TCP connection.

### Format

Type	Command	Response
Execute	AT+TCPCLOSE=<n><CR>	<CR><LF>+TCPCLOSE:<n>,<result> <CR><LF>OK<CR><LF> Or <CR><LF>+TCPCLOSE:ERROR<CR><LF> Or <CR><LF>ERROR<CR><LF>
Unsolicited report	+TCPCLOSE:0,Link Closed	

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<n>** Socket ID, ranging from 0 to 4.  
**<result>** OK  
Link Closed

### Example

```

AT+TCPCLOSE=1           Close the TCP connection on socket 1.
+TCPCLOSE:1,OK         Successfully.

AT+TCPCLOSE=5           Socket number error
+TCPCLOSE:ERROR

+TCPCLOSE:0,Link Closed The TCP connection is closed.
                        The server sends a closing command or the network
                        encounters abnormality or weak signals.
    
```

## 8.5 AT+IPSTATUS – Querying TCP/UDP Socket Status

To query the TCP/UDP socket status. This command can be used to query the status of the transparent connection.

### Format

Type	Command	Response
Execute	AT+IPSTATUS=<n><CR>	<CR><LF>+IPSTATUS: <n>,<CONNECT or DISCONNECT>[,<TCP or UDP>,<send-buffer-size>] Or <CR><LF>+IPSTATUS: ERROR

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<n>	Socket ID, ranging from 0 to 4.
<CONNECT or DISCONNECT>	Socket status
<TCP or UDP>	socket type, value: TCP or UDP
<send-buffer-size>	The size of the available send buffer on the module, in decimal ASCII mode. Unit: byte.

### Example

```

AT+IPSTATUS=0           A TCP connection is set up on socket 0 and the buffer size
+IPSTATUS: 0,CONNECT,TCP,4096 is 4096 bytes.
    
```

```

AT+IPSTATUS=0           A UDP connection is set up on socket 0 and the buffer size
+IPSTATUS:0,CONNECT,UDP,4096    is 4096 bytes.

AT+IPSTATUS=1           No TCP or UDP connection is set up on socket 1.
+IPSTATUS:1,DISCONNECT

AT+IPSTATUS=5           The socket number in the command is incorrect.
+IPSTATUS: ERROR
    
```

## 8.6 AT+TCPACK – Querying Status of Data Sent

To query the size of data successfully sent by the TCP server and the size of the data received.

### Format

Type	Command	Response
Execute	AT+TCPACK=<n><CR>	<CR><LF>+TCPACK: <n>,<data_sent>,<acked_rcv> Or <CR><LF>+TCPACK: <n>,<DISCONNECT> Or <CR><LF>+TCPACK: NO TCP LINK Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <data\_sent>** Data successfully sent through this socket.
- <acked\_rcv>** Data acknowledged by the receiver.

### Example

```

AT+TCPACK=0           20-byte data is transmitted from socket 0 and the receiver
+TCPACK: 0,20,20      acknowledges 20-byte data.

AT+TCPACK=0           128-byte data is transmitted from socket 0 and the receiver
+TCPACK:0,128,120    acknowledges 120-byte data.

AT+TCPACK=1           No connection is set up on socket 1.
+TCPACK:1,DISCONNECT
    
```

```
AT+TCPACK=2           A UDP connection is set up on socket 2.
+TCPACK: NO TCP LINK
AT+TCPACK=5           The socket number in the command is incorrect.
ERROR
```



The values of <data\_sent> and <acked\_rcv> are unsigned 64-bit integers in decimal ASCII. The unit is byte.

## 8.7 AT+DATAFORMAT - Setting Data TX/RX Format

To set the TCP/UDP data TX/RX format.

The settings by this command are not saved after the module is powered off.

### Format

Type	Command	Response
Set	AT+DATAFORMAT=<n>,<m><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+DATAFORMAT?<CR>	<CR><LF>+DATAFORMAT: <n><m> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <n> Transmitted data type  
0: Transmitted data is displayed in hexadecimal ASCII code.  
1: Transmitted data is displayed in char type.
- <m> Received data type  
0: Hexadecimal ASCII code  
1: Char type

### Example

```

AT+DATAFORMAT=0,0          Set the data transmitting and receiving in hexadecimal
OK                          ASCII code format.
AT+TCPSEND=0,5
>
OK

+TCPSEND:0,5

+TCPRECV: 0,5,6162636465
AT+DATAFORMAT=1,0          Data is transmitted in char type and received in
OK                          hexadecimal ASCII format.
AT+TCPSEND=0,10
>
OK

+TCPSEND:0,10

+TCPRECV: 0,10,31323334353637383930
AT+DATAFORMAT?            Query the current data format used for data RX/TX.
+DATAFORMAT: 0,0
OK
    
```



The data is transmitted/received in char type by default.

## 8.8 AT+TCPLPORT – Setting Local TCP Port

To set the local TCP port.

Execute this command before the AT+TCPSETUP command is executed. If you do not use this command, the local port ID is allocated dynamically every time the connection is set up. The local port ID setting is not saved after the module is powered off.

### Format

Type	Command	Response
Set	AT+TCPLPORT=<socket>,<port><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>+TCPLPORT: ERROR Or

<CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<socket>** Socket ID, ranging from 0 to 4  
**<port>** Port ID, ranging from 1 to 65535

### Example

```
AT+TCPLPORT=0,6800           Set the local port ID of socket 0 to 6800.
OK
AT+TCPLPORT=0,0             Port error
+TCPLPORT: ERROR
```

## 8.9 AT+TCPKEEPALIVE - Setting TCP Keepalive

To set the TCP keepalive heartbeat. The settings by this command are not saved after the module is powered off.

### Format

Type	Command	Response
Set	AT+TCPKEEPALIVE=<mode>[,<time>[,interval]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+TCPKEEPALIVE?<CR>	<CR><LF>+TCPKEEPALIVE: <mode>,<time>,<interval> <CR><LF>OK<CR><LF>
Test	AT+TCPKEEPALIVE=?<CR>	<CR><LF>+TCPKEEPALIVE: +TCPKEEPALIVE: (range of supported<mode>),(range of supported <time>),(range of supported <interval> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;mode&gt;</b>	0: Disable (default) 1: Enable
<b>&lt;time&gt;</b>	Interval for which the TCP is idle before the module sends the KEEPALIVE packet to the remote server. A value between 120 and 300 is recommended.
<b>&lt;interval&gt;</b>	Interval for the module to resend the KEEPALIVE packet since it sends last time and does not receive a response. The value ranges from 1s to 1800s, and the default value is 75s.

## Example

```

AT+TCPKEEPALIVE=1           Enable TCP keepalive
OK
AT+TCPKEEPALIVE=1,120,75   Enable and set the KEEPALIVE parameters
OK
AT+TCPKEEPALIVE=0         Disable TCP KEEPALIVE
OK
AT+TCPKEEPALIVE?          Query the parameter range
+TCPKEEPALIVE: 1,120,75
OK
AT+TCPKEEPALIVE=?         Query the value ranges of parameters.
+TCPKEEPALIVE: (0-1),(30-7200),(1-1800)
OK

```



- Execute this command before setting up a TCP connection. It is valid for all connections. DO NOT send it after establishing a TCP connection.
- This function consumes data traffic.
- Configure the keepalive parameters properly based on the network conditions.
- If <time> is set to a too-large value, a one-way connection may occur; if the value of <interval> exceeds the value of <time>, the data will not be retransmitted
- If the settings of <time> and <interval> values are too short, the terminal may disconnect the connection.

There is a sleep mechanism in GSM. When the interval is too short, if multiple heartbeat packets are sent during the sleep period, the heartbeat packets will be sent together after waking up. The receiving side considers the sticky packet data to be invalid and does not reply to the confirmation message. When the information terminal is confirmed, the connection is considered invalid and the connection is actively disconnected.

- Recommended settings: <time>: 120 to 300 <interval>: 40 to 100

## 8.10 AT+RCVMODE - Setting Receive Mode

To set the receive mode of TCP and UDP data.

The settings are not saved after the module is powered down.

Do not send this command during communication because it will clear the buffer.

This command also works for UDP data.

### Format

Type	Command	Response
Set	AT+RCVMODE=<n>[,<mode>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+RCVMODE?<CR>	<CR><LF>+RCVMODE: <n>[,<mode>] <CR><LF>OK<CR><LF>
Test	AT+RCVMODE=?<CR>	<CR><LF>+RCVMODE: (range of supported <n>),(range of supported <n><mode>) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <n>** receive mode  
 0: buffer the TCP or UDP data received and MCU sends commands to read the data  
 1: print the TCP or UDP data received to UART directly (default)
- <mode>** report format  
 0: report in ASCII mode (default)  
 1: Hexadecimal

### Example

```
AT+RCVMODE=1,1          Print data and report data in HEX format
OK
```

```
AT+RECVMODE=0,0          Buffer data and report in ASCII format
OK
```

## 8.11 A+TCPREAD - Reading TCP Data

To read TCP data.

### Format

Type	Command	Response
Execute	AT+TCPREAD=<n>,<length>	<CR><LF>+TCPREAD:<n>,<length>,<data> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<n>** Socket ID, ranging from 0 to 4.  
**<length>** maximum length of data allowed to read.  
**<data>** Data read.

### Example

```
+TCPRECV: 0          Socket 0 receives data.
AT+TCPREAD=0,100     Read data.
+TCPREAD:0,10,1234567890  The data read is 1234567890.
OK
```

## 9 SSL TCP Data Service

### 9.1 AT+SSLTCPCFG - Configuring SSL Parameters for TCP

To configure SSL parameters for HTTPS.

#### Format

Type	Command	Response
Set	AT+SSLTCPCFG=<type>,<type_name><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+SSLTCPCFG?<CR>	<CR><LF>+SSLTCPCFG:<sslversion type_name>,<authmode type_name>,<ciphersuite type_name>,<cacert type_name>,<clientcert type_name>,<clientkey type_name> <CR><LF>OK<CR><LF>
Test	AT+SSLTCPCFG=?<CR>	<CR><LF>+SSLTCPCFG: <type>,<type_name> <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

**<type>** SSL parameter options  
 sslversion: SSL protocol version  
 authmode: authentication mode  
 ciphersuite: Cipher suite  
 cacert: CA certificate  
 clientcert: Client certificate  
 clientkey: Client key

**<type\_name>** Settings for SSL parameter, the relations between the <type> and <type\_name> values are as follows:

- sslversion  
0:SSL3.0  
1:TLS1.0  
2:TLS1.1  
3:TLS1.2
- authmode  
0:No authentication  
1:Manage server authentication  
2:Manage server and client authentication if requested by the remote server
- ciphersuite: reserved.
- cacert: string, CA certificate
- clientcert: string, client certificate
- clientkeyClientkey: string, client key



Use double quote marks to enclose the parameter values except for numbers.

## Example

```

AT+SSLTCPCFG="sslversion",0           Set SSL version to SSL3.0.

OK

AT+SSLTCPCFG="authmode",0           Set authmode to no authentication.

OK

AT+SSLTCPCFG="authmode",1           Set the certificate.

OK

AT+SSLTCPCFG="cacert","ca.pem"

OK

AT+SSLTCPCFG?                       Query the current SSL settings.

+SSLTCPCFG: 0,1,,ca.pem,,

OK

AT+SSLTCPCFG=?

+SSLTCPCFG: <type>,<type_name>

OK
    
```



If the authmode is set to 0, you do not have to set other parameters, such as cacert, clientcert, and clientkey.

## 9.2 AT+SSLTCPSETUP – Setting up TCP Connection over SSL

To set up a TCP connection over SSL. You must activate PPP and apply one IP address before setting up a TCP connection over SSL.

### Format

Type	Command	Response
Execute	AT+SSLTCPSETUP=<n>,<ip>,<port>,<mode><CR>	<CR><LF>OK<CR><LF> <CR><LF>+SSLTCPSETUP: <n>,<status> Or <CR><LF>CONNECT Or <CR><LF>+SSLTCPSETUP: ERROR Or <CR><LF>+SSLTCPSETUP: GPRS DISCONNECTION
Query	AT+SSLTCPSETUP?	<CR><LF>+SSLTCPSETUP: <n>,<ip>,<port>,<mode> <CR><LF>OK<CR><LF>
Test	AT+SSLTCPSETUP=?	<CR><LF>+SSLTCPSETUP: (list of supported <n>s),(range of supported <ip>),(range of supported <port>),(list of supported <mode>s)

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <n>** socket ID, ranging from 0 to 4.
- <IP>** IP address or domain name of the server.
- <Port>** server port.
- <Mode>** transmission mode  
0: non-transparent

**<status>**            1: transparent (not supported now)  
OK  
ERROR1  
AUTHFAIL  
FAIL

### Example

```
AT+SSLTCPSETUP=1,58.60.184.213,12009,0
OK
+SSLTCPSETUP: 1,OK
AT+SSLTCPSETUP=1,58.60.184.213,12009,0
OK
+SSLTCPSETUP: 1,ERROR1
AT+SSLTCPSETUP=1,58.60.184.213,12009,1
OK
CONNECT
AT+SSLTCPSETUP=1,58.60.184.213,12009,0
OK
+SSLTCPSETUP: 1,AUTHFAIL
AT+SSLTCPSETUP=1,58.60.184.213,12009
+SSLTCPSETUP: ERROR
```

Set up a non-transparent connection to 183.239.240.45 on socket 1.  
Successfully

An SSL TCP connection is already set up on socket 1.

Set up a transparent SSL TCP connection on socket 1.  
Successfully  
Send +++ to exit from transparent mode.

Set up a connection to 192.168.20.6,7000 on socket 1.  
Fail to authenticate.

Set up a connection.  
Fail because the command is incomplete.

## 9.3 AT+SSLTCPCLOSE – Closing TCP Connection over SSL

To close a TCP connection over SSL.

### Format

Type	Command	Response
Execute	AT+SSLTCPCLOSE=<n>	<CR><LF>+SSLTCPCLOSE: <n>,<result> Or

<CR><LF>+SSLTCPCLOSE: ERROR

Unsolicited report +SSLTCPCLOSE: 0,Link Closed

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<n>** socket ID, ranging from 0 to 4.  
**<result>** OK  
 ERROR  
 Link Closed

## Example

```
AT+SSLTCPCLOSE=0
                                Close the TCP connection on socket 0.
+SSLTCPCLOSE: 0,OK
AT+SSLTCPCLOSE=0
                                The TCP connection on socket 0 is closed.
+SSLTCPCLOSE: ERROR
+SSLTCPCLOSE: 0,Link Closed    The TCP connection on socket 0 is closed.
```

## 9.4 AT+SSLTCPSEND – Sending TCP Data over SSL

To send TCP data over SSL.

### Format

Type	Command	Response
Execute	AT+SSLTCPSEND=<n>,<data_a_length>	<CR><LF>> <CR><LF>OK<CR><LF> <CR><LF>+SSLTCPSEND: <n>,<data_length> Or <CR><LF>+SSLTCPSEND: <n>,OK<CR><LF> Or <CR><LF>+SSLTCPSEND: BUFFER NOT ENOUGH, 439

		Or <CR><LF>+SSLTCPCSEND:<err>
Test	AT+SSLTCPCSEND=?	<CR><LF>+SSLTCPCSEND:(range of supported <n>),(range of supported <data_length>)

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<n>	socket ID, ranging from 0 to 4.
<data_length>	data length, ranging from 1 to 4096.
<err>	Data length error SOCKET ID OPEN FAILED ERROR GPRS DISCONNECTION

## Example

```

AT+SSLTCPCSEND=1,20
>
OK                               Send 20-byte data to the server over socket 1.

+SSLTCPCSEND: 1,20
AT+SSLTCPCSEND=1,4097
+SSLTCPCSEND: Data length error   Fail because the data length exceeds the threshold.
AT+SSLTCPCSEND=0,1024
+SSLTCPCSEND:BUFFER NOT ENOUGH,   Fail because buffer is full.
439
AT+SSLTCPCSEND=?
+SSLTCPCSEND: (0-4),(1-4096)      Query the value range of the parameters.

```

## 9.5 +SSLTCPRECV – Report of Receiving SSLTCP Data

The unsolicited report that indicates SSLTCP data received.

When the module receives SSLTCP data from the network, the UART prints the data automatically.

### Format

Type	Command
Unsolicited report	+SSLTCPRECV: <n>,<data_length>,<data><CR><LF>

### Timeout

N/A.

### Parameter

- <n> ranging from 0 to 4, used to identify the connection to the server.
- <data\_length> the length of data received
- <data> data received.

### Example

```
+SSLTCPRECV: 1,20,12345678901234567890 Receive 20-byte data over socket 0.
```

## 9.6 AT+SSLTCPREAD - Reading SSL TCP Data

To read SSL TCP data. This command can buffer at most 2048-byte data.

### Format

Type	Command	Response
Execute	AT+SSLTCPREAD= <n>,<size><CR>	<CR><LF><n>,<data> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;n&gt;</b>	Socket ID, ranging from 0 to 4.
<b>&lt;size&gt;</b>	Length of data read.
<b>&lt;data&gt;</b>	Data read.

## Example

```
AT+SSLTCPSREAD=0,10           Data received on socket 0.  
                                Read data.  
+SSLTCPSREAD:0,1234567890     The data read is 1234567890.  
OK
```

## 10 SSL Commands

### 10.1 AT+CERTADD - Adding SSL Certificate

To add an SSL certificate to the module.

#### Format

Type	Command	Response
Execute	AT+CERTADD=<file_name>,<length><CR>	<CR><LF>> <CR><LF>+CERTADD: <length>,OK Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <file\_name>** certificate file name written to the module.  
**<length>** file length.

#### Example

```
AT+CERTADD="alipay.crt",1900
> Add the alipay.crt certificate of 1900 bytes to the module.
+CERTADD: 1900,OK
```

### 10.2 AT+CERTCHECK - Checking SSL Certificate

To check the SSL certificate.

## Format

Type	Command	Response
Execute	AT+CERTCHECK=<file_name><CR>	<CR><LF>+CERTCHECK: <file_name>,OK Or <CR><LF>+CERTCHECK: ERROR Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<file\_name>** Certificate file name to be confirmed.

## Example

```
AT+CERTCHECK="ca.pem"
                          Check the ca.pem certificate.
+CERTCHECK: ca.pem,OK
AT+CERTCHECK="ck.pem"
                          The certificate does not exist.
+CERTCHECK: ERROR
```

## 10.3 AT+CERTDEL - Deleting SSL Certificate

To delete an SSL certificate.

## Format

Type	Command	Response
Execute	AT+CERTDEL=<file_name><CR>	<CR><LF>+CERTDEL: <file_name>,OK Or <CR><LF>+CERTDEL: ERROR

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<file\_name>** Certificate file name to be deleted.

## Example

```
AT+CERTDEL="ck.pem"           Delete ck.pem.
+CERTDEL: ck.pem,OK           Successfully
AT+CERTDEL="ck.pem"           Delete ck.pem
+CERTDEL: ERROR               Fail because the file does not exist.
```

# 11 UDP Data Service

## 11.1 AT+UDPSETUP - Setting Up UDP Connection

To set up a UDP connection.

Use the AT+XIIIC=1 command to set up a PPP link before running this command.

### Format

Type	Command	Response
Execute	AT+UDPSETUP=<n>,<ip>,<port><CR>	<CR><LF>OK<CR><LF> <CR><LF>+UDPSETUP: <n>,<result><CR><LF> Or <CR><LF>ERROR<CR><LF> Or <CR><LF>+UDPSETUP: ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 60s.

### Parameter

- <n>** Socket ID, ranging from 0 to 4.
- <ip>** Use the AT+XIIIC=1 command to set up a PPP link before running this command. [www.china.com](http://www.china.com) (domain name)
- <port>** Destination port ID in decimal ASCII code.
- <result>** Result codes  
OK  
FAIL  
ERROR1

### Example

```
AT+UDPSETUP=1,220.199.66.56,7000           Set up a connection to 192.168.20.6,7000 on socket 1.
```

OK	Successfully.
+UDPSETUP: 1,OK	
AT+UDPSETUP=0,neowayjsr.oicp.net,60010	Set up a connection to neowayjsr.oicp.net,60010 on socket 0
OK	Successfully
+UDPSETUP: 0,OK	
AT+UDPSETUP=0,58.60.184.213,11008	A TCP/UDP connection is set up on socket 0.
+UDPSETUP: 0, ERROR1	
AT+UDPSETUP=1,192.168.20.6,7000	Set up a connection to 192.168.20.6, 7000 on socket 1.
OK	because socket 0 is unavailable.
+UDPSETUP: 1,FAIL	
AT+UDPSETUP=5,192.168.20.6,6800	Socket number error
+UDPSETUP: ERROR	
AT+UDPSETUP=0.58.60.184.213.10012	The punctuations in the command are incorrect.
+UDPSETUP: ERROR	
AT+UDPSET=0,58.60.184.213,10012	The AT command is not complete.
ERROR	

## 11.2 AT+UDPSSEND - Sending UDP Data

To send UDP data.

Ensure that the UDP link is set up before sending UDP data. In buffer mode, the module returns > after this command is sent. Send UDP data 50ms to 100ms later.



- In command mode, at most 512 bytes can be sent in HEX format and at most 1024 bytes can be sent in ASCII format.
- To decrease the packet loss rate, do not send data more than 1472 bytes each time.
- For how to send quotation marks and backslash in command mode, see the Example.
- The mode parameter can be omitted. ASCII supports escape mode by default.

### Format

Type	Command	Response
Execute	AT+UDPSSEND=<n>,<length>[[,<content>],<mode>]<CR>	Set Buffer mode <CR><LF>><content> <CR><LF>OK<CR><LF> Or

Set Command mode  
<CR><LF>OK<CR><LF>  
Error code  
<CR><LF>+UDPSSEND: ERROR<CR><LF>  
Or  
<CR><LF>+UDPSSEND: <n>, OPERATION EXPIRED<CR><LF>  
Or  
<CR><LF>+UDPSSEND: SOCKET ID OPEN FAILED<CR><LF>  
Or  
<CR><LF>+UDPSSEND: DATA LENGTH ERROR<CR><LF>  
Or  
<CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<n>** Socket ID, ranging from 0 to 4. A UDP connection is established on the socket.  
**<length>** Length of the data to be sent, ranging from 1 to 4096, unit: byte.  
**<content>** data sent in command mode.  
**<mode>** 0: ASCII format, escape mode is supported (default)  
 1: HEX format

## Example

```
AT+UDPSSEND =0,1024,,1          Send 1024-byte data in hexadecimal format
>                                in buffer mode.
OK

+UDPSSEND: 0,1024              Successfully
AT+UDPSSEND=0,10,"DEGHRFRD",0   In command mode, send data in ASCII mode.
OK

+UDPSSEND: 0,10                Successfully
AT+UDPSSEND=1,27,"\"3~!@#$$%\^&*()_+;'332\", \"32\""
OK                                In command mode, the data contains escape
+UDPSSEND: 0,27                characters are sent successfully.
AT+UDPSSEND=0,4097             4097-byte data fails to be sent on socket 0
+UDPSSEND:DATA LENGTH ERROR    because data length exceeds the limit.
AT+UDPSSEND=1,6,"313233343536",1
OK                                Send data in hexadecimal format in command
mode.
```

<pre>+UDPSSEND: 0,6  AT+UDPSSEND=0,10 &gt; +UDPSSEND:0,OPERATION EXPIRED  AT+UDPSSEND=0,1 +UDPSSEND: SOCKET ID OPEN FAILED</pre>	<p>Successfully</p> <p>After the data sending command is input and &gt; is returned, no more data is entered in 30 seconds. Then the expiration information is displayed.</p> <p>One-byte data fails to be sent on socket 0 because the socket is not opened.</p>
--	---

## 11.3 +UDPRECV - Indicating that UDP Data Has Been Received

To indicate that UDP data has been received.

### Format

Type	Command
Unsolicited report	+UDPRECV: <n>,<length>[,<data>]<CR>

### Timeout

N/A.

### Parameter

**<n>** Socket ID, ranging from 0 to 4.

**<length>** the length of date received

**<data>** Data received Add 0x0d 0x0a to the end of the data. Identify the end based on <length>.

### Example

<pre>+UDPRECV: 0,10,1234567890</pre>	<p>10-byte of data is received on socket 0. The data is 1234567890 in ASCII format.</p>
<pre>+UDPRECV: 0,10,31323334353637383930</pre>	<p>10-byte of data is received on socket 0. The data is 31323334353637383930 in ASCII format.</p>

## 11.4 AT+UDPREAD - Reading UDP Data

To read UDP data.

### Format

Type	Command	Response
Execute	AT+UDPREAD=<n>[,<length>]<CR>	<CR><LF>+ UDPREAD: <n>,<length>,<data> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<n>	Socket ID, ranging from 0 to 4.
<length>	maximum length of data allowed to read.
<data>	UDP data read.

### Example

```
+UDPRECV: 0,10           Data received on socket 0.
AT+UDPREAD=0,100        Read data.
+UDPREAD: 0,10,1234567890 The data read is 1234567890.
OK
```

## 11.5 AT+UDPCLOSE - Closing UDP Link

To close the UDP connection.

### Format

Type	Command	Response
Execute	AT+UDPCLOSE=<n><CR>	<CR><LF>+UDPCLOSE: <n>,OK<CR><LF> Or <CR><LF>+UDPCLOSE:ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<n>** Socket ID, ranging from 0 to 4.

## Example

```

AT+UDPCLOSE=1           The TCP link on socket 1 is closed successfully.
+UDPCLOSE: 1,OK
AT+UDPCLOSE=5           Socket number error
+UDPCLOSE:ERROR

```

# 11.6 AT+UDPLPORT - Setting Local UDP Port

To set the local UDP port.

Execute this command before the AT+UDPSETUP command is executed.

If you do not use this command, the local port ID is allocated dynamically every time the connection is set up.

## Format

Type	Command	Response
Set	AT+UDPLPORT=<socket>,<port><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>+UDPLPORT: Error

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<socket>** Socket ID, ranging from 0 to 4  
**<port>** Port ID, ranging from 0,4097 to 32767

## Example

```
AT+UDPLPORT=0,6800          Set the local port ID of socket 0 to 6800.
OK
AT+UDPLPORT=0,0             Port error
+UDPLPORT: Error
```

## 12 Transparent TCP/UDP

### 12.1 AT+TCPTRANS - Setting Up Transparent TCP Connection

To set up a transparent TCP connection.



- The UART does not display the data transmitted to the server after the transparent TCP connection is set up successfully.
- Use +++ to switch the server to the command mode and ATO to switch it to the data mode.
- The module exits from the transparent mode if a call or message is incoming.
- At most 4096-byte data can be sent or received per packet in transparent mode.
- TCP data can be transparently transmitted after the TCP connection is set up successfully and +TCPTRANS:OK is returned.

#### Format

Type	Command	Response
Execute	AT+TCPTRANS=<ip>,<port><CR>	<CR><LF>OK<CR><LF> <CR><LF>+TCPTRANS: <result><CR><LF> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 60s.

#### Parameter

- <ip>** Use the AT+XIIC=1 command to set up a PPP link before running this command. [www.china.com](http://www.china.com) (domain name)
- <port>** Destination port ID in decimal ASCII code.
- <result>** OK

FAIL  
ERROR

### Example

```

AT+TCPTRANS=220.199.66.56,6800      Set up a transparent TCP connection.
OK

+TCPTRANS:OK                        Successfully.
AT+TCPTRANS=neowayjsr.oicp.net,60010 Set up a transparent TCP connection using domain name.
OK

+TCPTRANS:OK                        Successfully.
AT+TCPTRANS=220.199.66.56,
+TCPTRANS: ERROR                    The command is in wrong format.
AT+TCPTRANS=220.199.66.56,6800
OK

+TCPTRANS:FAIL                      Fail to set up a transparent TCP connection.

AT+TCPTRANS=220.199.66.56,6800      ERROR is returned after the command is executed because a
ERROR                                transparent (TCP, UDP, TCP server) connection is already
                                     set up.
    
```

## 12.2 AT+UDPTRANS – Setting Up Transparent UDP Connection

To set up a transparent UDP connection.



- The UART does not display the data transmitted to the server after the transparent UDP connection is set up successfully.
- Use +++ to switch the server to the command mode and ATO to switch it to the data mode.
- At most 4096-byte data can be sent or received per packet in transparent mode.
- UDP data can be transparently transmitted after the UDP connection is set up successfully and +UDPTRANS:OK is returned.

### Format

Type	Command	Response
Execute	AT+UDPTRANS=<ip>,<port><CR>	<CR><LF>OK<CR><LF> <CR><LF>+UDPTRANS: <result><CR><LF> Or

---

<CR><LF>ERROR<CR><LF>

---

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;ip&gt;</b>	Use the AT+XIIC=1 command to set up a PPP link before running this command. <a href="http://www.china.com">www.china.com</a> (domain name)
<b>&lt;port&gt;</b>	Destination port ID in decimal ASCII code.
<b>&lt;result&gt;</b>	OK FAIL ERROR

## Example

```
AT+UDPTRANS=220.199.66.56,6800
OK
Set up a transparent UDP connection.

+UDPTRANS: OK
Successfully.

AT+UDPTRANS=neowayjsr.oicp.net,60010
OK
Set up a transparent UDP connection by using the domain
name
Successfully.

+UDPTRANS:OK
AT+UDPTRANS=220.199.66.56,
+UDPTRANS: ERROR
The command format is incorrect.

AT+UDPTRANS=220.199.66.56,6800
OK
Fail to set up a transparent UDP connection.

+UDPTRANS:FAIL

AT+UDPTRANS=220.199.66.56,6800
ERROR
ERROR is returned after the command is executed because
a transparent (TCP, UDP, TCP server) connection is
already set up.
```

## 12.3 AT+TRANSCLOSE – Closing Transparent Connection

To close the transparent transmission connection.

## Format

Type	Command	Response
Execute	AT+TRANSCLOSE<CR>	<CR><LF>+TRANSCLOSE: <n>,OK Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

N/A.

## Example

AT+TRANSCLOSE	Close transparent TCP connection
+TRANSCLOSE: 0,OK	Successfully.
AT+TRANSCLOSE	No transparent TCP/UDP link is set up.
ERROR	
AT+TRANSCLOSE	Close a transparent UDP connection.
+TRANSCLOSE: 1,OK	Successfully.
+TCPTRANS:Link Closed	The transparent TCP connection is closed.
+UDPTRANS:Link Closed	The transparent UDP connection is closed.

## 13 TCP Server AT Commands

### 13.1 AT+TCPLISTEN - Setting TCP Listening for Server

To set the TCP listening function of the server.

Only the SIM cards with fixed IP addresses can be used as servers.

#### Format

Type	Command	Response
Set	AT+TCPLISTEN=<port><CR>	<CR><LF>+TCPLISTEN:<socket>,OK
		Or
		<CR><LF>+TCPLISTEN: bind error
		Or
		<CR><LF> Listening... <CR><LF>
Query	AT+TCPLISTEN?<CR>	Or
		<CR><LF>+TCPLISTEN:ERROR
Query	AT+TCPLISTEN?<CR>	<CR><LF>+TCPLISTEN:<status><CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

<b>&lt;port&gt;</b>	Port ID
<b>&lt;socket&gt;</b>	Socket ID
<b>&lt;status&gt;</b>	bind error not listening

#### Example

```
AT+TCPLISTEN=6800
+TCPLISTEN: 0,OK
```

```
Listening port ID: 6800
The listening function of the server
is started.
```

AT+TCPLISTEN=6800	Listening port ID: 6800
+TCPLISTEN: bind error	Fail to bind.
AT+TCPLISTEN=6800	Transparent listening is set already.
Listening...	
AT+TCPLISTEN=0	The port ID listened is invalid.
+TCPLISTEN: ERROR	
AT+TCPLISTEN?	Query the listening status. Here the server is in the listening status.
+TCPLISTEN: listening status	
AT+TCPLISTEN?	Query the listening status. Here the server is not in the listening status.
+TCPLISTEN: not listening	
Connect	Receive the connection request from the client. AcceptSocket indicates the socket ID on the module, and 119.123.77.133 is the IP address of the client.
AcceptSocket=1,ClientAddr=119.123.77.133,ClientPort=8000	

## 13.2 AT+CLOSELISTEN - Closing Listening Socket

To close the listening socket.

### Format

Type	Command	Response
Execute	AT+CLOSELISTEN<CR>	<CR><LF>+CLOSELISTEN:<socket_id>,local link closed
Unsolicited report	+CLOSELISTEN:<socket_id>,local link closed	

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<socket\_id>**      Socket ID

### Example

+CLOSELISTEN: 0,local link closed	The client closes the socket or network abnormalities occur.
-----------------------------------	--

<p>AT+CLOSELISTEN +CLOSELISTEN: 0,local link closed</p>	<p>The local socket is closed if there is any connection to the client.</p>
---	---

### 13.3 AT+CLOSECLIENT – Closing Listening Socket

To close the listening socket.

#### Format

Type	Command	Response
Execute	AT+CLOSECLIENT[=<socket>]<CR>	<CR><LF>+CLOSECLIENT: <socket>,remote link closed<CR><LF> Or <CR><LF>ERROR<CR><LF> Or <CR><LF>+CLOSECLIENT: All remote link closed<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

**<socket>**      Socket ID

#### Example

```

AT+CLOSECLIENT
+CLOSECLIENT: 1,remote link closed          .Sockets are closed successfully.

+CLOSECLIENT: 2,remote link closed

AT+CLOSECLIENT=1                           .Close socket 1.
+CLOSECLIENT: 1,remote link closed           .Successfully.

AT+CLOSECLIENT=1
ERROR                                         .No connection to remote client on socket 1.

AT+CLOSECLIENT
+CLOSECLIENT: All remote link closed         .Connections to all clients are closed.
    
```

## 13.4 +TCPRECV(S) – Receiving Data from Client

To receive data from the client.

### Format

Type	Command
Unsolicited report	+TCPRECV(S): <n>,<length>,<data><CR>

### Timeout

N/A.

### Parameter

<b>&lt;n&gt;</b>	Socket ID, ranging from 0 to 4.
<b>&lt;length&gt;</b>	the length of date received
<b>&lt;data&gt;</b>	Data received Add 0x0d 0x0a to the end of the data. Identify the end based on <length>.

### Example

```
+TCPRECV(S): 1,10,1234567899
```

Socket 1 receives 10-byte data in char format from the client.

```
+TCPRECV(S): 0,10,30313233343536373839
```

+TCPRECV(S): 0,10,30313233343536373839 Socket 0 receives 10-byte data in hexadecimal ASCII format.



- Additional (s) makes this command different from the receive mode of the client mode in format.
- The parameters in this command vary from the parameters of the command of the client.

## 13.5 AT+TCPSENDS – Sending Data to Client

To send data to the client.

This command supports data sending in command mode and buffer mode as well as in ASCII and HEX format.

Ensure that the TCP connection is set up before sending TCP data.

### Format

Type	Command	Response
		<CR><LF>>
		<CR><LF>OK<CR><LF>
		<CR><LF>+TCPSENDS:<socket>[,<length>]<CR><LF>
		Or
		<CR><LF>>
Execute	AT+TCPSENDS=<socket> >[,<length>]<CR>	<CR><LF>+TCPSENDS: <result><CR><LF>
		Or
		<CR><LF>>
		<CR><LF>+TCPSENDS: <socket>, OPERATION EXPIRED<CR><LF>
		Or
		<CR><LF>+TCPSENDS: <socket> is not link<CR><LF>

### Timeout

The command times out if no data is entered within 60s after > is displayed.

### Parameter

- <socket>** Value of AcceptSocket, that is, the socket of the module. See the description of the AT+TCPLISTEN command.
- <length>** Length of the data to be sent, ranging from 1 to 4096, unit: byte.
- <content>** data sent in command mode, supporting escape characters.
- <mode>** data format  
0: ASCII, escape characters are supported (default)  
1: HEX

### Example

```

AT+TCPSENDS=1,1024,,1          Send 1024-byte data in hexadecimal format
>                               in buffer mode.
OK

+TCPSENDS: 1,1024             Successfully
AT+TCPSENDS=1,27,"\"3~!@#%$%^&*()_+;'332\", \"32\"" Send data with escape characters in
OK                               command mode.

```

```
+TCPSENDS: 1,27
                                     Successfully
AT+TCPSENDS=0
                                     Send 21-byte data on socket 0.
>
OK                                     (e.g.:
                                     012345678901234567890).

+TCPSENDS: 0,21
AT+TCPSENDS=1,6,"313233343536",1
                                     Send data in hexadecimal format in command
OK                                     mode.

+TCPSENDS: 1,6
                                     Successfully
AT+TCPSENDS=1,4097
                                     4097-byte data fails to be sent on socket
                                     1 because data length exceeds the limit.

+TCPSENDS: DATA LENGTH ERROR
AT+TCPSENDS=0,1024
                                     Send TCP data.
>
+TCPSENDS: ERROR                       Congestion.
AT+TCPSENDS=0,10
+TCPSENDS: 0 is not link
                                     No connection is set up on socket 0.
AT+TCPSENDS=0
+TCPSENDS: 0 is not link
AT+TCPSENDS=0,5
>
                                     No data is input within 1 minute after >
                                     is displayed
+TCPSENDS: 0,OPERATION EXPIRED
```

## 13.6 AT+TCPACKS – Querying Status of Data Sent

To query the size of data successfully sent by the TCP server and the size of the data received.

### Format

Type	Command	Response
Execute	AT+TCPACKS=<n><CR>	<CR><LF>+TCPACKS: <n>,<data_sent>,<acked_rcv>
		Or
		<CR><LF>+TCPACKS: <n>,<DISCONNECT>
		Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <n>** Socket ID, ranging from 0 to 4.  
**<data\_sent>** Data successfully sent through this socket.  
**<acked\_rcv>** Data acknowledged by the receiver.



The values of <data\_sent> and <acked\_rcv> are unsigned 32-bit integers in decimal ASCII. The unit is byte.

## Example

```
AT+TCPACKS=0                20-byte data is transmitted from socket 0 and the
+TCPACKS: 0,20,20           receiver acknowledges 20-byte data.

AT+TCPACKS=0                128-byte data is transmitted from socket 0 and the
+TCPACKS: 0,20,20           receiver acknowledges 120-byte data.

AT+TCPACKS=1                No connection is set up on socket 1.
+TCPACKS: 1,DISCONNECT

AT+TCPACK=5                 The socket number in the command is incorrect.
ERROR
```

## 14 Unlimited UDP Server AT Commands

### 14.1 AT+FUDPLISTEN - Setting UDP Listening on Server

To set UDP listening on the server.



- This command is valid only after a PPP connection is set up successfully.
- Only the SIM cards with fixed IP addresses can be used as servers.

#### Format

Type	Command	Response
Execute	AT+FUDPLISTEN=<port><CR>	<CR><LF>+FUDPLISTEN: <socket>,OK Or <CR><LF>+FUDPLISTEN:<result>
Query	AT+FUDPLISTEN?<CR>	<CR><LF>+FUDPLISTEN:<status> <CR><LF>OK<CR><LF>
Test	AT+FUDPLISTEN=?<CR>	<CR><LF>+FUDPLISTEN: (range of supported <port>) <CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

<port>	Port number, ranging from 1 to 65535.
<socket>	SOCKET number
<result>	GPRS DISCONNECTION ERROR Error Port Listen Error

**<status>** Bind Error  
listening status  
not listening

### Example

```

AT+FUDPLISTEN=6000           Listening port ID: 6000
+FUDPLISTEN:0,OK           The listening function of the server is
or                          started.
+FUDPLISTEN:bind error     Fail to bind.
AT+FUDPLISTEN=6000           Set server listening before setting up PPP
                              connections.

+FUDPLISTEN: GPRS DISCONNECTION
AT+FUDPLISTEN=6000           Transparent listening is set already.
Listening...
AT+FUDPLISTEN=?            Transparent listening has been set.
+FUDPLISTEN: (1-65535)
OK
AT+FUDPLISTEN?             Query the listening status. Here the server is
+FUDPLISTEN: listening status in the listening status.
AT+FUDPLISTEN?             Query the listening status. Here the server is
+FUDPLISTEN: not listening not in the listening status.
    
```

## 14.2 +FUDPRECV(S) - Receiving Data from Client

To receive and output data from the client.

### Format

Type	Command
Unsolicited report	+FUDPRECV(S): <ip>,<port>,<length><data><CR><LF>

### Timeout

N/A.

### Parameter

**<ip>** IP address of the client.  
**<port>** ID of the port for the client to communicate.

**<length>** Length of data received, byte.  
**<data>** Data received

### Example

```
+FUDPRECV(S):          FUDP receives 10-byte data (1234567890) from
10.72.170.156,38061,00010,1234567890    the client (IP: 10.72.170.156, 38061).
```

## 14.3 AT+FUDPSENDS – Sending Data to Client

To send data in ASCII or HEX format to the client.

Buffer mode or command mode are supported.



- Ensure that the UDP link is set up before sending UDP data.
- In command mode, at most 512 bytes can be sent in HEX format and at most 1024 bytes can be sent in ASCII format.
- To decrease the packet loss rate, do not send more than 1472 each time.
- For how to send quotation marks and backslash in command mode, see the Example.
- The mode parameter can be omitted. Data sent in ASCII format supports escape mode by default.
- The mode setting is not saved. Set it when sending data.
- In buffer mode, input data 50ms to 100ms later after receiving >.

### Format

Type	Command	Response
Execute	AT+FUDPSENDS=<ip>,<port>,<length>[[,<content>][,<mode>]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;ip&gt;</b>	IP address of the client.
<b>&lt;port&gt;</b>	ID of the port for the client to communicate.
<b>&lt;length&gt;</b>	Length of the data to be sent, value ranges from 1 to 1024. Unit: byte.
<b>&lt;content&gt;</b>	data sent in command mode, supporting escape characters
<b>&lt;mode&gt;</b>	0: ASCII format, escape mode is supported (default) 1: HEX format

## Example

```

AT+FUDPSENDS=10.230.214.106,44416,10          Send 10-byte data to the client (IP:
>0123456789                                  10.230.214.106: 44416).
OK
+FUDPSENDS: 0,10
AT+FUDPSENDS= 10.127.225.31,49607,4,,1       Send data in HEX format and Buffer mode.
                                              Send 4-byte HEX data to the client (IP:
>                                              10.127.225.31: 49607).
OK
+FUDPSENDS: 0,4
AT+FUDPSENDS=10.127.225.31,49607,27,"\"3~!@#$%\\^&* ( Send data with escape characters in
) _+;' '332\", \"32\""                    command mode.
OK
+FUDPSENDS: 0,27                            Successfully
AT+FUDPSENDS=10.230.214.106,44416,10         The listening is not enabled.
+FUDPSENDS:ERROR
AT+FUDPSENDS=10.230.214.106,44416,10         No data is input after 10 seconds.
>
+FUDPSENDS:Error!TimeOut
AT+FUDPSENDS=10.74.2222.173,41287,10        The IP address or port number is
+FUDPSENDS: IP OR PORT ERROR                incorrect.
AT+FUDPSENDS= 10.127.225.31,49607,4097      Send data in buffer mode.
+FUDPSENDS: DATA LENGTH ERROR             Fail because the data length exceeds the
                                              threshold.

```

## 14.4 AT+CLOSEFUDPLISTEN – Closing Listening on UDP Server

To close listening on a UDP server.

## Format

Type	Command	Response
Execute	AT+CLOSEFUDPLISTEN<CR>	<CR><LF>+CLOSEFUDPCLIENT:<socket>,remote link closed<CR><LF> <CR><LF>+CLOSEFUDPCLIENT:<socket>,local link closed<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<socket>** Socket number.

## Example

```
AT+CLOSEFUDPLISTEN          Close listening for UDP server.  
+CLOSEFUDPLISTEN:0,closed
```

# 15 FTP AT Commands

## 15.1 AT+FTPLOGIN - Logging In to FTP Server

To log in to the FTP server.

The FTP functions cannot be used with the internal protocol stack TCP/UDP function. Data can be read from or written to the FTP server only after login.

### Format

Type	Command	Response
Execute	AT+FTPLOGIN=<ip>,<port>,<user>,<pwd>,<type><CR>	<CR><LF>OK<CR><LF> <CR><LF>+FTPLOGIN: <result><CR><LF> Or <CR><LF>OK<CR><LF> <CR><LF>+FTP:Server Ctrl Link Disconnect <CR><LF>ERROR<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 60s.

### Parameter

- <ip>** IP address of the FTP server.
- <port>** Port ID of the FTP server; 21
- <user>** The user name to log in to the FTP server. The length of the user name cannot exceed 100 bytes in ASCII code and the user name cannot contain comma (,).
- <pwd>** The password for the user account to log in to the FTP server. The length of the password cannot exceed 100 bytes in ASCII code and the password cannot contain comma (,).
- <type>** File transmission mode.  
0: passive (default)  
1: active (not supported)

- <result>**
- Error: The format of the AT command is incorrect
  - Have Logged In: The user has logged in to the FTP server.
  - AT Busy: Last FTP AT command has not been executed completely.
  - User logged in: The user logged in to the FTP server successfully.
  - 530 Not logged in: The user failed to log in to the FTP server because the user account or password is incorrect.
  - GPRS DISCONNECTION: The user logged in to the FTP server before a PPP link is set up.

## Example

```

AT+FTPLLOGIN=219.134.179.52,21,user1,pwd2009
OK
user1 logs in to the server 219.134.179.52
through port 21 successfully. And the
password for user1 is pwd2009.

+FTPLLOGIN: User logged in

AT+FTPLLOGIN=58.60.184.213,21,neoway,neoway
OK

+Connection timed out - Auto closed link to
server!
Fail to log in to the FTP server using neoway
because the connection times out.

+FTPLLOGIN: ERROR

AT+FTPLLOGIN=58.60.184.210,21,neowayftp,neowayftp
OK

+CME ERROR: OTHER ERROR
IP was set incorrectly.

+FTPLLOGIN: ERROR

AT+FTPLLOGIN=58.60.184.213,21,neowayftp,neowayftp
OK

+FTP:Server Control Link Disconnect
Fail to log in to the FTP server.

+FTPLLOGIN:ERROR
    
```

## 15.2 AT+FTPLOGOUT – Logging out from FTP Server

To log out from the FTP server.

### Format

Type	Command	Response
Execute	AT+FTPLOGOUT<CR>	<CR><LF>+FTPLOGOUT: User logged out

```
<CR><LF>OK<CR><LF>
Or
<CR><LF>+CME ERROR: INVALID SOCKET ID
<CR><LF>ERROR<CR><LF>
```

## Timeout

The command times out if the module does not respond in 300ms.

## Example

```
AT+FTPLLOGOUT                               Log out from the FTP server.
+FTPLLOGOUT: User logged out
OK
AT+FTPLLOGOUT
+CME ERROR: INVALID SOCKET ID                Log out of the FTP server because the FTP server is offline.
ERROR
```

## 15.3 AT+FTPGET – Downloading Data from FTP Server

To download data from the FTP server.

### Format

Type	Command	Response
		<CR><LF>+FTPGET:<length><data><CR><LF>
		<CR><LF>+FTP:Server Data Link Disconnect<CR><LF>
Execute	AT+FTPGET=[<dir&filenam e>],<type>,<content info>[,<size>][,<len>]<CR>	<CR><LF>+FTPGET: OK.total length is <n> Or <CR><LF>+FTPGET: OK.total length is <m><CR><LF> Or <CR><LF>+FTPGET: Error<CR><LF>

## Timeout

The command times out if the module does not respond in 30s.

## Parameter

<b>&lt;dir&amp;filename&gt;</b>	Path and name of the file to be read (Note: The file directory under the FTP root directory)
<b>&lt;type&gt;</b>	File transfer mode: 1: ASCII 2: Binary
<b>&lt;Content or Info&gt;</b>	File content or file (or specified path) information 1: Obtain the file content 2: Obtain the information of the file or the specified path
<b>&lt;size&gt;</b>	Specifies where file data starts. This parameter is valid only when <content or info> is 1. 0 (or omitted): Obtain all data of the file. Other values: smaller than the data length of the file.
<b>&lt;len&gt;</b>	Length of the file downloaded from the start point. Max. value: 5120
<b>&lt;result&gt;</b>	<ul style="list-style-type: none"> <li>• <b>+FTPGET: Error:</b> The format of the AT command is incorrect</li> <li>• <b>+FTPGET: Error Not Login:</b> The user has not logged in to the FTP server.</li> <li>• <b>+FTPGET: AT Busy:</b> Last FTP AT command has not been executed completely.</li> <li>• <b>+FTPGET: Error!TimeOut:</b> Some failure is caused by download timeout (timeout period is 30 seconds) and the module does not receive data from the FTP server within 30 seconds.</li> <li>• <b>+FTP: Server Data Link Disconnect:</b> The link is disconnected after the data is downloaded. It is connected automatically when the module downloads data again.</li> <li>• <b>+FTP: Server Control Link Disconnect:</b> The control link is disconnected because the link is not used for long time or for other causes. The module returns this message whenever the control link is disconnected. Connect to the FTP server again by running the AT+FTPLLOGIN command.</li> <li>• <b>+FTP:Create data link Error:</b> The data link fails to set up and it automatically connects when downloading the data again.</li> </ul>
<b>&lt;data&gt;</b>	Data content
<b>&lt;n&gt;</b>	The length of data read
<b>&lt;m&gt;</b>	File size

## Example

```
AT+FTPGET=,1,2                                Obtain information under the
+FTPGET:446,drw-rw-rw- 1 user  group      0 Apr 14 15:55 .    root directory.
drw-rw-rw-  1 user  group      0 Apr 14 15:55 ..
-rw-rw-rw-  1 user  group     1238528 Jan 14 10:36 1M.doc
-rw-rw-rw-  1 user  group      10 Jan 15 15:01 test.txt

+FTP:Server Data Link Disconnect
```

+FTPGET:OK.total length is 446	
AT+FTPGET=test.txt,1,2	Obtain information of
+FTPGET:65,-rw-rw-rw- 1 user group 10 Jan 15 15:01	<b>test.txt</b> under the root
test.txt	directory.
+FTP:Server Data Link Disconnect	
+FTPGET:OK.total length is 65	
AT+FTPGET=test.txt,1,1	Obtain content of <b>test.txt</b>
+FTPGET:10,1234567890	under the root directory.
+FTP:Server Data Link Disconnect	
+FTPGET:OK.total length is 10	
AT+FTPGET=hellotest.txt,1,1,1000	
+FTPGET: 1024,01234567890123456789end!	Obtain 1024-byte data of
	hellotest.txt starting at the
	1000th byte.
+FTP:Server Data Link Disconnect	
+FTPGET:OK.total length is 1024	
AT+FTPGET=Test\hello.txt,1,1	Obtain content of <b>hello.txt in</b>
+FTPGET:10,1234567890	<b>Test</b> folder under the root
	directory.
+FTP:Server Data Link Disconnect	
+FTPGET:OK.total length is 10	
AT+FTPGET=200K.txt,1,1,0,3072	Obtain 3072-byte data from
+FTPGET:3072,#01%456789adcdfehgij0123456789adcdfehgij0123456789	200K.txt.
AT+FTPGET=200K.txt,1,1,0,5120	The <len> value is too large.
ERROR	
AT+FTPGET=\TEST\test\zhang\pv.txt,1,1	Fail to set up a data
+FTP:Create data link Error	connection.
AT+FTPGET=TEST\test\zhang\pv.txt,1,1,1024	The <size> value is too large.
+FTPGET:SIZE Error	

## 15.4 AT+FTPPUT - Uploading data to FTP Server

To upload data to FTP Server.

### Format

Type	Command	Response
Execute	AT+FTPPUT=<filename>,<type>,<CR><LF>	

---

```

<mode>,<size><CR>                <CR><LF>+FTPPUT: OK,<n><CR><LF>
Or
<CR><LF>+FTPPUT: <result><CR><LF>

```

---

## Timeout

The command times out if the module does not respond in 60s.

## Parameter

- <filename>** Path and name of the file to be uploaded.  
The file path is relative to the FTP root path.
- <type>** File transmission mode  
1: ASCII  
2: Binary
- <mode>** Operating mode  
1: STOR mode Create a file in the server and write data into the file; if the file exists already, overwriting the original file.  
2: APPE mode Create a file in the server and write data into the file; if the file exists already, write the data from the end of the file content.  
3: DELE mode Delete a file.
- <size>** Data length, 1024 or most.
- <result>** Mode Error: The format of the command is incorrect  
Error Not Login: The user has logged in to the FTP server.  
AT busy: Last FTP AT command has not been executed completely.  
SIZE Error: value of <length> is greater than 8192 or less than 2.  
Delete File OK: the file is deleted successfully.  
Error send data error: this command cannot be recognized; the module closes the connection.
- <n>** Length of the file to be sent.

## Example

```

AT+FTPPUT=test.txt,1,1,1024
>
+FTPPUT:OK,1024

AT+FTPPUT=test.txt,1,2,1024
>
+FTPPUT:OK,1024

```

Note: the test.txt file (stored in the root directory the FTP server). The file is transmitted in ASCII mode, the operating mode is STORE, and the file length is 1024 bytes.

Note: the test.txt file (stored in the root directory the FTP server). The file is transmitted in ASCII mode, the operating mode is APPE, and the file length is 1024 bytes.

<pre>AT+FTPPUT=tt.txt,1,1,1024 &gt; +FTPPUT:OPERATION EXPIRED  AT+FTPPUT=Test\test.txt,1,2,1024 &gt; +FTPPUT:OK,1024  AT+FTPPUT=test.txt,1,3,0 +FTPPUT&gt;Delete File OK  AT+FTPPUT=FTP\1024.txt,1,1,1024 &gt; +FTPPUT:Send Fail  AT+FTPPUT=FTP\1024.txt,1,1,1024 &gt; +FTPPUT:Send Fail</pre>	<p>After the uploading command is input and &gt; is returned, no &lt;filename&gt; value is entered in 1 second. Then the expiration information is displayed.</p> <p>Note: the test.txt file (stored in the Test folder under the root directory the FTP server). The file is transmitted in ASCII mode, the operating mode is APPE, and the file length is 1024 bytes.</p> <p>Delete the test.txt file from the root directory.</p> <p>Fail to upload. There is no a relevant file in the root directory of the FTP server.</p> <p>The &lt;size&gt; parameter is missing.</p>
--	--

## 15.5 AT+FTPSTATUS - Querying the FTP Connection Status

To query the FTP connection status.

### Format

Type	Command	Response
Execute	AT+FTPSTATUS<CR>	<CR><LF>+FTPSTATUS:<status>,<ip>,<port><CR><LF> Or <CR><LF>+FTPSTATUS: 0<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <status>**      0: FTP connection is not set up.  
                  1: FTP connection is set up.
- <ip>**            The IP address of the FTP server
- <port>**          Port number of the FTP server.

### Example

<pre>AT+FTPSTATUS +FTPSTATUS: 1,119.139.221.66,21</pre>	<p>Query the FTP link status.</p> <p>Set up an FTP link, and display the IP address and port ID of the server.</p>
<pre>AT+FTPSTATUS +FTPSTATUS:0,0.0.0.0,0</pre>	<p>Query the FTP link status.</p> <p>The FTP connection is not set up yet.</p>

## 15.6 AT+FTPGETBUFF - Downloading Data in Buffer Mode from FTP Server

To download data from the FTP server.

The data will be saved inside the module. The buffer content is saved after the module is powered off.



- The command is executed successfully. The data connection is set up successfully.
- The data is downloaded in the background. After the download completes, +FTPBUFFSTAT: 1 is reported.
- During the downloading process, you can use the +FTPBUFFSTAT command to check whether the download completes.

### Format

Type	Command	Response
Execute	AT+FTPGETBUFF=<filename>[,<type>[,<offset>[,<length>]]]<CR>	<pre>&lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt;</pre> <p>Or</p> <ul style="list-style-type: none"> <li>• AT+CMEE=0 &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt;</li> <li>• AT+CMEE=1 &lt;CR&gt;&lt;LF&gt;+CME ERROR:&lt;errcode&gt;&lt;CR&gt;&lt;LF&gt;</li> <li>• AT+CMEE=2 &lt;CR&gt;&lt;LF&gt;+CME ERROR:&lt;errtext&gt;&lt;CR&gt;&lt;LF&gt;</li> </ul>

### Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;dir&amp;filename&gt;</b>	Path and name of the file to be read. (Remarks: The file path is relative to the FTP root path)
<b>&lt;type&gt;</b>	File transmission mode 1: ASCII 2: Binary (default)
<b>&lt;offset&gt;</b>	0 or omitted: obtain all content of the file. Value of <offset> cannot exceed or equal to the data length of the file.
<b>&lt;length&gt;</b>	Length of the file content downloaded, ranging from 1 to 20480, unit: byte.
<b>&lt;errcode&gt;</b>	Error code
<b>&lt;errtext&gt;</b>	Error text, see appendix A.

## Example

AT+FTPGETBUFF="TEXT.TXT"	Download data of the TEXT.TXT file in default format.
OK	
AT+FTPGETBUFF="TEXT.TXT",1,0,20480	Download data of the TEXT.TXT file in ASCII mode from the beginning and the length is 20480.
OK	
AT+CMEE=1	
OK	No dial-up connection is established.
AT+FTPGETBUFF="TEXT.TXT",1,2,20480	
+CME ERROR: 1001	
AT+CMEE=2	
OK	The buffer space is full.
AT+FTPGETBUFF="TEXT.TXT",1,2	
+CME ERROR: MEMORY FULL	
AT+CMEE=2	
OK	No dial-up connection is established. PDP is not active.
AT+FTPGETBUFF="TEXT.TXT"	
+CME ERROR: PDP NOT ACTIVE	
AT+CMEE=2	
OK	Download file.
AT+FTPGETBUFF="TEXT.TXT"	Fail to set up the FTP data connection.
+CME ERROR: FAIL TO OPEN THE DATA CONNECTION	

## 15.7 AT+FTPBUFFSTAT - Querying and Reporting the Download Status in FTP Buffer Mode

To query whether the download in FTP Buffer mode completes and the completion status of the unsolicited report.

### Format

Type	Command	Response
		<pre>&lt;CR&gt;&lt;LF&gt;+FTPBUFFSTAT: &lt;stat&gt;,&lt;length&gt; &lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt; Or • AT+CMEE=0 &lt;CR&gt;&lt;LF&gt;ERROR&lt;CR&gt;&lt;LF&gt; Or • AT+CMEE=1 &lt;CR&gt;&lt;LF&gt;+CME ERROR:&lt;errcode&gt;&lt;CR&gt;&lt;LF&gt; Or • AT+CMEE=2 &lt;CR&gt;&lt;LF&gt;+CME ERROR:&lt;errtext&gt;&lt;CR&gt;&lt;LF&gt;</pre>
Execute	AT+FTPBUFFSTAT<CR>	
Unsolicited report	+FTPBUFFSTAT: <result>	

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<b>&lt;stat&gt;</b>	Buffer status 0: the buffer space is not full. 1: the buffer space is full.
<b>&lt;length&gt;</b>	Buffer space that the file takes up. 0: buffer space is empty. The buffer space ranges from 1 to 20480.
<b>&lt;result&gt;</b>	Buffer status 0: start the perform the upgrade. 1: download completes
<b>&lt;errcode&gt;</b>	Error code
<b>&lt;errtext&gt;</b>	Error text, see appendix A.

## Example

```
AT+FTPGETBUFF="TEXT.TXT"           Download the TEXT.TXT file in default format.
OK

+FTPBUFFSTAT: 0                     Start to download

AT+FTPBUFFSTAT
+FTPBUFFSTAT: 0,1024                The buffer space is not full and 1024-byte data has
OK                                  been downloaded.

+FTPBUFFSTAT: 1                     Download completed

AT+FTPBUFFSTAT
+FTPBUFFSTAT: 1,20480               The buffer space is full and 20480-byte data has
OK                                  been downloaded.

AT+FTPGETBUFF="TEXT.TXT",1,0,10     Download data from the file starting from the 10th
OK                                  byte of data

+FTPBUFFSTAT: 0                     Start to download data.

+FTPBUFFSTAT: 1                     Download completed

AT+FTPBUFFSTAT
+FTPBUFFSTAT: 0,10                  The buffer space is not full and 10-byte space has
OK                                  been occupied

AT+FTPGETBUFF="TEXT.TXT",1,10,10    Download data from the file starting from the 10th
OK                                  byte of data

+FTPBUFFSTAT: 0                     Start to download.

+FTPBUFFSTAT: 1                     Download completed

AT+FTPBUFFSTAT
+FTPBUFFSTAT: 0,20                  Query the buffer space; 20-byte space has been
OK                                  occupied
```



- During the downloading process, you can use the relevant command to check the download status.
- If the buffer space is full, **memoryisfull** is prompted.
- If the file to be downloaded exceeds the remaining buffer space, **memoryisfull** is prompted.

## 15.8 AT+FTPBUFFREAD – Reading Data from FTP Server in Buffer Mode

To download data from the FTP server.

The data will be saved inside the module.

### Format

Type	Command	Response
Execute	AT+FTPBUFFREAD=<length><CR>	<CR><LF>+FTPBUFFREAD: <content_length>,<content> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <length>** Length of the file content downloaded, ranging from 1 to 8192, unit: byte
- <content\_length>** The length of content read
- <content>** Content that was read.

### Example

```
AT+FTPGETBUFF=Test_1M.txt,1,0,1024

OK

+FTPBUFFSTAT: 0

+FTPBUFFSTAT: 1
AT+FTPBUFFREAD=100

+FTPBUFFREAD:
100,00001START1024LPDeBxxCLcCOD6M16jyJ6k
E6Nhc9qWlYSUq41iaEIvW5042mixnlFrfrkrcWDF
0kB1oQx0VdQqxvXDQuTBtUdT
OK
```

## 16 HTTP Commands

### 16.1 AT+HTTTPARA - Setting HTTP Parameters

To set HTTP parameters.

To send new HTTP request, set new HTTP parameters.

#### Format

Type	Command	Response
Set	AT+HTTTPARA=<para>,<para_value><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <para>** HTTP parameters, supporting the following two parameters:  
 url: destination path  
 port: destination port ID
- <para\_value>** Value of <para>. The value of url contains at most 128 bytes and url supports domain name translation. The default port is 80.

#### Example

```
AT+HTTTPARA=url,www.neoway.com.cn/en/index.aspx      Set the Neoway homepage as the URL. The
OK                                                    URL supports domain name translation.
AT+HTTTPARA=url,121.15.200.97/Service1.asmx/GetNote  Set URL.
OK
AT+HTTTPARA=url,                                     The AT command is not complete.
ERROR
AT+HTTTPARA=port,80                                  Set destination port ID to 80.
```

```

OK
AT+HTTTPARA=port,8080                               Set destination port ID to 8080.
OK
AT+HTTTPARA=url, www.neoway.com.cn:80/en/index.aspx  Set the URL to neoway and set the
OK                                                    destination port ID to 80.

```

## 16.2 AT+HTTPSETUP - Setting Up HTTP Connection

To set up an HTTP connection. An HTTP connection is set up successfully only after the destination address and port ID are set correctly.

### Format

Type	Command	Response
Execute	AT+HTTPSETUP<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 60ms.

### Example

```

AT+HTTPSETUP                               Set up an HTTP connection
OK                                           Successful
AT+HTTPSETUP                               Set up an HTTP connection.
ERROR                                        Failed

```

## 16.3 AT+HTTPACTION - HTTP Request

To execute an HTTP request.

Customized packets must comply with the HTTPS protocol.

## Format

Type	Command	Response
		<CR><LF>OK<CR><LF> <CR><LF>><post_content><CR><LF> Or <CR><LF>>
Execute	AT+HTTPACTION=<mode>[,<length>[,<type>[,<offset>,<size>]]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF> Or <CR><LF>+HTTPACTION:<err1> Or <CR><LF>+HTTTPARA:<err2>

## Timeout

The command times out if the module does not respond in 60s.

## Parameter

<b>&lt;mode&gt;</b>	HTTPS request mode 0: GET You can set the <offset> and <size> values to implement segmented download through GET method. 1: HEAD 2: POST 99: OPEN_MODE. You can customize the packet mode.
<b>&lt;length&gt;</b>	The length of the POST content or user-defined packet length, maximum value 2048.
<b>&lt;type&gt;</b>	POST request data type. 0: x-www-form-urlencoded 1: text 2: json 3: xml 4: html 5: application/octet-stream
<b>&lt;offset&gt;</b>	Offset, specifies where file data starts.
<b>&lt;size&gt;</b>	Length of file downloaded from the start point in GET mode.
<b>&lt;post_content&gt;</b>	Content sent in POST method
<b>&gt;</b>	
<b>&lt;err1&gt;</b>	GPRS DISCONNECTION ERROR

NOT LINK  
 LACK OF PARAMETER  
 TYPE ERROR  
 LENGTH ERROR  
 <err2> SIZE ERROR  
 ERROR MODE  
 OFFSET ERROR1  
 OFFSET ERROR2

## Example

```

AT+HTTTPARA=url,www.neoway.com.cn/en/index.aspx
OK
AT+HTTTPARA=port,80
OK
AT+HTTTPSETUP
OK
AT+HTTTPACTION=0
OK

+HTTTPRECV:
HTTP/1.1 200 OK
Cache-Control: private
Content-Type: text/html; charset=utf-8
Server: Microsoft-IIS/7.5
Set-Cookie:
ASP.NET_SessionId=rh3fjg554ufzb145aevgzz45; path=/;
HttpOnly
X-AspNet-Version: 2.0.50727
X-Powered-By: ASP.NET
X-UA-Compatible: IE=EmulateIE7
Date: Thu, 28 Nov 2013 03:06:57 GMT
Connection: close
Content-Length: 13842
/*content of neoway home page, html format, 13842
bytes*/
.....
/* content of neoway homepage*/

+HTTTPCLOSED: HTTP Link Closed
AT+HTTTPARA=url,www.neoway.com.cn/en/index.aspx
OK
AT+HTTTPARA=port,80
OK
AT+HTTTPSETUP
OK
AT+HTTTPACTION=1
  
```

Set the destination path. The default port is 80.  
 Set up an HTTP connection.  
 GET request  
 Receive the response from the HTTP server.  
 The server finishes the response and disconnects the link.

Set the destination path. The default port is 80  
 Set up an HTTP connection.  
 HEAD request

OK	The HTTP server responds.
+HTTPRECV:	
HTTP/1.1 200 OK	
Cache-Control: private	
Content-Length: 13842	
Content-Type: text/html; charset=utf-8	
Server: Microsoft-IIS/7.5	
Set-Cookie:	
ASP.NET_SessionId=znt4fqabqsuclz55pvfufn55; path=/;	
HttpOnly	
X-AspNet-Version: 2.0.50727	
X-Powered-By: ASP.NET	
X-UA-Compatible: IE=EmulateIE7	
Date: Thu, 28 Nov 2013 03:32:35 GMT	
Connection: close	
+HTTPCLOSED: HTTP Link Closed	
AT+HTTTPARA=url,121.15.200.97/Service1.asmx/GetNote	
OK	Set URL
AT+HTTTPARA=port,8080	
OK	Set the destination port ID as 8080.
AT+HTTPSETUP	
OK	Set up an HTTP link
AT+HTTPACTION=2,25	
>MAC=NEOWAY&DATA=012345678	
OK	POST request.
Send 25 bytes; enter the contents to be uploaded after > is displayed.	
+HTTPRECV:	
HTTP/1.1 200 OK	
Cache-Control: private, max-age=0	
Content-Type: text/xml; charset=utf-8	
Server: Microsoft-IIS/7.5	
X-AspNet-Version: 4.0.30319	
X-Powered-By: ASP.NET	
Date: Thu, 28 Nov 2013 03:41:52 GMT	
Connection: close	
Content-Length: 98	
The server replies an XML file containing the uploaded content NEOWAY and 0123456	
<?xml version="1.0" encoding="utf-8"?>	
<string xmlns="http://wslui.cn/">NEOWAY+0123456	
</string>	
The server disconnects to the module after finishing responding.	
+HTTPCLOSED: HTTP Link Closed	
AT+HTTTPARA=url,www.neoway.com.cn/en/index.aspx	
OK	Set URL
AT+HTTTPARA=port,80	
OK	Set the destination port ID as 8080.
AT+HTTPSETUP	
OK	Request to send 70-byte custom packets.
AT+HTTPACTION=99,76	
>HEAD /en/index.aspx HTTP/1.1	

```

connection: close
HOST: www.neoway.com.cn          Receive the response from the HTTP server.
OK

+HTTPRECV:
HTTP/1.1 200 OK
Cache-Control: private
Content-Length: 13842
Content-Type: text/html; charset=utf-8
Server: Microsoft-IIS/7.5
Set-Cookie:
ASP.NET_SessionId=pvlaai3fizxg44eyvyqsyenk; path=/;
HttpOnly
X-AspNet-Version: 2.0.50727
X-Powered-By: ASP.NET           The server disconnects to the module after
X-UA-Compatible: IE=EmulateIE7 finishing responding.
Date: Thu, 28 Nov 2013 05:40:24 GMT
Connection: close

+HTTPCLOSED: HTTP Link Closed

```

## 16.4 AT+HTTPCLOSE - Closing HTTP Connection

To close an HTTP socket.

### Format

Type	Command	Response
Execute	AT+HTTPCLOSE<CR>	<CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

N/A.

### Example

```

AT+HTTPCLOSE          To close an HTTP link.

```

OK

## 16.5 +HTTPRECV - Receiving HTTP Data

Unsolicited report of data HTTP socket receives.

### Format

Type	Command
Unsolicited report	+HTTPRECV: <CR><LF><datas>

### Timeout

N/A.

### Parameter

**<datas>** data HTTP socket receives.

### Example

```
+HTTPRECV:
HTTP/1.1 200 OK
Cache-Control: private
Content-Length: 13842
Content-Type: text/html; charset=utf-8
Server: Microsoft-IIS/7.5
Set-Cookie: ASP.NET_SessionId=pvlaai3fizxg44eyvyqsyenk; path=/; HttpOnly
X-AspNet-Version: 2.0.50727
X-Powered-By: ASP.NET
X-UA-Compatible: IE=EmulateIE7
Date: Thu, 28 Nov 2013 05: 40: 24 GMT
Connection: close

+HTTPCLOSED: HTTP Link Closed
```

Report the data received from the HTTP connection.

## 16.6 +HTTPCLOSED - Unsolicited Report of HTTP Connection Closing

Unsolicited report of the HTTP Connection closing.

## Format

Type	Command
Unsolicited report	+HTTPCLOSED: HTTP Link Closed

## Timeout

N/A.

## Parameter

N/A.

## Example

```
+HTTPCLOSED: HTTP Link Closed          Unsolicited report that the HTTP socket is closed.
```

## 17 HTTPS Commands

### 17.1 AT+HTTPSPARA - Setting HTTPS Parameters

To set HTTPS parameters

To send a new HTTPS request, set new HTTPS parameters. The HTTPS connection is closed if the +HTTPSCLOSE command is executed.

#### Format

Type	Command	Response
Set	AT+HTTPSPARA=<para>,<para_value><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <para>** HTTPS parameters, including two parameters  
 url: destination path  
 port: destination port ID
- <para\_value>** the value of the <para>, 128 bytes at most for url; 443 by default for port.

#### Example

```
AT+HTTPSPARA=url,www.alipay.com/index.html      Set URL to the alipay homepage. The
OK                                               URL supports DNS translation.
AT+HTTPSPARA=url,support.cdmatech.com/index.html
OK                                               Set URL.
AT+HTTPSPARA=url,
ERROR                                           The AT command is in wrong format.
AT+HTTPSPARA=port,443                          Set the destination port to 443.
```

```
OK
AT+HTTPSPARA=url,www.alipay.com:443/index.html      Set URL to the alipay homepage and set
OK                                                    the destination port to 443.
```

## 17.2 AT+HTTPSSETUP - Setting up HTTPS Connection

To set up an HTTPS connection. An HTTP connection is set up successfully only after the destination address and port ID are set correctly.

### Format

Type	Command	Response
Execute	AT+HTTPSSETUP<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 60s.

### Example

```
AT+HTTPSSETUP      Set up an HTTPS connection.
OK                 Successful
AT+HTTPSSETUP      Set up an HTTPS connection.
ERROR              Failed
```

## 17.3 AT+HTTPSACTION - HTTPS Request

To execute an HTTPS request.

Custom packets must comply with the HTTP protocol.

Different status codes might be returned after sending the request.

### Format

Type	Command	Response
------	---------	----------

Execute	AT+HTTPSACTION=<mode>[,<length>[,<type>]][, <offset>[,<size>]]<CR>	<CR><LF><post_content><CR><LF> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
---------	--	---

## Timeout

The command times out if the module does not respond in 60 s.

## Parameter

<b>&lt;mode&gt;</b>	HTTPS request mode 0: GET 1: HEAD 2: POST 99: OPEN_MODE. You can customize the packet mode.
<b>&lt;length&gt;</b>	The length of the POST content or user-defined packet length, maximum value 2048.
<b>&lt;type&gt;</b>	POST request data type. 0: x-www-form-urlencoded 1: text 2: json 3: xml 4: html 5: application/octet-stream
<b>&lt;offset&gt;</b>	Offset, specifies where file data starts.
<b>&lt;size&gt;</b>	Length of the file downloaded from the start point in GET mode.

## Example

```

AT+HTTSPARA=url,www.alipay.com/ index.html      Set the destination address. The
OK                                               default port is 443.
AT+HTTSPARA=port,443                          Set up an HTTPS connection.
OK
AT+HTTSPSETUP                                  GET request
OK
AT+HTTPSACTION=0
OK

+HTTPSRECV:
HTTP/1.1 200 OK
Server: spanner/1.0.6
Date: Fri, 01 Aug 2014 03:02:34 GMT
    
```

```

Content-Type: text/html; charset=gbk
Content-Length: 56028
Connection: close
Last-Modified: Wed, 23 Jul 2014 07:51:38 GMT
Strict-Transport-Security: max-age=31536000
Accept-Ranges: bytes
Set-Cookie:
spanner=Z761rjOVBLsAdq8c3/Rwpd9j7dWQJZjm;path=/;secure;
/*content of Alipay homepage,html format,56028 bytes*/
.....
/* content of alipay homepage*/
+HTTSCLOSED: HTTPS Link Closed
AT+HTTSPARA=url,www.alipay.com/index.html
OK
AT+HTTSPARA=port,443
OK
AT+HTTSPSETUP
OK
AT+HTTSPACTION=1
OK

+HTTPSRECV:
HTTP/1.1 200 OK
Server: spanner/1.0.6
Date: Fri, 01 Aug 2014 03:05:41 GMT
Content-Type: text/html; charset=gbk
Content-Length: 56028
Connection: close
Last-Modified: Wed, 23 Jul 2014 07:51:40 GMT
Strict-Transport-Security: max-age=31536000
Accept-Ranges: bytes
Set-Cookie:
spanner=G0TDss3KC108k1dgppqS1y6qNx1FfX2V;path=/;secure;

+HTTSCLOSED: HTTPS Link Closed
AT+HTTSPARA=url,www.alipay.com/index.html
OK
AT+HTTSPARA=port,443
OK
AT+HTTSPSETUP
OK
AT+HTTSPACTION=99,69
>HEAD /index.html HTTP/1.1
HOST:www.alipay.com
connection: close
OK

+HTTPSRECV:

```

Receive the response from the HTTPS server.

Set the destination address. The default port is 443.

Set up an HTTPS connection.

HEAD request

HTTPS server responses.

Set URL.

Use the default port 443 to set up an HTTPS connection.

Use custom packet mode to send 69-byte packets.

Receive HTTPS server response.

```

HTTP/1.1 200 OK
Server: spanner/1.0.6
Date: Sat, 02 Aug 2014 06:06:21 GMT
Content-Type: text/html; charset=gbk
Content-Length: 56059
Connection: close
Last-Modified: Fri, 01 Aug 2014 07:45:49 GMT
Strict-Transport-Security: max-age=31536000
Accept-Ranges: bytes
Set-Cookie:
spanner=LBKsxiiZAaTeM3wRYcCaUtMjpheSwnH+;path=/;secure;

```

The server finishes responding and close the connection.

```
+HTTPCLOSED: HTTPS Link Closed
```

## 17.4 AT+HTTPCLOSE - Closing HTTPS Connection

To close an HTTPS connection.

After this command is executed, the HTTPS connection is closed but the parameters set by +HTTSPARA are reserved.

### Format

Type	Command	Response
Execute	AT+HTTPCLOSE<CR>	<CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

N/A.

### Example

```

AT+HTTPCLOSE
OK

```

Close an HTTPS connection.

## 17.5 +HTTSCLOSED - HTTPS Connection Closed Report

Unsolicited report that an HTTPS connection is closed.

### Format

Type	Command
Unsolicited report	+HTTSCLOSED: HTTP Link Closed

### Timeout

N/A.

### Parameter

N/A.

### Example

+HTTSCLOSED: HTTPS Link Closed	Unsolicited report that the HTTPS link is closed.
--------------------------------	---

## 17.6 AT+HTTSCFG - Configuring HTTPS Parameters

To configure the SSL parameter options.

### Format

Type	Command	Response
Set	AT+HTTSCFG=<type>,<type_name><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+HTTSCFG?<CR>	+HTTSCFG:<sslversion type_name>,<authmode type_name>,<ciphersuite type_name>,<cacert type_name>,<clientcert type_name>,<clientkey type_name> <CR><LF>OK<CR><LF>

---

Test	AT+HTTPSCFG=?<CR>	<CR><LF>+HTTPSCFG: <type>,<type_name> <CR><LF>OK<CR><LF>
------	-------------------	---

---

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <type>** SSL parameter options
- sslversion: SSL protocol version
  - authmode: authentication mode
  - ciphersuite: Cipher suite
  - cacert: CA certificate
  - clientcert: Client certificate
  - clientkey: Client key
- <type\_name>** Settings for SSL parameter, the relations between the <type> and <type\_name> values are as follows;
- sslversion
    - 0:SSL3.0
    - 1:TLS1.0
    - 2:TLS1.1
    - 3:TLS1.2
  - authmode
    - 0:No authentication
    - 1:Manage server authentication
    - 2:Manage server and client authentication if requested by the remote server
  - ciphersuite: reserved.
  - cacert: string, CA certificate
  - clientcert: string, client certificate
  - clientkeyClientkey: string, client key



Use double quote marks to enclose the parameter values except for numbers.

If the **authmode** is set to 0, you do not have to set the cacert, clientcert, and clientkey parameters.

---

## Example

```
AT+HTTPSCFG="sslversion",3
```

```
Set the TLS version to 1.2.
```

```
OK
```

```
AT+HTTPSCFG="authmode",0
                                     Set not to verify server certificates.
OK
AT+HTTPSCFG?
+HTTPSCFG: 0,1,,ca.pem,cc.pem,ck.pem      Query
OK
AT+HTTPSCFG=?
+HTTPSCFG: <type>,<type_name>
OK
```

## 18 MQTT Commands

### 18.1 AT+MQTTCONNPARAM – Setting User Parameter

To set ID, user names, and passwords.

#### Format

Type	Command	Response
Set	AT+MQTTCONNPARAM=<"cliendID">, <"username">,<"password"><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.



The parameters must be enclosed by quotation marks.

#### Parameter

<"clientID"> Device ID  
<"username"> User name  
<"password"> Password

#### Example

```
AT+MQTTCONNPARAM="23342423b","lixystest/thing01","01SoY/
eYnlSqUeAsbAKKQ/ACmipZwEw9H7Ff0h1kOps=" Parameters are set successfully.
OK
```

## 18.2 AT+MQTTWILLPARAM – Setting Will

To set will parameters.

### Format

Type	Command	Response
Set	AT+MQTTWILLPARAM=<retained>,<qos>,<"topicname">,<message><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<retained>	Retain mark.
<qos>	Quality of service. 0 to 2. 2 is not supported.
<"topicname">	Will topic, the parameter must be marked by quotation marks.
<"message">	Will Message.



the **topicname** parameter must be enclosed by quotation marks.

### Example

```
AT+MQTTWILLPARAM=0,1,"lixxytopic",byby    The will is set successfully.
OK
```

## 18.3 AT+MQTTCONN – Setting up Connection

To connect to the MQTT server.

### Format

Type	Command	Response
Execute	AT+MQTTCONN=<"host">,<clean>,<keep_alive><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 60s.

### Parameter

- <"host"> Server address (URL: port), the parameter must be marked by quotation marks.
- <clean> whether to clean session, digit type, 0: Not clean (default)  
1: Clean
- <keep\_alive> Keepalive interval, 60 secs by default

### Example

```
AT+MQTTCONN="lixystest.mqtt.iot.gz.baidubce.com:1883",0,60
OK
```

The connection is set up successfully.

## 18.4 AT+MQTTSUB - Subscribing Topic

To subscribe to a topic.

After the module fails to subscribe to a topic, query the status of the network and the MQTT connection, and then perform the next operation. When the network is in poor quality, the module might return value late.

### Format

Type	Command	Response
Execute	AT+MQTTSUB=<"topicname">,<qos><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 30s.

## Parameter

- <"topicname">** Topic to subscribe to, the parameter must be marked by quotation marks.  
**<qos>** Quality of service. 0 to 2. 2 is not supported.

## Example

```
AT+MQTTSUB="lixystopic",1
OK
Subscribe to the topic successfully. The server issues the
message with a retain mark of 1 of this topic.
+MQTTSUB:2,"lixystopic",5,12345
AT+MQTTSUB="lixystopic",1
OK
Subscribed to the topic successfully.
```

# 18.5 AT+MQTTUNSUB - Canceling a Subscription

To cancel a subscription to the specified topic.

## Format

Type	Command	Response
Execute	AT+MQTTUNSUB=<"topicname"><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 30s.

## Parameter

- <"topicname">** topic name, max. 128 bytes. Enclose the value with a pair of quotation marks.

## Example

```
AT+MQTTUNSUB="/lixystopic"
Cancel a subscription successfully.
```

OK

## 18.6 AT+MQTTPUB – Publishing Topic

To publish a topic.

When the network is in poor quality, the module might return value late.

### Format

Type	Command	Response
Execute	AT+MQTTPUB=<retained>,<qos>,<"topicname">,<message><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 30s.

### Parameter

- <retained>** retain mark.
- <qos>** quality of service, 0 to 1.
- <"topicname">** Will topic, the parameter must be marked by quotation marks.
- <message>** message, support JOSN format.



The message supports JOSN format. If it contains quotation marks or backslash, add escape characters.

### Example

```
AT+MQTTPUB=0,1,"lixystopic",12345
OK
AT+MQTTPUB=0,2,"lixystopic",12345
ERROR
```

The topic is published successfully.

The server does not support QoS=2.

After the command times out, the device disconnects to the MQTT server. Reconnect manually.

## 18.7 AT+MQTTPUBIN - Publishing Topic (HEX)

To publish a topic.

### Format

Type	Command	Response
Query	AT+MQTTPUBIN=<retained>,<qos>,<"t opicname">,<message_len><CR>	<CR><LF>> <CR><LF>input HEX data <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 30s.

### Parameter

- <retained>** retain mark.
- <qos>** quality of service, 0 to 1.
- <"topicname">** Will topic, the parameter must be marked by quotation marks.
- <msg\_len>** Length of the HEX message published, ranging from 1 to 512 bytes.

### Example

```
AT+MQTTPUBIN=0,1,"lixxytopic",10
>                                     The topic is published successfully.
OK
```

## 18.8 AT+MQTTPUBS - Publishing Topic with Long Message

To publish a topic with long messages.

### Format

Type	Command	Response
Execute	AT+MQTTPUBS=<retained>,<qos>,<"topicname">,<p	<CR><LF>OK<CR><LF>

ayload\_len><CR>

Or  
<CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <retained>** retain mark.
- <qos>** quality of service, 0 to 1.
- <"topicname">** Will topic, the parameter must be marked by quotation marks.
- <payload\_len>** data length, ranging from 0 to 4096.

### Example

```
AT+MQTTPUBS=1,1,"/hhh2",20           The topic is published successfully.
>
OK
```

## 18.9 AT+MQTTDISCONN - Disconnecting to MQTT Server

To disconnect to the MQTT server and release resources.

### Format

Type	Command	Response
Execute	AT+MQTTDISCONN<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 30s.

## Parameter

N/A.

## Example

```
AT+MQTTDISCONN          Disconnect to the MQTT server and release resources.
OK
```



- The device disconnects to the MQTT server proactively and releases the MQTT resources.
- To publish messages after disconnecting, set up the connection again.
- An error will be reported when a disconnection action is performed again after a closing.

## 18.10 +MQTTSUB - Receiving Message

To receive the message sent by the server. When the network is in poor quality, the modules might return value late.

### Format

Type	Command
Unsolicited report	+MQTTSUB:<message_id>,<"topicname">,<message_len>,<message><CR>

### Timeout

N/A.

### Parameter

<b>&lt;message_id&gt;</b>	Message ID
<b>&lt;"topicname"&gt;</b>	Topic name the parameter must be marked by quotation marks.
<b>&lt;message_len&gt;</b>	The length of the data received
<b>&lt;message&gt;</b>	data received, end with 0x0d 0x0a; users can determine the end according to the <message_len>.

### Example

```
+MQTTSUB:2,"lixxytopic",5,12345      Receive messages published by the topic subscribed to.
```

## 18.11 AT+MQTTSTATE – Querying MQTT Connection Status

To query the status of the MQTT connection. The setting by this command is not saved after the module is powered off.

Every time you set up an MQTT connection, enable the unsolicited report of MQTT connection status.

### Format

Type	Command	Response
Query	AT+MQTTSTATE?<CR>	<CR><LF>+MQTTSTATE: <state><CR><LF> <CR><LF>OK<CR><LF>
Set	AT+MQTTSTATE=<mode><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <mode>** Report mode of the status
  - 0: disable the unsolicited report (default)
  - 1: enable the unsolicited report
- <state>** Reconnection status
  - 0: the connection has been closed
  - 1: the connection is established.
  - 2: the connection is being established

### Example

```
AT+MQTTSTATE=1      Enable the MQTT connection status unsolicited report
OK
```

```
+MQTTSTATEURC: 2          2 the connection is being established
+MQTTSTATEURC: 1          1: the connection is established (successful reconnection).
```



- The device sends keepalive packets to the MQTT server by default. If the server does not respond with ACK, the device automatically reconnects to the server. You can also send this command to check the connection status and decide whether to reconnect automatically after detecting disconnection.
- To reconnect manually, execute +MQTTDISCONN to release resources and execute +MQTTDISCONN to set up a new connection.

## 18.12 AT+MQTTMODE – Setting MQTT Mode

To set the mode of MQTT connection.

By default, MQTT communication uses plain TCP connections.

To use MQTT over TLS, execute this command before authentication.

### Format

Type	Command	Response
Set	AT+MQTTMODE=<mode><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<mode>** MQTT mode  
0: MQTT  
1: MQTT over TLS

### Example

```
AT+MQTTMODE=1           Set the mode of MQTT connection to MQTT over TLS.
OK
```

## 18.13 AT+MQTTCFG - Setting MQTT Parameters

To set MQTT parameters.

### Format

Type	Command	Response
Set	AT+MQTTCFG=<type>,<type_name><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <type>** SSL parameter options  
 sslversion: SSL protocol version  
 authmode: authentication mode  
 ciphersuite: Cipher suite  
 cacert: CA certificate  
 clientcert: Client certificate  
 clientkey: Client key
- <type\_name>** Settings for SSL parameter, the relations between the <type> and <type\_name> values are as follows:
- sslversion  
 0:SSL3.0  
 1:TLS1.0  
 2:TLS1.1  
 3:TLS1.2
  - authmode  
 0:No authentication  
 1:Manage server authentication  
 2:Manage server and client authentication if requested by the remote server
  - ciphersuite: reserved.

- cacert: string, CA certificate
- clientcert: string, client certificate
- clientkeyClientkey: string, client key



Use double quote marks to enclose the parameter values except for numbers.

If authmode is set to 0, the cacert,clientcert, and clientkey parameters are not required.

## Example

```
AT+MQTTCFG="cacert","ca_cert.pem"      Set the mode of MQTT connection to MQTT over TLS.
OK
```

## 18.14 AT+MQTTAUTORECON - Setting MQTT Auto Reconnection

To set MQTT auto reconnection.

Auto reconnection is enabled by default.

To disable auto reconnection, send this command before authentication.

If auto reconnection is disabled, the module reports +MQTTDISCONNECTED: LINK CLOSED and releases resources when it goes offline.

### Format

Type	Command	Response
Set	AT+MQTTAUTORECON=<mode><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+MQTTAUTORECON?<CR>	<CR><LF>+MQTTAUTORECON: <mode> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<mode>** Specify whether to enable auto reconnection.  
0: disable  
1: enable (default)

## Example

```
AT+MQTTAUTORECON=0          Disable auto reconnection.

OK

AT+MQTTAUTORECON?           Query the setting of the parameter.

+MQTTAUTORECON: 0

OK
```

## 19 Ali MQTT Commands

### 19.1 AT+IMQTTMODE - Setting MQTT Mode

To set the mode of MQTT connection.

#### Format

Type	Command	Response
Set	AT+IMQTTMODE=<mode><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

**<mode>** MQTT mode  
0: MQTT  
1: MQTT over TLS

#### Example

```
AT+IMQTTMODE=1          Set the mode of MQTT connection to MQTT over TLS.  
OK
```

### 19.2 AT+IMQTTAUTH - Setting Device Authentication

Device authentication information.

## Format

Type	Command	Response
Execute	AT+IMQTTAUTH=<productKey>,<deviceName>,<deviceSecret><CR>	<CR><LF>OK<CR><LF> <CR><LF>+IMQTTAUTH:OK Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <productKey>** product key
- <deviceName>** device name
- <deviceSecret>** device key

## Example

```
AT+IMQTTAUTH="productKey001","deviceName001","deviceSecret123"
OK
+IMQTTAUTH:OK
```

The device is authenticated successfully.



After the authentication is started, OK is returned to indicate legal input and then the authentication result is returned.

## 19.3 AT+IMQTTTPARA – Setting MQTT Parameters

To set the parameters of the device for Ali MQTT communication.

## Format

Type	Command	Response
Set	<ul style="list-style-type: none"> <li>• AT+IMQTTTPARA=&lt;ParaTag&gt;,&lt;ParaValue&gt;&lt;CR&gt;</li> <li>• AT+IMQTTTPARA=&lt;ParaTag1&gt;,&lt;ParaValue1&gt;&lt;ParaTag2&gt;,&lt;ParaValue2&gt; ....</li> </ul>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;ParaTag&gt;</b>	MQTT parameter tag. "TIMEOUT": MQTT timeout interval, 0 to 10, unit: second. "CLEAN": to specify whether to clear session 0: No 1: Yes "KEEPALIVE": heartbeat interval, 60 to 180, unit: second. "VERSION": MQTT version, 3.1 or 3.1.1 "AUTHMODE": authentication mode 0: set parameter only and do not enable authentication 1: set parameter and enable authentication; the default value is 1.
<b>&lt;ParaValue&gt;</b>	MQTT parameter value

## Example

```

AT+IMQTTPARA=                                Parameters are set successfully.
"TIMEOUT",2,"CLEAN",1,"KEEPALIVE",60
"VERSION","3.1.1"
OK
AT+IMQTTPARA="TIMEOUT",2                      One parameter is set successfully.
OK

```



The query command is executed to query all parameters and their values.

## 19.4 AT+IMQTTCONN – Setting up MQTT Connection

To set up an MQTT connection to Ali's server.

Before calling this command, execute AT+IMQTTPARA to set MQTT parameters.

### Format

Type	Command	Response
------	---------	----------

Execute    AT+IMQTTCONN<CR>                    <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

N/A.

### Example

```
AT+IMQTTCONN                    An MQTT connection to Ali's server is set up successfully.
OK
```

## 19.5 AT+IMQTTPUB – Publishing Message

To publish message.

### Format

Type	Command	Response
Execute	AT+IMQTTPUB=<topic>,<qos>,<message><CR>	<CR><LF><CR><LF>+IMQTTPUB:<packet_id> <CR><LF>OK<CR><LF> <CR><LF><CR><LF>+IMQTTPUB:<packet_id>,<status><CR><LF> Or <CR><LF><CR><LF>+CME ERROR:<err><CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <topic>            Topic name
- <qos>                0 to 2. 2 is not supported.

- <message>** message to be published, supports JOSN format.
- <packet\_id>** The ID returned when subscribing to a message.
- <status>** Status of message publishing.
  - 0: successful
  - 1: timeout
  - 2: other errors

### Example

```
AT+IMQTTPUB="/test_topic_001",1,"hellosim"      Send a short message.

+IMQTTPUB:24761
OK

+IMQTTPUB:24761,0
```



If some complexed messages are sent containing quotation marks or other special symbols, add an escape character \ to invoke an alternative interpretation.

## 19.6 AT+IMQTTSUB - Subscribing to Topic

To subscribe to a topic.

### Format

Type	Command	Response
Execute	AT+IMQTTSUB=<topic>,<qos><CR>	<CR><LF><CR><LF>+IMQTTSUB:<packet_id> <CR><LF>OK<CR><LF> <CR><LF><CR><LF>+IMQTTSUB:<packet_id>,<status><CR><LF> Or <CR><LF>ERROR<CR><LF> Or <CR><LF><CR><LF>+CME ERROR:<err><CR><LF>
Query	AT+IMQTTSUB?	<CR><LF>+IMQTTSUB:<topic><Qos> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;topic&gt;</b>	Topic name
<b>&lt;qos&gt;</b>	QoS value, ranging from 0 to 2. 2 is not supported.
<b>&lt;packet_id&gt;</b>	The ID returned when subscribing to a message.
<b>&lt;status&gt;</b>	A status returned after subscribing message: 0: successful, QoS0 1: successful, QoS1 2: successful, QoS2 128: Failed

## Example

```
AT+IMQTTSUB="/test_topic_001",2
+IMQTTSUB:24761
OK                               The module subscribes to a topic successfully.
+IMQTTSUB:24761,1
```



Only the last topic subscribed and its QoS are returned to the query command.

## 19.7 AT+IMQTTUNSUB - Canceling a Topic Subscription

To cancel a topic subscription.

### Format

Type	Command	Response
Execute	AT+IMQTTUNSUB=<topic><CR>	<CR><LF><CR><LF>+IMQTTUNSUB:<packet_id> <CR><LF>OK<CR><LF> <CR><LF><CR><LF>+IMQTTUNSUB:<packet_id>,<status><CR><LF>

		Or <CR><LF>ERROR<CR><LF> Or <CR><LF><CR><LF>+CME ERROR:<err><CR><LF>
Query	AT+IMQTTUNSUB?	<CR><LF>+IMQTTUNSUB:<topic> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

<b>&lt;topic&gt;</b>	topic name
<b>&lt;packet_id&gt;</b>	The ID returned when subscribing to a topic.
<b>&lt;status&gt;</b>	A status returned after subscribing to a topic: 0: successful, QoS0 1: timeout 2: other errors
<b>&lt;err&gt;</b>	See Appendix A.

## Example

```
AT+IMQTTUNSUB="/test_topic_001"           The module cancels the topic subscription successfully.
+IMQTTUNSUB:24761
OK
+IMQTTUNSUB:24761, 0
```



Only the last topic subscribed and its QoS are returned to the query command.

## 19.8 +IMQTTTRCV PUB – Receiving Publish Message

To receive a publish message. The module reports message received in an unsolicited manner.

## Format

Type	Command
Unsolicited report	<CR><LF>+IMQTTTRCVPUB:<packet_id>,<topic>,<msg_len>,<message>,[format],[fragment_id]

## Timeout

N/A.

## Parameter

<b>&lt;topic&gt;</b>	Topic name
<b>&lt;qos&gt;</b>	QoS value, ranging from 0 to 2. 2 is not supported.
<b>&lt;message&gt;</b>	message to be published.
<b>[format]</b>	message format 0: normal character strings 1: character string in hexadecimal format Optional, the default value is 0
<b>[fragment_id]</b>	fragment ID of long message. Optional, the default value is 0

## Example

```
+IMQTTTRCVPUB:24761,"/test_topic_001",5,"hello"
OK
```

The module reports message received in an unsolicited manner.

## 19.9 AT+IMQTTSTATE - Querying MQTT Connection

## Status

To query the status of the MQTT connection.

## Format

Type	Command	Response
Query	AT+IMQTTSTATE?<CR>	<CR><LF>+IMQTTSTATE:<state> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<state>** MQTT connection state  
0: MQTT disconnected  
1: Reserve  
2: MQTT connected

## Example

```
AT+IMQTTSTATE?                               The device was connected to the MQTT server.  
+IMQTTSTATE:2  
OK
```

# 19.10 AT+IMQTTDISCONN – Disconnecting to MQTT Server

To disconnect to the MQTT server and release resources.

## Format

Type	Command	Response
Execute	AT+IMQTTDISCONN<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

N/A.

### Example

```
AT+MQTTDISCONN                               Disconnect to the MQTT server.

OK
```

## 19.11 AT+MQTTPUBIN – Publishing Message (Sending HEX Data)

To publish message.

### Format

Type	Command	Response
Execute	AT+MQTTPUBIN=<topic>,<qos>,<msg_len><CR>	<CR><LF>OK<CR><LF> If valid data is input, the module returns OK and then waits for HEX data input. <CR><LF><CR><LF>+MQTTPUBIN:<packet_id> <CR><LF>OK<CR><LF> <CR><LF><CR><LF>+MQTTPUBIN:<packet_id>,<status><CR><LF> Or <CR><LF><CR><LF>+CME ERROR:<err><CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <topic>** Topic name
- <qos>** QoS value, ranging from 0 to 2. 2 is not supported.
- <msg\_len>** length of message to be published, ranging from 1 to 512.
- <packet\_id>** The ID returned when subscribing to a message.
- <status>** Status of message publishing.
  - 0: successful
  - 1: timeout
  - 2: other errors
- <err>** See Appendix A.

### Example

```
AT+MQTTPUBIN="/sys/aluLuQ8vniR/N11v2/thing/model/up_raw",1,12 Publish a message
OK
//0000000000100320100000000
+MQTTPUBIN:1 Input data in HEX format
OK
+MQTTPUB:1,0
```

## 19.12 AT+CLOUDPARA – Query Authentication Parameters

To query the device authentication information. The parameter is not saved after the module is powered off.

### Format

Type	Command	Response
Query	AT+ CLOUDPARA?<CR>	<CR><LF>+CLOUDPARA:<pk>,<dn>,<ds> Or <CR><LF>ERROR<CR><LF>
Set	AT+CLOUDPARA=<pk>,<dn>,<ds><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <pk>** productKey, supports 63-byte data at most; double quotation marks are not supported.
- <dn>** deviceName, supports 63-byte data at most; double quotation marks are not supported.
- <ds>** deviceSecret, supports 63-byte data at most; double quotation marks are not supported.

## Example

```
AT+ CLOUDPARA?                               Query the current authentication parameters
                                              that have been saved.

+CLOUDPARA: productKey, deviceName ,
deviceSecret
OK
AT+CLOUDPARA=prodackKEY,deviceName,deviceSecret  Set the authentication parameters.
OK
```

## 20 OceanConnect Commands

### 20.1 AT+NCDPOPEN - Connecting to Server

To connect to an OceanConnect server.

#### Format

Type	Command	Response
Execute	AT+NCDPOPEN=<ip_addr>[,<port>][,<psk>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <ip\_addr>** IP address of OceanConnect server.
- <port>** port of OceanConnect server, 5683 by default.
- <psk>** generated by OceanConnect dynamically, used to enhance the security of device.

#### Example

```
AT+NCDPOPEN=180.101.147.135      Connect to the OceanConnect server of 180.101.147.135.
OK
```



The device registration address is <http://180.101.147.135:8843>.

IMEI must be set and NodeID must be consistent with the IMEI number.

## 20.2 AT+NCDPCLOSE – Closing Connection to Server

To close the connection to the server.

### Format

Type	Command	Response
Execute	AT+NCDPCLOSE<CR>	<CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

N/A.

### Example

```
AT+NCDPCLOSE          Close the connection to the server.
OK
```

## 20.3 AT+NMGS – Sending Data

To send data.

### Format

Type	Command	Response
Execute	AT+NMGS=<length>,<data><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <length>** length of data to be sent.
- <data>** data to be sent, character string in HEX format.

### Example

```
AT+NCDPOPEN=6,1E2A07065F4B          Read command
OK
```

## 20.4 AT+NMGR – Reading Data

To read data.

This command reads data in buffer mode. Enable the buffer mode by AT+NNMI=1.

### Format

Type	Command	Response
Execute	AT+NMGR<CR>	<CR><LF>+NMGR: <length>,<data> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <length>** The length of data read.
- <data>** data to be sent, character string in HEX format.

### Example

```
AT+NMGR          Read command
+NMGR: 5,3206151324
OK
```

## 20.5 AT+NNMI – Configuring Data Report Switch

To configure data report switch.

### Format

Type	Command	Response
Set	AT+NNMI=<status><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+NNMI?	<CR><LF>+NNMI: <status>,<data> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <status>**      0: disable data report. To obtain data, send AT+NMGR.  
                   1: enable data report. Data is reported in form of +NNMI: <lenth>,<data>.  
                   2: enable report prompt. +NNMI is returned.
- <data>**         Data content

### Example

```
AT+NCDPOPEN="180.101.147.115"           Enable data report.
OK
AT+NNMI=1
OK
AT+NMGS=7,010548454c4c4f
OK
+NNMI: 4,aaaa0000
AT+NCDPCLOSE
OK
AT+NCDPOPEN="180.101.147.115"           Disable data report.
OK
AT+NNMI=0
OK
AT+NMGS=7,010548454C4C4F
OK
AT+NMGR
+NMGR: 4,aaaa0000
OK
AT+NCDPCLOSE
OK
```

## 21 AMR Commands

### 21.1 AT+AMRPLAY – Playing AMR Audio

To play AMR audio

This command can be used to play only AMR files.

#### Format

Type	Command	Response
Execute	AT+AMRPLAY=<file_name>,<mode><CR>	<CR><LF>OK<CR><LF> <CR><LF>+AMRPLAY:<status> Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

- <file\_name>** File name, the file length does not exceed 50 characters.
- <mode>** Playing mode
  - 0: Play out of a call and automatically stop when a call is on (default)
  - 1: play during a call and the other side can hear the audio played (not supported)
- <status>** Play ok!  
play failed!

#### Example

```

AT+FSWF=test.amr,1,1024,10000      Write the test.amr file to user disk. The data content
>                                  should comply with the AMR file format. For example,
                                   #!AMR..

OK
AT+AMRPLAY=test.amr,0              Play the test.amr file.
    
```

```

OK
+AMRPLAY: Play ok!
AT+AMRPLAY=test.amr,0           The test1.amr file does not exist, file content format is
                                  incorrect, or the file is tried to play during a call.
+AMRPLAY: play faild!
OK
AT+AMRPLAY                       Stop playing.
OK
AT+AMRPLAY                       ERROR is returned because no audio is played.
ERROR
    
```

## 21.2 AT+AMRPAUSE – Playing AMR Audio

To pause the AMR audio playing.

### Format

Type	Command	Response
Execute	AT+AMRPAUSE<CR>	<CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

N/A.

### Example

```

AT+AMRPLAY=test.amr,0

OK
AT+AMRPAUSE                       Execute this command to pausing playing when playing a video.
OK
AT+AMRRESUME                       Execute this command to resume playing after a pausing command.

OK
+AMRPLAY: Play ok!
    
```

## 21.3 AT+AMRRESUME – Resuming AMR Audio Playing

To resume the AMR audio playing.

### Format

Type	Command	Response
Execute	AT+AMRRESUME<CR>	<CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

N/A.

### Example

```
AT+AMRPLAY=test.amr,0
```

```
OK
```

```
AT+AMRPAUSE
```

Execute this command to pausing playing when playing a video.

```
OK
```

Execute this command to resume playing after a pausing command.

```
AT+AMRRESUME
```

```
OK
```

```
+AMRPLAY: Play ok!
```

## 22 File System Commands

### 22.1 AT+FSWF - Writing Data to File

To write data to a file.



The data to be written cannot exceed the threshold of the <size> value.

#### Format

Type	Command	Response
Execute	AT+FSWF=<file_name>,<mode>,<size>,<time><CR>	<CR><LF><CR><LF> <CR><LF>OK<CR><LF> Or <CR><LF><CR><LF> <CR><LF>+FSWF: Timeout! Or <CR><LF>ERROR<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

<file_name>	File name, the file length does not exceed 50 characters.
<mode>	mode 0: If the file already exists, new data is written to the start of the file and then it overwrites original data. 1: If the file already exists, new data is written to the end of the file.
<size>	Data size, ranging from 0 to 16384, unit: byte.
<time>	timeout period, ranging from 0 to 60000, unit:ms

### Example

```

AT+FSWF="test.txt",1,1024,10000      Write 1024-byte data to the test.txt file.
>                                     The command is executed successfully.

OK

AT+FSWF="test.txt",1,1024,10000      Write 1024-byte data to the test.txt file.
>                                     The command times out after 10 seconds.

+FSWF: Timeout!

AT+FSWF="test.txt",1,1024,60001      ERROR is returned because the set value exceeds the
ERROR                                 parameter range.
    
```

## 22.2 AT+FSRF – Reading Data from File

To read data from a file.



- The data to be read should not exceed the size of the file.
- <size> and <position> is determined by the file size.

### Format

Type	Command	Response
Execute	AT+FSRF=<file_name>,<mode>,<size> [,<position>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <file\_name>** File name, the file length does not exceed 50 characters.
- <mode>** mode
  - 0: to read data from the starting position of the file.
  - 1: to read data from the position specified in <position>.
- <size>** data size, not exceed the size of the file, 0 is valid.

**<position>** the position in the file, where data to be read starts, valid when <mode> is set to 1, 0 is invalid.

## Example

```

AT+FSRF="test.txt",0,10      Read 10-byte data of the test.txt file from the starting
+FSRF: 10,start01234        position.
OK
AT+FSRF="test.txt",0,0      Read 0-byte data of the test.txt file from the starting
ERROR                       position.
AT+FSRF="test.txt",0,1025   ERROR is returned because <size> exceeds the file size.
ERROR
AT+FSRF="test.txt",1,20,2   Read 20-byte data from the second byte of the test.txt
+FSRF: 20,tart0123456789012345 file.
OK                           The data is read successfully.
AT+FSRF="test.txt",1,0,2    Read 0-byte data from the second byte of the test.txt file.
ERROR
AT+FSRF="test.txt",1,10,0   ERROR is returned because the set value exceeds the
ERROR                       parameter range.

```

## 22.3 AT+FSFS – Obtaining File Size

To obtain the size of a file.

### Format

Type	Command	Response
Execute	AT+FSFS=<file_name><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<file\_name>** File name, the file length does not exceed 50 characters.

## Example

```

AT+FSFS="test.txt"      Obtain the size of the text.txt file.
+FSFS: 1024             The size is 1024 bytes.
OK
AT+FSFS="123.txt"      Obtain the size of the 123.txt file.
ERROR                  ERROR is returned because the file does not exist.

```

## 22.4 AT+FSDF - Deleting File

To delete a file.

### Format

Type	Command	Response
Execute	AT+FSDF=<file_name><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<file\_name>** File name, the file length does not exceed 50 characters.

## Example

```

AT+FSDF="test.txt"      Delete the text.txt file.
OK
AT+FSDF="123.txt"      Obtain the size of the 123.txt file.
ERROR                  ERROR is returned because the file does not exist.

```

## 23 FOTA Commands

### 23.1 AT+NEOFOTA - Upgrade Through Network

To control the upgrade of module over the air.

Do not power down or restart the module during upgrade.

#### Format

Type	Command	Response
Execute	AT+NEOFOTA=<server>,<port><CR>	<CR><LF>OK<CR><LF> <CR><LF>+NEOFOTA: <status><CR><LF> Or <CR><LF>ERROR<CR><LF> Or <CR><LF>+NEOFOTA: <err><CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

<b>&lt;server&gt;</b>	FOTA server address
<b>&lt;port&gt;</b>	Server port
<b>&lt;status&gt;</b>	Upgrade status 0: no valid OTA packages 1: the OTA package is downloaded successfully. 2: fail to download the OTA package. 3: start to perform a local upgrade. 4: the local upgrade is performed successfully. 5: fail to perform the local upgrade.
<b>&lt;err&gt;</b>	GPRS DISCONNECTION ERROR URL ERROR PORT ERROR INIT FAIL

### Example

```

AT+NEOFOTA=115.29.178.98/,80      Start to upgrade.
OK
+NEOFOTA: 1                      The upgrade package is downloaded
                                successfully.
+NEOFOTA: 3                      Start to upgrade.
+NEOFOTA: 4                      Upgrade successfully.
AT+NEOFOTA=115.29.178.98/,80      No upgrade packages.
OK
+NEOFOTA: 0
    
```

## 23.2 AT+UPDATE - Upgrade Through UART

To control the upgrade of module through UART.

Do not power down or restart the module during upgrade.

### Format

Type	Command	Response
Execute	AT+UPDATE=<file_lenth><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<file\_lenth>     package length

### Example

```

AT+UPDATE=10240                  Upgrade successfully.
OK
AT+UPDATE=?                      This command does not support value range query.
ERROR
    
```

## 24 Extended AT Commands

### 24.1 AT+CPWROFF - Shutting Down Module

To shut down the module.

#### Format

Type	Command	Response
Execute	AT+CPWROFF<CR>	<CR><LF>OK<CR><LF>

#### Timeout

The command times out if the module does not respond in 300ms.

#### Parameter

N/A.



- Before sending AT+CPWROFF, leave the ON/OFF pin unconnected or pull its level high.
- After the module returns OK, pull the level down at the ON/OFF pin to restart the module.

#### Example

```
AT+CPWROFF
OK
```

The module is off after returning OK.

### 24.2 AT+UPDATETIME - Updating Time

To update the module time to the network time. The settings by this command are not saved after the module is powered off.



- Enable PPP link (AT+XIIC=1) before sending this command.
- You can send AT+CCLK? to query whether RTC is synchronized to the current network time after this command is sent successfully.
- Currently the following time servers support time update: time.windows.com, and so on.

## Format

Type	Command	Response
Set	AT+UPDATETIME=<mode>[,<serv_ip>,<time>[[,<TZ>],[,<DST>]]]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+UPDATETIME?<CR>	<CR><LF>+UPDATETIME:<serv_ip><Time><TZ><DST> <CR><LF>OK<CR><LF>
Test	AT+UPDATETIME=?<CR>	<CR><LF>+UPDATETIME: (range of supported<mode>),(<serv_ip>),(range of supported <time>),(<TZ>),(range of supported <DST>) <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

- <mode>** 0: Query mode. Query when the time was updated to the network time last time.  
1: Setting mode. Synchronize the time to the network time.
- <serv\_ip>** The IP address of the time server, in form of xx.xx.xx.xx or domain name.
- <time>** the timeout period, ranging from 1 to 30, unit: second.
- <TZ>** Time zone, in format of E/W+digits; E8 by default.  
E: east time zone, 0 to 13  
W: west time zone, 0 to 12  
0: Zero time zone
- <DST>** Daylight Saving Time  
1: Select DST auto-adjustment  
0: Not select (by default)

## Example

```

AT+UPDATETIME=0                                Query when the time was updated last time.
+UPDATETIME: Last Update Time 2014-03-31,11:10:26
OK
AT+UPDATETIME=0                                Query when the time was updated last time.
+UPDATETIME: Last Update Time 0000-00-00,00:00:00    The time was not updated.
OK
AT+UPDATETIME=1,time.windows.com,10           No PPP connection is set up.
+UPDATETIME: No PPP Link
AT+UPDATETIME=1,time.windows.com,10           Synchronize with the network time.
OK

Time Updating,Please Wait...
+UPDATETIME: Time Out                            Times out; network busy.
AT+UPDATETIME=1,time.windows.com,10,"E8",0     Synchronize with the network time.
OK

Time Updating,Please Wait...
+UPDATETIME: Update To 2014-03-31,11:32:55
AT+UPDATETIME=1,time.windows.com,10,"W12",1    Time update request sending fails.
OK                                               The reason probably is bad network connection or
                                                inability to support time update.

Time Updating,Please Wait...
+UPDATETIME: Update To 2014-04-12,15:17:48
AT+UPDATETIME=1,time.windows.com,10,"W12",1    Time update request sending fails.
OK                                               The reason probably is bad network connection or
                                                inability to support time update.

+UPDATETIME: Send Request Fail
AT+UPDATETIME=1,time.windows.com,10,"W12",1    The domain name is invalid. The possible reason is
+UPDATETIME: Domain Name Invalid                the SIM (USIM) card is out of credit.
AT+UPDATETIME=1,time.windows.com,10,"W12",1    Socket error.
OK                                               The possible reason might be network congestion.

+UPDATETIME: Socket Error
AT+UPDATETIME?
+UPDATETIME: time.windows.com,10,"E8",0        Query the IP address of the server to which the
OK                                               time is updated and the timeout period, time zone,
                                                and DTS.
AT+UPDATETIME=?
+UPDATETIME: (0-1),,(1-30),,(0-1)            Query available parameter value ranges.
OK

```

## 24.3 AT+DNS – Querying IP Address

To query the IP address.

### Format

Type	Command	Response
Execute	AT+DNS=<string><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<string>** The website URL to be queried, in form of www.xxx.com (with or without quotation marks)



The URL length should not exceed 250 bytes.

### Example

```
AT+DNS="www.china.com"
OK
+DNS:124.238.253.103

+DNS:OK
AT+DNS="neowayjsr.oicp.net"
OK
+DNS:219.133.101.207

+DNS:OK
```

Query the IP address of www.china.com, and the module returns the IP address 124.238.253.103. To query the IP address.

Query the IP address of neowayjsr.oicp.net, and the module returns the IP address 219.133.101.207.

## 24.4 AT+PING – PING Function

Ping function.

### Format

Type	Command	Response
Execute	AT+PING=<ip><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<ip>** destination IP address, in form of xx.xx.xx.xx or www.xxxxxx.com (domain name with or without quotation marks)



A PPP connection must be set up before using this command.

### Example

```

AT+PING=www.baidu.com          PING
OK                               www.baidu.com
Reply from 183.232.231.172: bytes= 36 time =
780(ms), TTL = 255              Send 4 request data packets (12 bytes)
Reply from 183.232.231.172: bytes= 36 time =          continuously.
299(ms), TTL = 255              Receive 4 response packets (32 bytes).
Reply from 183.232.231.172: bytes= 36 time =
719(ms), TTL = 255
Reply from 183.232.231.172: bytes= 36 time =
755(ms), TTL = 255
Reply from 183.232.231.172: bytes= 36 time =
299(ms), TTL = 255

Ping statistics for 183.232.231.172
    
```

```

Packets: Sent = 5, Received = 5, Lose = 0
<0%>, max_delay = 780 ms, min_delay = 299 ms,
average delay = 570 ms

AT+PING=192.168.2.61                                PING 192.168.2.61
OK
Request timed out.
Request timed out.                                Send 4 request data packets (12 bytes)
Request timed out.                                continuously.
Request timed out.                                Send 5 request data packets (12 bytes)
Request timed out.                                continuously.
Request timed out.                                Receive 0 response packets because of timeout.

Ping statistics for 192.168.2.61:
Packets: Sent = 5, Received = 0, Lose =
5<100% >

AT+PING=www.baidu.com                               No PPP connection is set up.
+PING: No PPP Link
    
```

## 24.5 AT+CIPGSMLOC – Obtaining Location of the Module

Obtain the location of the module.

### Format

Type	Command	Response
Execute	AT+CIPGSMLOC<CR>	<CR><LF>OK<CR><LF> <CR><LF>+CIPGSMLOC:<err> Or <CR><LF>ERROR<CR><LF>
	AT+CIPGSMLOC=<n><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <n>**            Select request type  
 0: close positioning request  
 1: enable positioning through multiple base stations

<err> GPRS DISCONNECTION  
DNS FAILED  
LINK FAIL  
POST FAIL  
FAIL  
INIT FAIL  
LINK NOT FREE

## Example

AT+CIPGSMLOC	The command is sent successfully.
OK	
+CIPGSMLOC: { "location": {"lat":22.69083, "lng":113.985228}, "accuracy":550.0}	The module reports location information.
+CIPGSMLOC: OK	
AT+CIPGSMLOC	PPP is not activated.
+CIPGSMLOC: GPRS DISCONNECTION	
AT+CIPGSMLOC	Fail to translate the server DNS name.
+CIPGSMLOC: DNS FAILED	
AT+CIPGSMLOC	Fail to connect to the server.
+CIPGSMLOC: LINK FAIL	
AT+CIPGSMLOC	Fail to report the location information.
+CIPGSMLOC: POST FAIL	
AT+CIPGSMLOC	Obtain the location;
OK	while the server returns invalid data.
+CIPGSMLOC: FAIL	
AT+CIPGSMLOC=0	Close the request.
OK	The link is released.



- The obtained location information is the GPS coordinates.
- The location information is reported in one or two minutes after the command is sent successfully.
- The current coordinates of latitude and longitude are valid and precision is reserved (0.0 by default).
- The current coordinates of latitude and longitude are valid and precision is reserved (0.0 by default).

## 24.6 AT+GLTS – Synchronizing Module Time with Base Station Time

To synchronize the module time with BS time. The settings by this command are saved after the module is powered off.

Time synchronization to base stations is disabled by default.

### Format

Type	Command	Response
Execute	AT+GLTS=<mode><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+GLTS?<CR>	<CR><LF>+GLTS: <mode> <CR><LF>OK<CR><LF>
Test	AT+GLTS=?<CR>	<CR><LF>+GLTS: (range of supported <mode>) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<mode>**      0: disable BS time synchronization.  
                  1: enable BS time synchronization.

### Example

```
AT+GLTS=0           Forbid BS time synchronization.
OK
AT+GLTS=1           Enable BS time synchronization.
OK
AT+GLTS=?           Query the value range of the network registration status parameter.
+GLTS: (0-1)
OK
AT+GLTS?            The module time is enabled to be synchronized with the BS time.
+GLTS: 1
OK
```



- After allowing updating to BS time is set, the BS proactively issues time.  
i.e. +GLTS: 15/06/25,18:38:13/GMT+32, to the module after the module powers on.
- After BS time synchronizing, send AT+CCLK? to check if RTC time is the current BS time.
- If module time is not updated after the BS time synchronization is enabled, the current BS registered does not support proactive time issuing.

## 24.7 AT+FLOWCALC – Statistics on Total Data Traffic

To collect the statistics on total data bytes that the module transmits and receives. This command supports only statistics on data that the module transmits and receives using external protocols since it is connected to the network last time.

### Format

Type	Command	Response
Query	AT+FLOWCALC?<CR>	<CR><LF>+FLOWCALC: <rx_count>,<tx_count> <CR><LF>OK<CR><LF>
Execute	AT+FLOWCALC=<n><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <rx\_count> Total data the module received, unit KB.
- <tx\_count> Total data the module transmitted, unit KB.

### Example

```
+FLOWCALC: 1355,1260      Query the total data that the module transmitted and received.
OK
AT+FLOWCALC=0           Clear the total data that the module transmits and receives.
OK
```

## 24.8 AT+RATECALC – Statistics on Transient Traffic

To collect statistics on transient data that the module transmits and receives within 100ms.

### Format

Type	Command	Response
Execute	AT+RATECALC?<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <rx\_count> Total data the module received, unit KB.
- <tx\_count> Total data the module transmitted, unit KB.

### Example

```
AT+FLOWCALC?           Query the total data that the module transmitted and received.
+FLOWCALC: 1355,1260
OK
AT+FLOWCALC?           Query the total data that the module transmitted and received.
+FLOWCALC: 0,0         No PPP connection is set up.
OK
```

## 24.9 AT+DNSSERVER – Setting DNS Server

To set primary and secondary DNS servers.

### Format

Type	Command	Response
Set	AT+DNSSERVER=<dns-ip1>[,<dns-ip2>]	<CR><LF>OK<CR><LF> Or

		<CR><LF>ERROR<CR><LF>
Query	AT+DNSSERVER?<CR>	<CR><LF>+DNSSERVER: dns1:<dns-ip1>;dns2: <dns-ip2><CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

- <dns-ip1>** primary IP address of DNS server
- <dns-ip2>** secondary IP address of DNS server

### Example

```

AT+DNSSERVER?                               Query the DNS.
+DNSSERVER: dns1:211.95.193.97;dns2:0.0.0.0

AT+DNSSERVER=211.65.24.123                   Set DNS server.
OK

AT+DNSSERVER?                               Set DNS servers.
+DNSSERVER: dns1:211.65.24.123;dns2:0.0.0.0   DNS2 is null.
OK
    
```



- In general, the IP address of the DNS server is issued by BS controller during PPP negotiation.
- This command works only after PDP is activated.

## 24.10 AT+SELFREGISTER - Setting Self-Register

To set self-register The settings by this command are saved after the module is powered down.

### Format

Type	Command	Response
Set	AT+SELFREGISTER=<operator><flag><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>

---

Query	AT+SELFREGISTER?<CR>	<CR><LF>+SELFREGISTER: <flag> <CR><LF>OK<CR><LF>
-------	----------------------	---

---

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<operator>**     0: CMCC  
                    1: UNICOM  
                    2: CTCC

**<flag>**            Specify whether to enable self-register.  
                    0: disable  
                    1: enable

## Example

```
AT+SELFREGISTER=0,1           Enable self-register.
OK
```

## 24.11 AT+SIMORDER – Setting SIM Slot Order

To set the SIM slot order. The settings by this command are saved after the module is powered down.

### Format

Type	Command	Response
Set	AT+SIMORDER=<simid><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+SIMORDER?<CR>	<CR><LF>+SIMORDER: <simid> <CR><LF>OK<CR><LF>

## Timeout

The command times out if the module does not respond in 300ms.

## Parameter

**<simid>** Specify which SIM is recognized in priority.  
0: SIM1  
1: SIM2

## Example

```
AT+SIMORDER=1           Set SIM2 to be recognized in priority

OK

AT+SIMORDER?           Query which SIM is recognized in priority.

+SIMORDER: 0

OK
```

## 24.12 AT+JAMMINGDETECT - Detecting Jamming

To detect jamming.

### Format

Type	Command	Response
Set	AT+JAMMINGDETECT=<mode> [,<threshold>]<CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+JAMMINGDETECT?<CR>	<CR><LF>+JAMMINGDETECT: <mode>,<threshold> <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<mode>** Specify whether to enable jamming detection.  
0: disabled (default)  
1: enable

**<threshold>** Setting of thresholds, ranging from 0 to 100; 75 by default.

## Example

```

AT+JAMMINGDETECT=1           Enable jamming detection.

OK

AT+JAMMINGDETECT=0           Disable jamming.

OK

AT+JAMMINGDETECT?           Query the parameters that are set.
+JAMMINGDETECT: 0,75

OK

```

## 24.13 +JAMMINGDTURC - Report of Jamming Detection

Rrport of jamming detection.

### Format

Type	Command
Unsolicited report	+JAMMINGDTURC: <mode>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<mode>** Specify whether to enable jamming detection.  
 0: disabled (default)  
 1: enable

## Example

```

AT+JAMMINGDETECT=1           Enable jamming detection.

OK

+JAMMINGDTURC: 1             The status is reported when there is jamming detection.

```

## 24.14 AT+NGPCLASS – Setting Multislot Class

To set multislot class.

### Format

Type	Command	Response
Set	AT+NGPCLASS=<class><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+NGPCLASS?	<CR><LF>+NGPCLASS:<class> <CR><LF>OK<CR><LF>
Test	AT+NGPCLASS=?	<CR><LF>+NGPCLASS: (range of supported <class>)

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

**<class>** Multi-slot class, ranging from 1 to 12. The default value is 12.

### Example

```

AT+NGPCLASS=10          Read command

OK
AT+NGPCLASS?

+NGPCLASS: 10
OK
AT+NGPCLASS=?          Query the value range of the parameter.

+NGPCLASS: (1-12)
OK
    
```

## 24.15 AT+SDMBS – Setting Anti-counterfeiting Base Station Function

To set whether to enable the anti-counterfeiting base station function.

The setting by this command is saved after the module is powered off.

The command setting works after the module is restarted or enters/exits flight mode.

- Enter flight mode: AT+CFUN=0
- Exit flight mode: AT+CFUN=1

### Format

Type	Command	Response
Set	AT+SDMBS=<n><CR>	<CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>
Query	AT+SDMBS?<CR>	<CR><LF>+SDMBS: <n> <CR><LF>OK<CR><LF>
Test	AT+SDMBS=?<CR>	<CR><LF>+SDMBS: (list of supported <n>s) <CR><LF>OK<CR><LF>

### Timeout

The command times out if the module does not respond in 300ms.

### Parameter

<n>            0: disable  
                 1: enable

### Example

```

AT+SDMBS=1                    Enable the anti-counterfeiting base station function.
OK

AT+SDMBS?                    Query the setting of the function.
+SDMBS: 1
OK

AT+SDMBS=?                   Query the parameter range of the command.
+SDMBS: (0,1)
OK
    
```

## A Error Codes

Error Code	Meaning
0	PHONE_FAILURE
1	NO_CONNECT_PHONE
2	PHONE_ADAPTER_LINK_RESERVED
3	OPERATION_NOT_ALLOWED
4	OPERATION_NOT_SUPPORTED
5	PHSIM_PIN_REQUIRED
6	PHFSIM_PIN_REQUIRED
7	PHFSIM_PUK_REQUIRED
10	SIM_NOT_INSERTED
11	SIM_PIN_REQUIRED
12	SIM_PUK_REQUIRED
13	SIM_FAILURE
14	SIM_BUSY
15	SIM_WRONG
16	INCORRECT_PASSWORD
17	SIM_PIN2_REQUIRED
18	SIM_PUK2_REQUIRED
20	MEMORY_FULL
21	INVALID_INDEX
22	NOT_FOUND
23	MEMORY_FAILURE
24	TEXT_LONG
25	INVALID_CHAR_INTEXT
26	DAIL_STR_LONG
27	INVALID_CHAR_INDIAL
30	NO_NET_SERVICE
31	NETWORK_TIMEOUT

---

32	NOT_ALLOW_EMERGENCY
40	NET_PER_PIN_REQUIRED
41	NET_PER_PUK_REQUIRED
42	NET_SUB_PER_PIN_REQ
43	NET_SUB_PER_PUK_REQ
44	SERVICE_PROV_PER_PIN_REQ
45	SERVICE_PROV_PER_PUK_REQ
46	CORPORATE_PER_PIN_REQ
47	CORPORATE_PER_PUK_REQ
48	PHSIM_PBK_REQUIRED
49	EXE_NOT_SURPORT
50	EXE_FAIL
51	NO_MEMORY
52	OPTION_NOT_SURPORT
53	PARAM_INVALID
54	EXT_REG_NOT_EXIT
55	EXT_SMS_NOT_EXIT
56	EXT_PBK_NOT_EXIT
57	EXT_FFS_NOT_EXIT
103	GPRS_ILLEGAL_MS_3
106	GPRS_ILLEGAL_MS_6
107	GPRS_SVR_NOT_ALLOWED
111	GPRS_PLMN_NOT_ALLOWED
112	GPRS_LOCATION_AREA_NOT_ALLOWED
113	GPRS_ROAMING_NOT_ALLOWED
132	GPRS_OPTION_NOT_SUPPORTED
133	GPRS_OPTION_NOT_SUBSCRIBED
134	GPRS_OPTION_TEMP_ORDER_OUT
149	GPRS_PDP_AUTHENTICATION_FAILURE
150	GPRS_INVALID_MOBILE_CLASS
148	GPRS_UNSPECIFIED_GPRS_ERROR
264	SIM_VERIFY_FAIL
265	SIM_UNBLOCK_FAIL

---

---

266	SIM_CONDITION_NO_FULLFILLED
267	SIM_UNBLOCK_FAIL_NO_LEFT
268	SIM_VERIFY_FAIL_NO_LEFT
269	SIM_INVALID_PARAMETER
270	SIM_UNKNOW_COMMAND
271	SIM_WRONG_CLASS
272	SIM_TECHNICAL_PROBLEM
273	SIM_CHV_NEED_UNBLOCK
274	SIM_NOEF_SELECTED
275	SIM_FILE_UNMATCH_COMMAND
276	SIM_CONTRADICTION_CHV
277	SIM_CONTRADICTION_INVALIDATION
278	SIM_MAXVALUE_REACHED
279	SIM_PATTERN_NOT_FOUND
280	SIM_FILEID_NOT_FOUND
281	SIM_STK_BUSY
282	SIM_UNKNOW
283	SIM_PROFILE_ERROR

---

## B Reference Process of AT Command Programming

### B.1 Content of PDU SMS Messages

<PDU> SMS message sending format:

1>: 0891

08: indicates the length of the SMSC address information

91: indicates the format of the SMSC address

2>: Inversion of every two bits (add F if the bits are not sufficient) in SMSC number, fixed. For example, China Unicom 8613010888500 should be 683108705505F0 here.

3>: 0100

01: Indicates basic parameters

00: indicates message baseline value

4>: Convert the receiving number into hexadecimal. For example, the number length is 11 bits and then the hexadecimal length should be 0B.

5>: 81 (Receiving mode) there are multiple receiving modes. 81 indicates that the receiving mode is unknown.

6>: Inversion of every two bits (add F if the bits are not sufficient) in the recipient number. For example, 13421839693 should be 3124819396F3 after conversion.

7>: 0008

8>: The hexadecimal length of the SMS message content. For example, the UCS2 code of hello is 00080A00680065006C006C006F, that is 10 bits and the hexadecimal length is 0A.

9>: Message content, for example, the USC2 code of hello is 00080A00680065006C006C006F.

One PDU message contains the above 9 parts and the parameter values are determined by the actual situation.



If the SMSC address length is 0, replace 08 with 00 and the SMSC type and address fields must be omitted.

The following is an example of the PDU message whose SMSC address length is not 0:

0891683110808805F001000B813124819396F300080A00680065006C006C006F

Wherein,

0891

683108705505F0: SMSC number of China Unicom

0100

0B: the length of the recipient number

81: Receiving mode

3124819396F3: The number of recipient

0008

0A: The length of the content

00680065006C006C006F: SMS message content

Message content: hello



The SMS message content starts from 0100, so the value of LENGTH in **AT+CMGS=LENGTH** is **23**.

---

The following is an example of the PDU message whose SMSC address length is **0**:

0001000B813124819396F300080A00680065006C006C006F

Wherein,

00: SMSC address information length

SMSC number is not needed.

0100

0B: the length of the recipient number

81: Receiving mode

3124819396F3: The number of recipient

0008

0A: The length of the content

00680065006C006C006F: SMS message content

SMS message content: hello

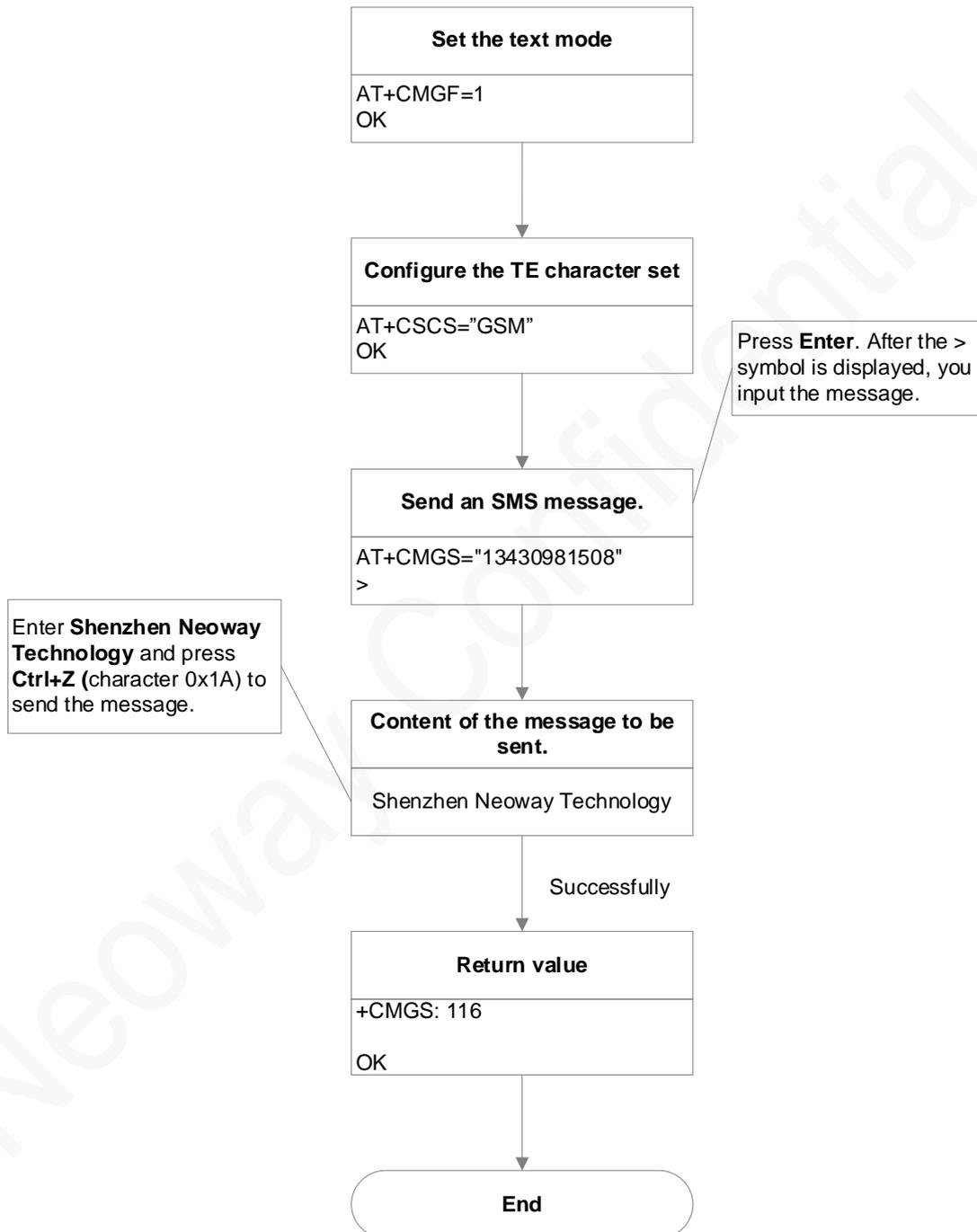


The SMS message content starts from 0100, so the value of LENGTH in **AT+CMGS=LENGTH** is **23**.

---

## B.2 Flowchart of Sending Text SMS Messages (Through UART)

Figure B-1 Flowchart of sending text format SMS messages



## B.3 Flowchart of Sending PDU SMS Messages (Through UART)

Figure B-2 Flowchart of Sending PDU SMS messages

