

N20 AT Command Manual

Version 1.0



Copyright © Neoway Technology Co., Ltd 2017. 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 有方 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 the N20.

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

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>

Revision Record

Issue	Changes	Revised By	Date
V1.0	Initial draft	Tao Wenhong	2017-10

Neoway
Confidential

Contents

Boot LOG Instruction	1
1 General Commands	2
1.1 Querying the Manufacturer Information: +ATI	2
1.2 Querying Software Version: +GMR	2
1.3 Querying Signal Quality: +CSQ	2
1.4 Querying the Network Registration Status: +CREG	3
1.5 Querying EPS Network Registration Status: +CEREG	4
1.6 Querying the IMSI: +CIMI	5
1.7 Querying IMEI: +CGSN	6
1.8 Obtaining the ICCID of the SIM Card: +CCID	6
1.9 Querying the Module Model: +CGMM	6
1.10 Querying the Module Model: +GMM	7
1.11 Setting the Baud Rate of the Module: +IPR	7
1.12 Setting Module Functionality: +CFUN	8
1.13 Activating Multiplexing Mode: +CMUX	9
1.14 Clock: +CCLK	10
1.15 Entering PIN Code: +CPIN	10
1.16 Enabling PIN and Querying MT and Network Device: +CLCK	11
1.17 Modifying the Password of the PIN: +CPWD	13
1.18 Defining PDP Context: +CGDCONT	14
1.19 PDP Authentication: +XGAUTH	15
1.20 Setting GPRS Attach and Detach: +CGATT	15
1.21 Enabling & Disabling the Terminal Display: ATE1/ATE0	16
1.22 GPRS Dialing Command: ATD*99#	17
2 SMS Commands	18
2.1 Selecting SMS Services: +CSMS	18
2.2 Setting Preferred SMS Storage: +CPMS	18
2.3 Setting SMS Inputting Mode: +CMGF	19
2.4 Setting the TE Character Set: +CSCS	20
2.5 Setting the SMS Indication Mode: +CNMI	21
2.6 Reading SMS Messages: +CMGR	22
2.7 SMS Message List: +CMGL	24
2.8 Sending SMS Messages: +CMGS	26
2.9 Writing SMS Messages: +CMGW	27
2.10 Sending Messages from Storage: +CMSS	28
2.11 Deleting SMS Messages: +CMGD	28
2.12 Setting the SMS Center Number: +CSCA	29
2.13 Setting the Parameters of the Text Mode: +CSMP	29
2.14 Displaying the Parameters of the Text Mode: +CSDH	30
2.15 Save Settings: +CSAS	31
3 TCP/UDP Client Commands	32

3.1 Setting Network APN: +NETAPN.....	32
3.2 Setting Up a PPP Link: +XIIC.....	32
3.3 Setting Up TCP Link: +TCPSETUP.....	33
3.4 Sending TCP Data: +TCPSSEND.....	34
3.5 Receiving TCP Data: +TCPRECV.....	34
3.6 Closing TCP Link: +TCPCLOSE.....	35
3.7 Setting Up UDP Link: +UDPSETUP.....	35
3.8 Sending UDP Data: +UDPSSEND.....	36
3.9 Receiving UDP Data: +UDPRECV.....	37
3.10 Closing UDP Link: +UDPCLOSE.....	37
3.11 Querying TCP/UDP Link Status: +IPSTATUS.....	38
3.12 Querying the Status of Data Sent by the TCP Link: +TCPACK.....	38
4 TCP Server AT Commands.....	40
4.1 Setting TCP Listening for the Server: +TCPLISTEN.....	40
4.2 Closing the Listening Connection: +CLOSELISTEN.....	40
4.3 Closing Connections with the Client: +CLOSECLIENT.....	41
4.4 Receiving Data from the Client: +TCPRECV(S).....	41
4.5 Sending Data to the Client: +TCPSENDS.....	42
4.6 Querying the Connection Status on the Client: +CLIENTSTATUS.....	42
4.7 Querying the Status of Data Sent by the TCP Link: +TCPACK.....	43
5 Transparent TCP/UDP Commands.....	44
5.1 Setting Up Transparent TCP Link: +TCPTRANS.....	44
5.2 Setting Up Transparent UDP Link: +UDPTRANS.....	45
5.3 Querying the Status of Data Sent by the TCP Link: +TCPACK.....	45
5.4 Querying TCP/UDP Link Status: +IPSTATUS.....	46
5.5 Closing Transparent Link: +TRANCLOSE.....	47
6 TCP Transparent Server Commands.....	48
6.1 Setting Transparent Listening for the TCP: +TCPSRVTRANS.....	48
6.2 Querying the Link Status on the Client: +CLIENTSTATUS.....	49
7 FTP AT Commands.....	50
7.1 Logging in to the FTP Server: +FTPLOGIN.....	50
7.2 Logging Out from the FTP Server: +FTPLOGOUT.....	51
7.3 Downloading Data from the FTP Server: +FTPGET.....	51
7.4 Uploading Data to the FTP Server: +FTPPUT.....	52
7.5 Querying FTP Link Status: +FTPSTATUS.....	53
8 GPS AT Commands.....	55
8.1 Switching GPS: \$MYGSPWR.....	55
8.2 Querying GPS Status: \$MYGPSSTATE.....	55
8.3 Obtaining NMEA Data: \$MYGPSPOS.....	55
9 Other AT Commands.....	61
9.1 Powering Off the Module: \$MYPOWEROFF.....	61
9.2 Controlling the Indicator of Socket Status: \$MYSOCKETLED.....	61
9.3 Obtaining the Version Information of the Module: \$MYGMR.....	61

9.4 Obtaining the CCID of the SIM Card: \$MYCCID	62
9.5 Querying the Type of the Module: \$MYMODEM (CSG Standard)	63
A Reference Process of AT Command Programming	64
A.1 Content of PDU SMS Messages	64
A.2 Flowchart of Sending Text SMS Messages (Through UART)	66
A.3 Flowchart of Sending PDU SMS Messages (Through UART)	67

Neoway
Confidential

Boot LOG Instruction

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

If the module is booted in automatic baudrate detection mode, enter AT 10 seconds after the module is powered on to check if the AT function is initialized or not. The UART responds with **OK** if AT is initialized and outputs **+PBREADY** after the phoneboos is available.

Neoway
Confidential

1 General Commands

1.1 Querying the Manufacturer Information: +ATI

Description	To query the manufacturer information, including manufacturer, model, and version	
Format	ATI<CR>	
Parameter	<manufacturer>: Module manufacturer <module_version>: Module model <soft_version>: Software version	
Return Value	<CR><LF><manufacturer> <CR><LF><module_version> <CR><LF><soft_version> <CR><LF>OK<CR><LF>	
Example	ATI NEOWAY N20 V001 OK	Manufacturer Module model Version
Remarks	N/A	

1.2 Querying Software Version: +GMR

Description	To query the software version	
Format	AT+GMR<CR>	
Parameter	<revision>: Software version information	
Return Value	<CR><LF><revision> <CR><LF>OK<CR><LF>	
Example	AT+GMR +GMR: N20_EAB0CM_BZ_V001 OK	
Remarks	N/A	

1.3 Querying Signal Quality: +CSQ

Description	To check the receiving signal strength indication (RSSI)	
Format	AT+CSQ<CR>	
Parameter	N/A	

Return Value	<pre><CR><LF>+CSQ: < signal >, <ber></pre> <pre><CR><LF>OK<CR><LF></pre> <pre>< signal></pre> <p>The following table shows the relationship between the signal and the RSSI.</p> <table border="1"> <thead> <tr> <th></th> <th>signal</th> <th>RSSI</th> </tr> </thead> <tbody> <tr> <td>0</td> <td><4 or 99</td> <td><-107 dBm or unknown</td> </tr> <tr> <td>1</td> <td><10</td> <td><-93dBm</td> </tr> <tr> <td>2</td> <td><16</td> <td><-81 dBm</td> </tr> <tr> <td>3</td> <td><22</td> <td><-69 dBm</td> </tr> <tr> <td>4</td> <td><28</td> <td><-57 dBm</td> </tr> <tr> <td>5</td> <td>>=28</td> <td>>=-57 dBm</td> </tr> </tbody> </table>			signal	RSSI	0	<4 or 99	<-107 dBm or unknown	1	<10	<-93dBm	2	<16	<-81 dBm	3	<22	<-69 dBm	4	<28	<-57 dBm	5	>=28	>=-57 dBm
		signal	RSSI																				
	0	<4 or 99	<-107 dBm or unknown																				
	1	<10	<-93dBm																				
2	<16	<-81 dBm																					
3	<22	<-69 dBm																					
4	<28	<-57 dBm																					
5	>=28	>=-57 dBm																					
<pre><ber></pre> <table border="1"> <tbody> <tr> <td>0...7</td> <td>Refer to the value of RXQUAL in the table of GSM 05.08 8.2.4.</td> </tr> <tr> <td>99</td> <td>Not known or not detectable</td> </tr> </tbody> </table>		0...7	Refer to the value of RXQUAL in the table of GSM 05.08 8.2.4.	99	Not known or not detectable																		
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	<pre>AT+CSQ</pre> <pre>+CSQ: 19,2</pre> <pre>OK</pre>																						
Remarks	N/A																						

1.4 Querying the Network Registration Status: +CREG

Description	To query the network registration status of the module
Format	<ul style="list-style-type: none"> AT+CREG=[<n>]<CR> AT+CREG?<CR> AT+CREG=?<CR>
Parameter	<p><n>: Specified whether to enable network registration unsolicited result codes.</p> <p>0: Disable network registration unsolicited result codes (default setting).</p> <p>1: Enable network registration unsolicited result codes +CREG: <stat>.</p> <p>2: Enable network registration and location information (Cell ID, Local ID) unsolicited result code +CREG: <stat>[, [<lac>], [<ci>], [<Act>]]</p> <p><stat>: network status</p> <p>0: Not registered, the module is not currently searching an operator to register to</p> <p>1: Registered the home network</p> <p>2: Not registered, but the module is currently trying to attach or searching an operator to register to</p> <p>3: Registration denied</p> <p>4: Unknown code</p> <p>5: Registered, roaming</p>

	<p><lac>: Two byte location area code in hexadecimal format, string type</p> <p><ci>: Two byte cell ID in hexadecimal format, string type</p> <p><Act>: The access technology of the serving cell, integer type</p> <p>0: GSM</p> <p>2: UTRAN</p> <p>3: GSM w/EGPRS</p>	
Return Value	<p><CR><LF>+CREG: <n>,<stat>[,<lac>,<ci>[,<Act>]]</p> <p><CR><LF>OK<CR><LF></p> <p>or</p> <p><CR><LF>ERROR<CR><LF></p>	
Example	AT+CREG=1 OK	Enable network registration unsolicited codes.
	AT+CREG? +CREG: 0,1 OK	Query the network registration status of the module.
	AT+CREG=? +CREG: (0-2) OK	Query the value range of the network registration status parameter.
Remarks	N/A	

1.5 Querying EPS Network Registration Status: +CEREG

Description	To query the EPS network registration status of the module
Format	<ul style="list-style-type: none"> AT+CEREG=[<n>]<CR> AT+CEREG?<CR> AT+CEREG=?<CR>
Parameter	<p><n>: Specified whether to enable network registration unsolicited result codes.</p> <p>0: Disable network registration unsolicited result codes (default setting).</p> <p>1: Enable network registration unsolicited result codes +CREG: <stat>.</p> <p>2: Enable network registration and location information (Cell ID, Local ID) unsolicited result code +CREG: <stat>[, [<lac>], [<ci>], [<AcT>]]</p> <p>4: Enable network registration unsolicited result codes containing Active-Time and Periodic-TAU</p> <p><stat>: network status</p> <p>0: Not registered, the module is not currently searching for an operator to register</p> <p>1: Registered to the home network</p> <p>2: Not registered, but the module is currently trying to attach or searching for an operator to register</p> <p>3: Registration denied</p> <p>4: Unknown code</p> <p>5: Registered, roaming</p>

	<p><lac>: Two byte location area code in hexadecimal format, string type</p> <p><ci>: Four byte cell ID in hexadecimal format, string type</p> <p><Act>: The access technology of the serving cell, integer type</p> <p>0: GSM</p> <p>1: GSM compact</p> <p>2: UTRAN</p> <p>3: GSM w/EGPRS</p> <p>4: UTRAN w/HSDPA</p> <p>5: UTRAN w/HSUPA</p> <p>6: UTRAN w/HSDPA and HSUPA</p> <p>7: E-UTRAN</p>	
Return Value	<p><CR><LF>OK<CR><LF></p> <p><CR><LF>+CEREG: <stat>[,<tac>],[<ci>],[<AcT>][,],[<Active-Time>],[<Periodic-TAU>]]]] <CR><LF>OK<CR><LF></p> <p><CR><LF>+CEREG: (list of supported <n>s) <CR><LF>OK<CR><LF></p>	
Example	AT+CEREG? +CEREG: 0,1 OK	Query the network registration status of the module.
	AT+CEREG=1 OK	Enable network registration unsolicited codes.
	AT+CEREG=? +CEREG: (0-2,4) OK	Query the value range of the network registration status parameter.
Remarks	N/A	

1.6 Querying the IMSI: +CIMI

Description	To query the international mobile subscriber identification (IMSI)	
Format	AT+CIMI<CR>	
Parameter	N/A	
Return Value	<p><CR><LF>+CIMI: <IMSI></p> <p><CR><LF>OK<CR><LF></p> <p>or</p> <p><CR><LF>ERROR<CR><LF></p>	
Example	AT+CIMI +CIMI: 460020188385503	Obtain the IMSI number.

	OK	
	AT+CIMI ERROR	Query the IMSI. No SIM card is installed.
Remarks	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.	

1.7 Querying IMEI: +CGSN

Description	To query the International Mobile Equipment Identity (IMEI) of the module	
Format	AT+CGSN<CR>	
Parameter	N/A	
Return Value	<CR><LF>+CGSN: <IMEI> <CR><LF>OK<CR><LF>	
Example	AT+CGSN +CGSN: 355897043139120 OK	
Remarks	The IMEI is a character string of 15 digits.	

1.8 Obtaining the ICCID of the SIM Card: +CCID

Description	To obtain the integrated circuit card identifier (ICCID) of the SIM card	
Format	AT+CCID<CR>	
Parameter	<ICCID>: SIM card ID	
Return Value	<CR><LF>+CCID: <ICCID> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>	
Example	AT+CCID +CCID: 89860002190810001367 OK	Read command
	AT+CCID ERROR	Read command The SIM card is not inserted.
Remarks	The ICCID number is a character string of 20 digits.	

1.9 Querying the Module Model: +CGMM

Description	To query the module model
--------------------	---------------------------

Format	AT+CGMM<CR>	
Parameter	<model>: Module model	
Return Value	<CR><LF>+CGMM: <model> <CR><LF>OK<CR><LF>	
Example	AT+CGMM +CGMM: N20 OK	Query the product model.
Remarks	N/A	

1.10 Querying the Module Model: +GMM

Description	To query the module model	
Format	AT+GMM<CR>	
Parameter	N/A	
Return Value	<CR><LF>+CGMM: <model> <CR><LF>OK<CR><LF>	
Example	AT+GMM +GMM: N20 OK	Query the product model.
Remarks	N/A	

1.11 Setting the Baud Rate of the Module: +IPR

Description	To set the baud rate of the module	
Format	<ul style="list-style-type: none"> AT+IPR=<baud rate><CR> AT+IPR?<CR> AT+IPR=?<CR> 	
Parameter	<baud rate>: The value can be 0, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600.	
Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>+IPR: <baud rate> <CR><LF>OK<CR><LF>	
	<CR><LF>+IPR: (list of supported <baud rate>s) <CR><LF>OK<CR><LF>	
Example	AT+IPR=115200 OK	Set the baud rate to 115200 bps.

	AT+IPR? +IPR: 115200 OK	Query the current baud rate.
	AT+IPR=? +IPR: 0,300,600,1200,2400,4800,9600,19200,38400,57600, 115200,230400,460800,921600 OK	Query the available baud rate range.
	AT+IPR=100 ERROR	Set the baud rate to 100. The value is not allowed
Remarks	<ul style="list-style-type: none"> The default baud rate is 0, indicating automatic baud rate detection. The settings will be not saved after the module is powered off. 	

1.12 Setting Module Functionality: +CFUN

Description	To select the level of functionality of the module by setting <fun>	
Format	<ul style="list-style-type: none"> AT+CFUN=[<fun>[,<rst>]]<CR> AT+CFUN?<CR> AT+CFUN=?<CR> 	
Parameter	<p><fun>: power saving function mode 0: turn off radio and SIM power 1: Full functionality (default) 4: Turn off the TX and RX circuits (Flight mode)</p> <p><rst>: Specifies whether to restart the module 0: do not reset the MT before setting it to <fun> power level 1: reset the MT before setting it to <fun> power level</p>	
Return Value	<p><CR><LF>+CFUN: (list of supported <fun>s),(list of supported <rst>s) <CR><LF>OK<CR><LF> or <CR><LF>ERROR<CR><LF></p>	
Example	AT+CFUN=1 OK	Set full functionality.
	AT+CFUN? +CFUN: 1 OK	Query current function level. Full functionality
	AT+CFUN=? +CFUN: (0-1,4),(0-1) OK	Query available parameter value ranges.
Remarks	The settings will not be saved after the module is powered off.	

1.13 Activating Multiplexing Mode: +CMUX

Description	To activate multiplexing mode	
Format	<ul style="list-style-type: none"> AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]<CR> AT+CMUX=?<CR> 	
Parameters	<p><mode>: The mode of MUX that is enabled, integer type 0: Basic option (default value) 1: Advanced option (not supported)</p> <p><subset>: Subset of frame format, integer type 0: UIH frames used only (default value) 1: UI frames used only (not supported currently)</p> <p><port_speed>: UART port rate, integer type 1: 9600bit/s 2: 19200bit/s 3: 38400bit/s 4: 57600bit/s 5: 115200bit/s (default) 6: 230400bit/s</p> <p><N1>: Maximum frame size. Integer type, ranging from 1 to 1509. The default value is 31. For Advanced option, the default value is 64.</p> <p><T1>: Acknowledgement timer in unite of ten milliseconds, integer type, ranging from 1 to 255, where 10 is default (equal to 100 ms).</p> <p><N2>: Maximum number of re-transmission, integer type, ranging from 0 to 5. The default value is 3.</p> <p><T2>: response timer for the multiplexer control channel in units of ten milliseconds, integer type. Ranging from 2 to 255. The default value is 30 (300 ms).</p> <p><T3>: Wake up response timer in seconds, integer type. Not supported</p> <p><k>: window size, integer type. Not supported</p>	
Return Value	<CR><LF>OK<CR><LF>	
Example	AT+CMUX=0 OK	Basic option. Other parameters are left out.
	AT+CMUX=2 ERROR	The parameter value exceeds available range
	AT+CMUX=0,0,,512,254,5,255 OK	Basic option.
	AT+CMUX=1,0,,512,254,5,255 ERROR	Advanced option. Not supported
	AT+CMUX=? +CMUX: (0),(0),(1-6),(16-1509),(1-255),(0-100),(2-255),	Query the available range of parameters.

	(1-255),(1-7) OK	
	AT+CMUX? ERROR	Incorrect command syntax.
Remarks	<ul style="list-style-type: none"> The multiplexing protocol allows two or more virtual ports to be created on a physical port. Generally, two virtual ports are created: one is used for dialing network and one is used for AT command sending and receiving. <T2> must be greater than <T1>. To enable multiplexing function, send AT+CMUX=0. 	

1.14 Clock: +CCLK

Description	To set and query the real-time clock	
Format	<ul style="list-style-type: none"> AT+CCLK=<time><CR> AT+CCLK?<CR> 	
Parameter	< time >: Character string in format of "YY/MM/DD, hh:mm:ss[+TZ]". TZ: Two digits, indicating the time lag between the local time and the GMT time. This information is optional because it can be displayed only when the network supports it.	
Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>+CCLK: <time> <CR><LF> OK<CR><LF>	
Example	AT+CCLK="08/07/01,14:54:01" OK	Set the real-time clock of the module.
	AT+CCLK? +CCLK: "08/07/01,14:54:10" OK	Query the setting of the real-time clock.
	AT+CCLK=14/07/02,10:48:50 ERROR	Incorrect command syntax.
Remarks	<ul style="list-style-type: none"> The settings will not be saved after the module is powered off. The default clock is GMT+0. 	

1.15 Entering PIN Code: +CPIN

Description	To query the PIN status and enter PIN code	
Format	<ul style="list-style-type: none"> AT+CPIN=<pin>[,<newpin>]<CR> AT+CPIN?<CR> AT+CPIN=<pin><CR> 	
Parameter	<pin>, <newpin>: string type value	

Return Value	<pre><CR><LF>+CPIN: <code> <CR><LF>OK<CR><LF> <code>: READY: No password SIM PIN: Enter PIN code. SIM PUK: Enter PUK code. SIM PIN2: Enter PIN2 code. SIM PUK2: Enter PUK2 code.</pre>	
Example	<pre>AT+CPIN? +CPIN:READY OK</pre>	<p>Query whether PIN code is required. No password is required.</p>
	<pre>AT+CPIN? +CPIN: SIM PIN OK AT+CPIN="1234" OK PBREADY</pre>	<p>Query whether PIN code is required. Required Input correct PIN code.</p> <p>Unlock</p>
	<pre>AT+CPIN? +CPIN: SIM PUK OK AT+CPIN="12345678","4321" OK PBREADY</pre>	<p>PUK code is required if PIN code is input incorrectly for three times Input PUK code, and new PIN code.</p> <p>Unlock</p>
Remarks	<ul style="list-style-type: none"> To enter PIN code, lock current SIM card (running <code>AT+CLCK="SC",1,"1234"</code>) and then restart the module. If PIN code is input incorrectly for three times, PUK is required to unlock. 	

1.16 Enabling PIN and Querying MT and Network Device: +CLCK

Description	To lock, unlock or interrogate an MT or a network facility
Format	<ul style="list-style-type: none"> <code>AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]<CR></code> <code>AT+CLCK=?<CR></code>
Parameter	<p><fac>: A pair of quotation marks are required for the value. "OI": Outgoing international calls "AI": All incoming calls "IR": Incoming calls when roaming outside the home country "SC": SIM card</p>

	<p>"AO": All outgoing calls "OX": All outgoing international calls except to the home country "AB": All barring services "AG": All outgoing barring services "AC": All incoming barring services "FD": SIM fixed dialing memory feature "PS": PH-SIM (lock Phone to SIM card) "PN": Network authentication "PU": Network subsystem authentication "PP": Service provider authentication "PC": Corporate authentication</p> <p><mode>: 0: Unlock 1: Lock 2: Query the status</p> <p><status>: 0: not active 1: active</p> <p><passwd>: Password or code, string type. A pair of quotation marks are required for the value.</p> <p><class>: 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</p>	
Return Value	<p>When <mode>=2 and command successful: <CR><LF>+CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>...]] <CR><LF>OK<CR><LF></p>	
Example	<p>AT+CLCK="SC",2 +CLCK: 0 OK</p> <p>AT+CLCK=? +CLCK: ("AB","AC","AG","AI","AO","IR","OI","OX","SC","FD","PN","PU","PP","PC","PF") OK</p>	<p>Query the network information related to the module.</p>
	<p>AT+CLCK="SC",1,"1234" OK</p>	<p>Lock the current SIM card. "1234" is the PIN code of current SIM card.</p>

	AT+CLCK="SC",0,"1234" OK	Unlock the current SIM card. "1234" is the PIN code of current SIM card.
	AT+CLCK="SC",1,"2222" ERROR	The PIN code is incorrect.
Remarks	The settings of this command take effect after the module is restarted.	

1.17 Modifying the Password of the PIN: +CPWD

Description	To modify the password of the lock function of the module	
Format	<ul style="list-style-type: none"> AT+CPWD=<fac>,<oldpwd>,<newpwd><CR> AT+CPWD=?<CR> 	
Parameter	<p><fac>: A pair of quotation marks is required for the value.</p> <p>"P2": SIM PIN2</p> <p>"OI": Outgoing international calls</p> <p>"AI": All incoming calls</p> <p>"IR": Incoming calls when roaming outside the homing place</p> <p>"SC": SIM card</p> <p>"AO": All outgoing calls</p> <p>"OX": All outgoing international calls except to the home country</p> <p>"AB": All calling services</p> <p>"AG": All outgoing call services</p> <p>"AC": All incoming call services</p> <p>"FD": Fixed dialing of the SIM card</p> <p>"PN": Network authentication</p> <p>"PU": Network subsystem authentication</p> <p>"PP": Service provider authentication</p> <p>"PC": Corporate authentication</p> <p><oldpwd>: Old password or code, string type. A pair of quotation marks is required for the value.</p> <p><newpwd>: New password or code, string type. A pair of quotation marks is required for the value.</p>	
Return Value	<p><CR><LF>OK<CR><LF></p> <p><CR><LF>+CPWD: list of supported (<fac>,<pwdlength>)s</p> <p><CR><LF>OK<CR><LF></p> <p><CR><LF> ERROR<CR><LF></p>	
Example	<pre>AT+CPWD=? +CPWD: ("AB",4),("AC",4),("AG",4),("AI",4),("AO",4), ("IR",4),("OI",4),("OX",4),("SC",8),("P2",8) OK</pre>	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	Incorrect command syntax. A pair of quotation marks (") is required for each parameter.
Remarks	To modify the PIN code, lock the SIM card (running AT+CLCK="SC",1,"1234").	

1.18 Defining PDP Context: +CGDCONT

Description	To set the packet data protocol (PDP) format of the GPRS/3G	
Format	<ul style="list-style-type: none"> AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>[,<pd1> [,<pdN>]]]]]]]]<CR> AT+CGDCONT?<CR> AT+CGDCONT=?<CR> 	
Parameter	<p><cid>: (PDP Context Identifier) a numeric parameter that specifies a particular PDP context definition. Minimum value = 1.</p> <p><PDP_type>: (Packet Data Protocol type) a string parameter. IP Internet Protocol (IETF STD 5)</p> <p><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.</p> <p><PDP_address>: a string parameter that identifies the terminal in the address space applicable to the PDP. TE will provide a value for this parameter after PDP starts if it is null or omitted. If TE fails to provide, the subscription value will be requested.</p> <p><d_comp>: numeric parameter that controls PDP data compression. Used only for SNDCP 0 - off (default if value is omitted)</p> <p><h_comp>: numeric parameter that controls PDP header compression. 0 - off (default if value is omitted)</p> <p><pd1>, ... <pdN>: zero to N string parameters whose meanings are specific to the <PDP_type></p>	
Return Value	See the Example.	
Example	AT+CGDCONT=1,"IP","CMNET" OK	Set PDP type to IP and APN to CMNET.
	AT+CGDCONT? +CGDCONT: 1,"IP","CMNET","0.0.0.0",0,0,0,0 OK	Query current PDP format.
	AT+CGDCONT=? +CGDCONT: (1-24),"IP",,,(0-2),(0-4),(0-1),(0-1) +CGDCONT: (1-24),"PPP",,,(0-2),(0-4),(0-1),(0-1) +CGDCONT: (1-24),"IPV6",,,(0-2),(0-4),(0-1),(0-1) +CGDCONT: (1-24),"IPV4V6",,,(0-2),(0-4),(0-1),(0-1)	Query the available value range of PDP format.

	OK	
Remarks	N/A	

1.19 PDP Authentication: +XGAUTH

Description	PDP authentication	
Format	<ul style="list-style-type: none"> AT+XGAUTH=<cid>,<auth>,<name>,<pwd><CR> +XGAUTH: (<cid>s),(<auth>s),lname,lpwd 	
Parameter	<p><cid>: PDP context identifier</p> <p><auth>: authentication may be:</p> <ul style="list-style-type: none"> - 0: meaning authentication protocol not used (NONE) - 1: meaning personal authentication protocol (PAP) - 2: meaning handshake authentication protocol (CHAP) <p><name>: user name as string with length <lname></p> <p><pwd>: password as string with maximum length <lpwd></p>	
Return Value	See the Example.	
Example	AT+XGAUTH=1,1,"gsm","1234" OK	Set the first PDP authentication.
	AT+XGAUTH=? +XGAUTH: (1),(0-2),32,32 OK	Query the available value range of parameters.
Remarks	<ul style="list-style-type: none"> Before sending this command, send AT+CGDCONT. To use internal protocol stack, add this command to the process. <cid> is same as that in +CGDCONT. 	

1.20 Setting GPRS Attach and Detach: +CGATT

Description	To set GPRS attach and detach	
Format	<ul style="list-style-type: none"> AT+CGATT=<state><CR> AT+CGATT?<CR> AT+CGATT=?<CR> 	
Parameter	<p><state>: 0, 1</p> <p>0: indicates detach</p> <p>1: indicates attach</p>	
Return Value	See the Example.	
Example	AT+CGATT=1 OK	GPRS attach is set successfully.
	AT+CGATT=0	

	OK	GPRS detach is set successfully.
	AT+CGATT=0 GPRS DISCONNECTION	Send this command after setting a PPP connection.
	OK	
	AT+CGATT=0 ERROR	ERROR is returned because no SIM card is installed.
	AT+CGATT? +CGATT: 0 OK	Query the GPRS status.
	AT+CGATT=? +CGATT:(0-1) OK	Query the valid parameter values for the command.
Remarks	<ul style="list-style-type: none"> By default, the module can automatically perform GPRS attach. Ensure that the GPRS attach is set before the PPP connection is set up. It is recommended to 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. The settings will not be saved after the module is powered off. 	

1.21 Enabling & Disabling the Terminal Display: ATE1/ATE0

Description	To enable or disable the terminal display function of the AT commands	
Format	<ul style="list-style-type: none"> ATE1<CR> ATE0<CR> 	
Parameter	N/A	
Return Value	See the Example	
Example	ATE1 OK AT OK	Turn on module AT command echo function Send AT, serial tools show "AT" and "OK".
	ATE0 OK OK	Turn off the module AT command echo function Send AT, serial tools only show "OK"
Remark	<ul style="list-style-type: none"> The settings by this command will not be saved after the module is powered off. The terminal display function is enabled by default. If the command is sent after dialing up to connect the network, terminal display is disabled automatically. 	

- ATE is equal to ATE1.

1.22 GPRS Dialing Command: ATD*99#

Description	To initialize a GPRS connection using external protocol stacks
Format	ATD*99#<CR>
Parameter	N/A
Return Value	<CR><LF>CONNECT<CR><LF>
Example	ATD*99# CONNECT
Remarks	<ul style="list-style-type: none">• This command is applicable only to external protocol stacks.• Ensure that the module has registered the network and set APN before dialing any number.

2 SMS Commands

2.1 Selecting SMS Services: +CSMS

Description	To select an SMS service among SMS-MO, SMS-MT, and SMS-CB	
Format	<ul style="list-style-type: none"> AT+CSMS=<service><CR> AT+CSMS?<CR> AT+CSMS=?<CR> 	
Parameter	<service>: 0: GSM03.40 and GSM03.41. SMS-related AT commands support GSM07.05 Phase 2. 1: GSM03.40 and GSM03.41. SMS-related AT commands support GSM07.05 Phase 2+. <mt>,<mo>,<bm>: 0: Not support 1: Support	
Return Value	<CR><LF>+CSMS: <mt>,<mo>,<bm>	
	<CR><LF>OK<CR><LF>	
	<CR><LF>+CSMS: <service>,<mt>,<mo>,<bm> <CR><LF>OK<CR><LF> <CR><LF>+CSMS: (list of supported <service>s) <CR><LF>OK<CR><LF>	
Example	AT+CSMS=1 +CSMS: 1, 1, 1 OK	Set SMS service to 1.
	AT+CSMS? +CSMS: 1, 1, 1, 1 OK	Query the current parameter value.
	AT+CSMS=? +CSMS: (0-1) OK	Query the value range of SMS service.
Remarks	The default settings of this command are 0, 1, 1, 1.	

2.2 Setting Preferred SMS Storage: +CPMS

Description	To set preferred SMS storage
Format	<ul style="list-style-type: none"> AT+CPMS=<mem1><CR> AT+CPMS?<CR> AT+CPMS=?<CR>
Parameter	<mem1>: String type, for example, "SM", "ME", "MT"

	<p><used>: Used quantity <total>: Total capacity of the storage <mem1>: "SM": SIM only "ME": ME only</p>	
Return Value	<p><CR><LF>+CPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3> <CR><LF>OK<CR><LF> OR <CR><LF>+CPMS: <mem1>, <used1>, <total1>, <mem2>, <used2>, <total2>, <mem3>, <used3>, <total3> <CR><LF>OK<CR><LF> OR <CR><LF>+CPMS: (list of supported <mem1>s), (list of supported <mem2>s), (list of supported <mem3>s) <CR><LF>OK<CR><LF></p>	
Example	<p>AT+CPMS="SM" +CPMS: 50, 50, 50, 50, 50, 50 OK</p>	<p>Set the SMS storage to "SM", that is, store SMS messages in SIM card.</p>
	<p>AT+CPMS? +CPMS: "SM", 50, 50, "SM", 50, 50, "SM", 50, 50 OK</p>	<p>Query the capacity of current SMS storage.</p>
	<p>AT+CPMS=? +CPMS: ("SM","ME","MT"), ("SM","ME","MT"), ("SM","ME","MT") OK</p>	<p>Query the available storages.</p>
Remarks	<ul style="list-style-type: none"> The settings by this command will be saved after the module is powered off. The default storage is SM. 	

2.3 Setting SMS Inputting Mode: +CMGF

Description	To set the SMS inputting mode
Format	<ul style="list-style-type: none"> AT+CMGF[=<mode>]<CR> AT+CMGF?<CR> AT+CMGF=?<CR>
Parameter	<p><mode>: 0: PDU mode 1: Text mode</p>
Return Value	<CR><LF>OK<CR><LF>
	<p><CR><LF>+CMGF: <mode> <CR><LF>OK<CR><LF></p>

	<CR><LF>+CMGF: (list of supported <mode>s) <CR><LF>OK<CR><LF>	
Example	AT+CMGF=1 OK	Set the SMS to text mode.
	AT+CMGF? +CMGF: 1 OK	Query the current mode of SMS message input.
	AT+CMGF=? +CMGF: (0-1) OK	Query the value range of SMS mode setting.
Remarks	N/A	

2.4 Setting the TE Character Set: +CSCS

Description	To set the format of the TE character set	
Format	<ul style="list-style-type: none"> AT+CSCS[=<chest>]<CR> AT+CSCS?<CR> AT+CSCS=?<CR> 	
Parameter	< chset >: <ul style="list-style-type: none"> "GSM": Default GSM alphabet (GSM03.38.6.2.1) "HEX": string consisting of 0x00 to 0xFF in hexadecimal format. E.g. 032FE6 is 3 8-bit characters, which are respectively 3, 47, and 230. "IRA": International reference alphabet (ITU-T T.50) "PCCP437": PC character set Code Page 437 "8859-1": ISO 8859 Latin 1 character set "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. 	
Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>+CSCS: <chset> <CR><LF>OK<CR><LF>	
	<CR><LF>+CSCS: (list of supported <chset>s) <CR><LF>OK<CR><LF>	
Example	AT+CSCS="IRA" OK	Set IRA character set.
	AT+CSCS? +CSCS: "IRA" OK	Query the format of current character set.

	AT+CSCS=? +CSCS: ("IRA","GSM","UCS2") OK	Query the character set formats that the module supports. The list of the character set formats is returned.
Remarks	The default value is IRA.	

2.5 Setting the SMS Indication Mode: +CNMI

Description	To set the mode how the module informs users of new SMS messages received from the network
Format	<ul style="list-style-type: none"> AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]<CR> AT+CNMI?<CR> AT+CNMI=?<CR>
Parameter	<p><mode>: Set the instruction mode after receiving SMS messages.</p> <p>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.</p> <p>1: When the module is online, it will discard saved SMS instruction codes and reject new codes. In other situations, the codes are displayed on the end device.</p> <p>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.</p> <p><mt>: Set the format of the new SMS instruction codes. The default value is 0.</p> <p>0: SMS instruction codes will not be sent to the end device (default)</p> <p>1: The format of the new SMS instruction codes is +CMTI: "MT" ,<index>. The SMS message is stored rather than directly displayed.</p> <p>2: The format of the new SMS instruction codes is +CMT :<oa>,<scts>,<tooa>,<lang>,<encod>,<priority>[,<cbn>],<length><CR><LF><data> (text mode). SMS messages are directly displayed rather than stored.</p> <p>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.</p> <p><bm>: Set the format of the new cell broadcast codes. The default value is 1.</p> <p>0: Not send the instruction information of new cell broadcast. The cell broadcast will not be stored.</p> <p>1: The cell broadcast instruction code is +CBMI: " BC" ,<index> and the cell broadcast is stored. (default)</p> <p>2: The format of the new cell broadcast instruction codes is +CBM: <oa>,[<alpha>],[<scts>[,<tooa>,<length>] <CR><LF><data>(text mode). The cell broadcast will be directly displayed rather than stored.</p> <p><ds>: Report status of SMS message sending. The default value is 1.</p> <p>0: No status report of SMS message sending</p> <p>1: The format of the SMS sending status report is +CDS :<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>(text mode).</p>

	<p>2: if a status report is stored, then the following unsolicited result code is sent: +CDSI: <memr>,<index></p> <p><bfr>: The default value is 0.</p> <p>0: When <mode> is set to 1 or 2, codes defined by this command and stored in TA will be sent to TE. The module will return OK before transmitting the codes.</p> <p>1: When <mode> is set to 1 or 2, the codes defined by this command and stored in TA will be cleared.</p>	
Return Value	See the Example.	
Example	AT+CNMI=1,1,0,0,0 OK	Set the SMS message indication mode.
	AT+CNMI=? +CNMI: (0-2), (0-3), (0,2), (0-2), (0,1) OK	Query the value ranges of the paramters.
	AT+CNMI? +CNMI: 1, 1, 0, 0, 0 OK	Query the current setting of the parameters.
Remarks	<ul style="list-style-type: none"> The default settings of this command are 0, 0, 0, 0, 1. The recommended setting is +CNMI: 2,1,0,0,0 (new messages are stored on SIM card rather than displayed directly) or +CNMI: 2,2,0,0,0 (new messages are displayed rather than stored on SIM card). SMS message types: <ul style="list-style-type: none"> Class 0: Displayed not stored Class 1: Stored in ME Class 2: Stored in SIM Class 3: Sent to TE 	

2.6 Reading SMS Messages: +CMGR

Description	To read SMS messages stored in current memory (use the AT+CPMS command to specify the current memory)
Format	AT+CMGR=<index><CR>
Parameter	<index>: location value <index> from preferred message storage <mem1> to the TE
Return Value	<p>Text mode (+CMGF=1)</p> <ul style="list-style-type: none"> The command is executed successfully and the command is SMS-DELIVER: +CMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> The command is executed successfully and the command is SMS-SUBMIT: +CMGR: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,<vp>],<sca>,<tosca>,<length>]<CR><LF><data> The command is executed successfully and the command belongs to

	<p>SMS-STATUS-REPORT: +CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st></p> <ul style="list-style-type: none"> The command is executed successfully and the command is SMS-COMMAND: +CMGR: <stat>,<fo>,<ct>[,<pid>],[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>] The command is executed successfully and the command supports CBM storage: +CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> <p>Stat: "REC UNREAD" Received unread message "REC READ" Received messages have been read "STO UNSENT" Stored unsent messages "STO SENT" Stored messages have been sent</p> <p>PDU mode (+ CMGF=0) and the command is executed successfully: +CMGR: <stat>,[<alpha>],<length><CR><LF><pdu></p> <p>Stat: 0 Unread message received 1 The read message has been received 2 Unsent messages have been stored 3 Sent messages have been stored</p> <p>Alpha: The number of characters to represent Length: The number of octets of the given TP-level data unit (octets that do not contain the service center address) pdu: PDU data</p>	
Example	<p>AT+CMGR=1 +CMGR: "REC READ","66421",,"11/09/13,16:37:59+32" 050003140401E27778592EA7E7EBE9373C3C279BCF68F59A ADC78FED62779BA596D7EBAEB5B91EBD16A5D46C35F98 406A744E311A95C32594DA75688B50EADACA6D689150EA DF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375 C0E1693CD6835DB0D9783A15C91D2E06BDAA558AC1F60C 52B937CADCD2B747AA9021BDEC627E8E9441BD42655DEF 446 OK</p>	<p>Read the message indexed as 1.</p>
	<p>AT+CMGF=0 OK AT+CSCS="UCS2" OK</p> <p>+CMTI: "SM",39 AT+CMGR=39 +CMGR: 0,,23 0891683110501905F0240BA18177377949F50000413062312503 230468341A0D</p>	<p>Set to PDU mode.</p> <p>Incoming SMS Read SMS.</p>

	OK	
	AT+CMGF=1 OK AT+CSCS="GSM" OK +CMTI: "SM",40 AT+CMGR=40 +CMGR: "REC UNREAD","18777397945",,"14/03/26,13:57:58+32" hello world OK	Set to text mode Incoming SMS. Read SMS.
Remarks	If the status of the message is received unread, the status in the storage changes to received read after executing this command.	

2.7 SMS Message List: +CMGL

Description	To read SMS messages of one type from the current memory specified by the +CPMS command
Format	<ul style="list-style-type: none"> • AT+CMGL[=<stat>]<CR> • AT+CMGL=?<CR>
Parameter	<p><state>: String type or numeric type</p> <p>When set AT+CMGF=1,</p> <ul style="list-style-type: none"> • "REC UNREAD": Unread SMS messages received • "REC UNREAD": Read SMS messages received • "STO UNSENT": Stored unsent SMS messages • "STO SENT": Stored sent SMS messages • "ALL": All SMS messages <p>When set AT+CMGF=0,</p> <ul style="list-style-type: none"> • 0: Unread SMS messages received • 1: Read SMS messages received • 2: Stored unsent SMS messages • 3: Stored sent SMS messages • 4: All SMS messages
Return Value	<p>Text mode (+CMGF=1)</p> <ul style="list-style-type: none"> • Command is executed successfully and is SMS-SUBMITs and/or SMS-DELIVERs: +CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>][,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF>+CMGL: <index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<tooa/toda>,<length>]<CR><LF><data>[...]]

	<ul style="list-style-type: none"> Command is executed successfully and SMS-STATUS-REPORTs: +CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF>+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[...]] Command successful and SMS-COMMANDs: +CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>+CMGL: index>,<stat>,<fo>,<ct>[...]] Command successful and CBM storage: +CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data> [...]] <p>PDU mode (+CMGF=0)</p> <ul style="list-style-type: none"> Command is executed successfully: +CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu>[<CR><LF> +CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu>[...]] 	
Example	<pre>AT+CMGL="ALL" +CMGL: 1,"REC READ","66421","", "2011/09/13 16:37:59+32" 050003140401E27778592EA7E7EBE9373C3C279BCF68F59AADC78FED62779BA59 6D7EBAEB5B91EBD16A5D46C35F98406A744E311A95C32594DA75688B50EADAC A6D689150EADF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375C0E169 3CD6835DB0D9783A15C91D2E06BDAA558AC1F60C52B937CADCD2B747AA9021 BDEC627E8E9441BD42655DEF446 +CMGL: 14,"STO SENT","66045","", 050003010401E27778592EA7E7EBE9373C3C279BCF68F59AADC78FED62779BA59 6D7EBAEB5B91EBD16A5D46C35F98406A744E311A95C32594DA75688B50EADAC A6D689150EADF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375C0E169 3CD6835DB0D9783A15C91D2E06BDAA558AC1F60C52B937CADCD2B747AA9021 BDEC627E8E9441BD42655DEF446 +CMGL: 44,"REC UNREAD","8615719556937","", "2011/09/30 03:00:55+32" 5E7F4E1C79FB52A863D0919260A8003A4E2D536B7528623700310035003700310039 0035003500360039003300377ED960A86765753500326B21002C6700540E4E006B215 72800320039002F00300039002000320030003A00340038002C60A853EF6309901A8B DD952E621690099879952E76F463A556DE62E8 OK.</pre>	
	<pre>AT+CMGL=? +CMGL: ("REC UNREAD", "REC READ", "STO UNSENT", "STO SENT", "ALL") OK</pre>	Query in text format (AT+CMGF=1).
	<pre>AT+CMGL=? +CMGL: (0-4) OK</pre>	Query in PDU format (AT+CMGF=0).
	<pre>AT+CMGL=ALL ERROR</pre>	The parameter format in the command is incorrect. A pair of quotation marks (") is required for the parameter.
	<pre>AT+CMGF=1 OK</pre>	The parameter should be set to 0.

	AT+CMGL=4 ERROR	
	AT+CMGF=0 OK AT+CMGL="ALL" ERROR	The parameter should be set to 1.
Remarks	N/A	

2.8 Sending SMS Messages: +CMGS

Description	To send an SMS message from the module to the network The network will return reference value <mr> to the module after the SMS message is sent successfully.	
Format	<ul style="list-style-type: none"> AT+CMGS=<da>[,<toda>]<CR>text is entered<Ctrl+Z/ESC> (Text command syntax) AT+CMGS=<length><CR>PDU is given<Ctrl+Z/ESC> (PDU command syntax) 	
Parameter	<da>: The destination number to which the SMS message is sent in text mode <text>: SMS message content in text mode <length>: The byte length of the SMS message content in PDU mode <mr>: The storage location <CR>: End character <Ctrl+Z>: Indicates the end of the input message, → in the example. <ESC>: Indicates giving up the input message	
Return Value	<ul style="list-style-type: none"> if text mode (+CMGF=1) and sending successful: <CR><LF>+CMGS: <mr>[,<scts>] <CR><LF>OK<CR><LF> if PDU mode (+CMGF=0) and sending successful: <CR><LF>+CMGS: <mr>[,<ackpdu>] <CR><LF>OK<CR><LF> <scts>: service center time stamp <ackpdu>: 3GPP 23.040 RP-User-Data element of RP-ACK PDU	
Example	AT+CMGS="66358"<CR> > This is the text → +CMGS: 171 OK	Text mode(+CMGF=1) → is the symbol after pressing Ctrl+Z .
	AT+CMGS="15889758493"<CR> > This is the text → ERROR	AT+CMGF=1 might not be executed.
	AT+CMGS=33<CR> > 0891683108705505F001000B815118784271F20008146D	PDU mode (+CMGF=0)

	F157335E025B9D5B89533A59276D6A80545EFA → +CMGS: 119 OK	
Remarks	N/A	

2.9 Writing SMS Messages: +CMGW

Description	To write an SMS message into the memory The location information <index> will be returned after the message is saved correctly.	
Format	<ul style="list-style-type: none"> Command syntax (text mode): AT+CMGW[=<oa/da>[,<toa/toda>[,<stat>]]]<CR>text is entered<Ctrl+Z/ESC> Command syntax (PDU mode): AT+CMGW=<length>[,<stat>]<CR>PDU is given<Ctrl+Z/ESC> 	
Parameter	<da>: The destination number to which the SMS message is sent in text mode <text>: SMS message content in text mode <length>: The byte length of the SMS message content in PDU mode <index>: Location information <CR>: End character <Ctrl+Z>: Indicates the end of the input message <ESC>: Indicates giving up the input message	
Return Value	<CR><LF>+CMGW: <index> <CR><LF>OK<CR><LF> <CR><LF>ERROR<CR><LF>	
Example	AT+CMGW="091137880"<CR> > "This is the text"<Ctrl+Z> +CMGW: 15 OK	Text mode (+CMGF=1)
	AT+CMGW=091137880 ERROR	A pair of quotation marks ("") is required for the number in text mode.
	AT+CMGW=31<CR> > 0891683108705505F001000B813124248536F3000812004 00026002A535A53D153A653C1532052C7<Ctrl+Z> +CMGW: 1 OK	PDU mode (+CMGF=0)
Remarks	If PDU messages is sent through a UART commissioning tool, press the Enter button or enter <CR> in hexadecimal format.	

2.10 Sending Messages from Storage: +CMSS

Description	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	AT+CMSS=<index>[,<da>[,<toda>]]<CR>	
Parameter	<index>: Message location <da>: the destination number of the SMS messages <toda>: type of address	
Return Value	<ul style="list-style-type: none"> if text mode (+CMGF=1) and sending successful: <CR><LF>+CMSS: <mr>[,<scts>] <CR><LF>OK<CR><LF> if PDU mode (+CMGF=0) and sending successful: <CR><LF>+CMSS: <mr>[,<ackpdu>] <CR><LF>OK<CR><LF> <mr>: message reference number <scts>: service center time stamp <ackpdu>: 3GPP 23.040 RP-User-Data element of RP-ACK PDU	
Example	AT+CMSS=2 +CMSS: <mr> OK	Send the SMS messages stored in memory 2.
	AT+CMSS=2 ERROR	No SMS message is stored in memory 2 or the SMS message number in memory 2 is incorrect.
Remarks	N/A	

2.11 Deleting SMS Messages: +CMGD

Description	To delete SMS messages from the current memory.	
Format	<ul style="list-style-type: none"> AT+CMGD=<index>[,<delflag>]<CR> AT+CMGD=?<CR> 	
Parameter	<index>: The recording number of the stored SMS messages <delflag>: Integer 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.	
Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>+CMGD: (list of supported <index>s, list of supported <delflag>s)	

	<CR><LF>OK<CR><LF>	
Example	AT+CMGD=0,3 OK	Delete all read, sent, and unsent SMS messages. Delete successfully
	AT+CMGD=? +CMGD: (0-50),(0-4) OK	Query the value ranges of parameters.
	AT+CMGD=5 ERROR	The 5 th message does not exist.
Remarks	If we set <delflag>, ignore the parameter <index>.	

2.12 Setting the SMS Center Number: +CSCA

Description	To set the SMS center number	
Format	<ul style="list-style-type: none"> AT+CSCA=<sca>[,<tosca>]<CR> AT+CSCA?<CR> 	
Parameter	<sca>: SMS center number <tosca>: The format of the SMS center number. 129 indicates national number; 145 indicates international number.	
Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>+CSCA: <sca>, <tosca> <CR><LF>OK<CR><LF>	
Example	AT+CSCA="+8613800755500",145 OK	Set an international SMSC number.
	AT+CSCA=8613800755500,145 OK	A pair of quotation marks ("") are not mandatory for SMSC number.
	AT+CSCA? +CSCA: "+8613800755500",145 OK	Query the SMSC number.
Remarks	This command is not supported on a CDMA network.	

2.13 Setting the Parameters of the Text Mode: +CSMP

Description	To select required values for the additional parameters in the 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	
Format	<ul style="list-style-type: none"> AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]<CR> AT+CSMP?<CR> 	
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>: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Value</th> <th>Validity Period</th> </tr> </thead> <tbody> <tr> <td>0-143</td> <td>(vp+1)*5mins, 12 hours at most</td> </tr> <tr> <td>144-167</td> <td>12hours +((vp-143)*30mins), 24 hours at most</td> </tr> <tr> <td>168-196</td> <td>(vp-166)*1day</td> </tr> <tr> <td>197-255</td> <td>(vp-192)*1week</td> </tr> </tbody> </table> <pid>: Integer-type TP-protocol-ID (default value: 0) <dcs>: Encoding plan for integer-type cell broadcast data (default value: 0)		Value	Validity Period	0-143	(vp+1)*5mins, 12 hours at most	144-167	12hours +((vp-143)*30mins), 24 hours at most	168-196	(vp-166)*1day	197-255	(vp-192)*1week
Value	Validity Period											
0-143	(vp+1)*5mins, 12 hours at most											
144-167	12hours +((vp-143)*30mins), 24 hours at most											
168-196	(vp-166)*1day											
197-255	(vp-192)*1week											
Return Value	<CR><LF>OK<CR><LF> <CR><LF>+CSMP: <fo>,<vp>,<pid>,<dcs> <CR><LF>OK<CR><LF>											
Example	AT+CSMP=17,167,0,0 OK	Text mode parameters: No status report; the validity period of the information is 24 hours; Only messages in text format can be sent.										
	AT+CSMP? +CSMP: 17,167,0,0 OK	Query the current settings of the text mode.										
Remarks	The default setting is,,0,0.											

2.14 Displaying the Parameters of the Text Mode: +CSDH

Description	To set whether the detailed header information is displayed in the result code in text mode	
Format	<ul style="list-style-type: none"> AT+CSDH=[<show>]<CR> AT+CSDH?<CR> AT+CSDH=?<CR> 	
Parameter	<show>: 0: not display (default value) 1: display	
Return Value	See the Example.	
Example	AT+CSDH=0 OK AT+CMGR=0 +CMGR: READ,"13510895077",,"15/07/23,20:58:28+32" abc OK	"REC Set the header information to not display Read the 0 th message.

	<pre>AT+CSDH=1 OK AT+CMGR=0 +CMGR:"REC READ","13510895077",,"15/07/23,20:58:28+32",161,36, 0,0,"+8613010888500",145,3 abc OK</pre>	<p>Set the detailed header information to display.</p> <p>Read the 0th message.</p>
	<pre>AT+CSDH? +CSDH: 0 OK</pre>	Query the current parameter setting of the command.
	<pre>AT+CSDH=? +CSDH: (0-1) OK</pre>	Query the value range of current parameter in the command.
Remarks	This command is valid in text mode, which can be set by AT+CMGF=1 .	

2.15 Save Settings: +CSAS

Description	To save current settings	
Format	<ul style="list-style-type: none"> AT+CSAS[=<profile>]<CR> AT+CSAS=?<CR> 	
Parameter	<profile>: 0: Save settings (or omit the parameter)	
Return Value	See the Example.	
Example	<pre>AT+CSAS OK</pre>	Save settings
	<pre>AT+CSAS=0 OK</pre>	Save settings
	<pre>AT+CSAS=1 ERROR</pre>	
	<pre>AT+CSAS=? +CSDH: 0 OK</pre>	Query the valid parameter values for the command.
Remarks	Only the parameter settings of AT+CSCA , AT+CSMP , and AT+CSCB can be saved by executing this command.	

3 TCP/UDP Client Commands

3.1 Setting Network APN: +NETAPN

Description	To set the network APN	
Format	<ul style="list-style-type: none"> AT+NETAPN="APN","USERNAME","PASSWORD"<CR> AT+NETAPN?<CR> 	
Parameter	APN: GPRS network access point USERNAME: GPRS user name PASSWORD: GPRS password	
Return Value	OK	
Example	AT+NETAPN="CMNET","","" OK	Set GPRS APN to CMNET and leave user account and password blank.
	AT+NETAPN=CMNET,, ERROR	ERROR is returned because the parameter format is incorrect. A pair of quotation marks is required for each parameter.
	AT+NETAPN? +NETAPN:"","","" OK	Query the current settings of APN parameter.
Remarks	N/A	

3.2 Setting Up a PPP Link: +XIIC

Description	To set up a PPP link	
Format	<ul style="list-style-type: none"> AT+XIIC=<n><CR> AT+XIIC?<CR> 	
Parameter	n: 0: Deactivate the PPP link 1: Activate the PPP link.	
Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>+XIIC: 1, <ip> <CR><LF>OK<CR><LF> <ip>: IP address	
Example	AT+XIIC=1 OK	The module is required to set up a PPP link.

	AT+XIIC? +XIIC: 1, 10.107.216.162 OK	The PPP link is set up successfully and the IP address is 10.107.216.162. There are four spaces before 1.
	AT+XIIC? +XIIC: 0, 0.0.0.0 OK	The PPP link is not set up successfully. There are four spaces before 0.
Remarks	<ul style="list-style-type: none"> Use AT+CGDCONT to set APN before setting up a PPP link Ensure that the module registers the network before using the AT+XIIC=1 command to set up PPP link. 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 did not register to the network. 	

3.3 Setting Up TCP Link: +TCPSETUP

Description	To set up a TCP link	
Format	AT+TCPSETUP=<n>,<ip>,<port><CR>	
Parameter	<n>: Socket number, ranging from 0 to 5 <ip>: Destination IP address, in xx.xx.xx.xx or domain name format <port>: Destination port ID in decimal ASCII code	
Return Value	See the Example.	
Example	AT+TCPSETUP=0,220.199.66.56,6800 OK +TCPSETUP: 0,OK	The link to 220.199.66.56,6800 is successfully set up on socket 0.
	AT+TCPSETUP=0,neowayjsr.oicp.net,60010 OK +TCPSETUP: 0,OK	The connection to neowayjsr.oicp.net, 60010 is set up on socket 0 successfully.
	+TCPCLOSE: 0,Link Closed	The link is closed.
	AT+TCPSETUP=1,192.168.20.6,7000 OK +TCPSETUP: 1,FAIL	Fails to set up the 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.
	AT+TCPSETUP=0,neowayjsr.oicp.net,60010 +TCPSETUP: 0, ERROR1	A TCP/UDP link has been set up on socket 0.
	AT+TCPSETUP=5,192.168.20.6,7000 +TCPSETUP: ERROR	Parameters are set incorrectly.
	AT+TCPSETUP=0.58.60.184.213.10012 +TCPSETUP: ERROR	Parameters are set incorrectly.

	AT+TCPSET=0,58.60.184.213,10012 ERROR	The AT command is not complete.
Remarks	Use the AT+XIIC=1 command to set up a PPP link before running this command.	

3.4 Sending TCP Data: +TCPSEND

Description	To send TCP data The module will return > after this command is sent. Send TCP data 50 ms to 100 ms later.	
Format	AT+TCPSEND=<n>,<length><CR>	
Parameter	<n>: Socket number, ranging from 0 to 5. A TCP link is established on the socket. <length>: The length of the data to be sent, ranging from 1 to 4096, unit: byte.	
Return Value	See the Example.	
Example	AT+TCPSEND=0,1 > OK +TCPSEND:0,1	1-byte data is successfully sent through socket 0.
	AT+TCPSEND=0,1024 > +TCPSEND:ERROR	Network congestion occurs when 1024-byte data is sent. Only some data is sent successfully.
	AT+TCPSEND=0,10 > +TCPSEND: 0,OPERATION EXPIRED	After the data sending command is input and > is returned, no more data is entered in 30 seconds. Then the expiration information is displayed.
	AT+TCPSEND=0,1 +TCPSEND:SOCKET ID OPEN FAILED	One-byte data fails to be sent on socket 0 because the link is not established.
	AT+TCPSEND=0,4097 +TCPSEND:DATA LENGTH ERROR	4097-byte data fails to be sent on socket 0 because data length exceeds the limit.
Remarks	<ul style="list-style-type: none"> Ensure that the TCP link is set up before sending TCP data. The AT+IPSTATUS command is recommended to check the buffer size before sending data. 	

3.5 Receiving TCP Data: +TCPRECV

Description	To receive TCP data
Format	+TCPRECV: <n>,<length>,<data><CR>
Parameter	<n>:Socket number, ranging from 0 to 5 <length>: The length of the data received

	<data>: The data received Add 0x0d 0x0a to the end of the data. Identify the end based on <length>.	
Return Value	See the Example.	
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.
Remarks	N/A	

3.6 Closing TCP Link: +TCPCLOSE

Description	To close a TCP link	
Format	AT+TCPCLOSE=<n><CR>	
Parameter	<n>: Socket ID, ranging from 0 to 5	
Return Value	See the Example.	
Example	AT+TCPCLOSE=1 +TCPCLOSE: 1,OK	Close the TCP link. The TCP link on socket 1 is closed successfully.
	AT+TCPCLOSE=2 +TCPCLOSE: ERROR	Socket number error
	+TCPCLOSE: 0,Link Closed	The TCP link is closed. The server sends TCP link closing command or the network encounters abnormality or weak signals.
Remarks	N/A	

3.7 Setting Up UDP Link: +UDPSETUP

Description	To set up a UDP link	
Format	AT+UDPSETUP=<n>,<ip>,<port><CR>	
Parameter	<n>: Socket ID, ranging from 0 to 5	
	<ip>: Destination IP address, in xx.xx.xx.xx format or domain name format (www.XXXX.com)	
	<port>: Destination port ID in decimal ASCII code	
Return Value	See the Example.	
Example	AT+UDPSETUP=1,220.199.66.56,7000 OK	The link to 220.199.66.56.7000 is successfully set up on socket 1.
	+UDPSETUP: 1,OK	

	AT+UDPSETUP=0,neowayjsr.oicp.net,60010 OK +UDPSETUP: 0,OK	The connection to neowayjsr.oicp.net,60010 is set up on socket 0 successfully.
	AT+UDPSETUP=0,58.60.184.213,11008 +UDPSETUP: 0,ERROR1	A TCP/UDP link has been set up on socket 0.
	AT+UDPSETUP=1,192.168.20.6,7000 OK +UDPSETUP: 0,FAIL	Fails to set up the connection to 192.168.20.6,7000 on socket 1 because socket 0 is unavailable.
	AT+UDPSETUP=6,192.168.20.6,6800 +UDPSETUP:ERROR	Parameters are set incorrectly.
	AT+UDPSETUP=0.58.60.184.213.10012 +UDPSETUP: ERROR	Parameters are set incorrectly.
	AT+UDPSET=0,58.60.184.213,10012 ERROR	The AT command is not complete.
Remarks	Use the AT+XIIC=1 command to set up a PPP link before running this command.	

3.8 Sending UDP Data: +UDPSSEND

Description	To send UDP data The module will return > after this command is sent. Send UDP data 50 ms to 100 ms later.	
Format	AT+UDPSSEND=<n>,<length><CR>	
Parameter	<n>: Socket number, ranging from 0 to 5. A UDP link is established on the socket. <length>: The length of the data to be sent, ranging from 1 to 4096, unit: byte.	
Return Value	<ul style="list-style-type: none"> If the AT command is input in correct format, the module returns >. If the command is input in incorrect format, the module returns ERROR. If the link has not been set up, the module returns +UDPSSEND: RROR. After entering the command, input the data to be sent until the module returns >. If the UDP data is sent successfully, the module returns +UDPSSEND: <n>,<length>. <length> indicates the length of data already sent. 	
Example	AT+UDPSSEND=0,2 > OK +UDPSSEND: 0,2	Send 2-byte data on socket 0. Then send the characters to be sent 50 ms to 100 ms after the module returns >. The data is sent successfully.
	AT+UDPSSEND=0,4097 +UDPSSEND: DATA LENGTH ERROR	4097-byte data fails to be sent on socket 0 because data length exceeds the limit.

	AT+UDPSEND=0,10 > +UDPSEND: 0,OPERATION EXPIRED	After the data sending command is input and > is returned, no more data is entered in 30 seconds. Then the expiration information is displayed.
Remarks	<ul style="list-style-type: none"> Ensure that the UDP link is set up before sending UDP data. The AT+IPSTATUS command is recommended to check the buffer size before sending data. To decrease the packet loss rate, do not send more than 1472 each time. 	

3.9 Receiving UDP Data: +UDPRECV

Description	To receive UDP data	
Format	+UDPRECV: <n>,<length>,<data><CR>	
Parameter	<n>: Socket ID, ranging from 0 to 5 <length>: The length of the data received <data>: The data received Add 0x0d 0x0a to the end of the data. Identify the end based on <length>.	
Return Value	See the Example.	
Example	+UDPRECV: 0,10,1234567890	10-byte data is successfully received on socket 0. The data is 1234567890.
Remarks	N/A	

3.10 Closing UDP Link: +UDPCLOSE

Description	To close the UDP link	
Format	AT+UDPCLOSE=<n><CR>	
Parameter	<n>: Socket ID, ranging from 0 to 5	
Return Value	If the value of <n> is illegal, the module returns: +UDPCLOSE: ERROR. Otherwise, the module returns +UDPCLOSE: <n>,OK.	
Example	AT+UDPCLOSE=1 +UDPCLOSE: 1,OK	The TCP link on socket 1 is closed successfully.
	AT+UDPCLOSE=6 +UDPCLOSE: ERROR	Socket number error
Remarks	N/A	

3.11 Querying TCP/UDP Link Status: +IPSTATUS

Description	To query the TCP/UDP link status	
Format	AT+IPSTATUS=<n><CR>	
Parameter	<n>: Socket ID, ranging from 0 to 5	
Return Value	<p>+IPSTATUS: <n>,<CONNECT or DISCONNECT>[,<TCP or UDP>,<send-buffer-size>]</p> <p><CONNECT or DISCONNECT>: Socket status, value: CONNECT or DISCONNECT</p> <p><TCP or UDP>: Link type, value: TCP or UDP</p> <p><send-buffer-size>: The size of the available send buffer on the module, in decimal ASCII mode, unit: byte</p>	
Example	AT+IPSTATUS=0 +IPSTATUS: 0,CONNECT,TCP,4096	A TCP link has been set up on socket 0 and the buffer size is 4096 bytes.
	AT+IPSTATUS=0 +IPSTATUS: 0,CONNECT,UDP,0	A UDP link has been set up on socket 0.
	AT+IPSTATUS=1 +IPSTATUS: 1,DISCONNECT	No TCP or UDP link is set up on socket 1.
	AT+IPSTATU ERROR	The AT command is not complete.
	AT+IPSTATUS=6 ERROR	The socket number in the command is incorrect.
Remarks	N/A	

3.12 Querying the Status of Data Sent by the TCP Link: +TCPACK

Description	To query the size of data successfully sent by the TCP server and the size of the data successfully received	
Format	AT+TCPACK=<n><CR>	
Parameter	<n>: Socket ID, ranging from 0 to 5	
Return Value	<p>AT+TCPACK=<n><CR> (Non-transparent)</p> <p>+TCPACK: <n>,<data_sent>,<acked_recv></p> <p><data_sent>: Data successfully sent through this socket</p> <p><acked_recv>: Data acknowledged by the receiver</p> <p>+TCPACK:<n>,< DISCONNECT ></p> <p>No connection is set up on this socket.</p> <p>+TCPACK:NO TCP LINK</p> <p>A UDP link has been set up on this socket.</p>	
Example	AT+TCPACK=0	20-byte data has been transmitted from socket 0

	+ TCPACK: 0,20,20	and the receiver acknowledged 20-byte data.
	AT+TCPACK=0 + TCPACK: 0,128,120	128-byte data has been transmitted from socket 0 and the receiver acknowledged 120-byte data.
	AT+TCPACK=1 + TCPACK: 1,DISCONNECT	No connection is set up on socket 1.
	AT+TCPACK=2 +TCPACK: NO TCP LINK	A UDP link is set up on link 2.
	AT+TCPACK=6 ERROR	The socket number in the command is incorrect.
Remarks	The values of <data_sent> and <acked_rcv> are unsigned 64-bit integers in decimal ASCII. The unit is byte.	

4 TCP Server AT Commands

4.1 Setting TCP Listening for the Server: +TCPLISTEN

Description	To set the TCP listening function of the server	
Format	<ul style="list-style-type: none"> AT+TCPLISTEN=<port><CR> AT+TCPLISTEN?<CR> 	
Parameter	<Port>: Port ID <Socket>: Socket ID	
Return Value	See the Example.	
Example	AT+TCPLISTEN=6800 +TCPLISTEN: 0,OK	Listening port ID: 6800 The listening function of the server is started.
	AT+TCPLISTEN=6800 +TCPLISTEN: bind error	Fails to bind
	AT+TCPLISTEN=6800 Listening...	Transparent listening has been set.
	AT+TCPLISTEN? +TCPLISTEN: listening status	Query the listening status. Here the server is in the listening status.
	AT+TCPLISTEN? +TCPLISTEN: not listening	Query the listening status. Here the server is not in the listening status.
	Connect AcceptSocket=1,ClientAddr=119.123.77.133,ClientPort=8000	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.
Remarks	<ul style="list-style-type: none"> Activate the PPP before using this command. Only the SIM cards with fixed IP addresses can be used as servers. This function might not work because carriers' networks do not support. 	

4.2 Closing the Listening Connection: +CLOSELISTEN

Description	To close the listening connection and close all connections	
Format	AT+CLOSELISTEN<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	+CLOSELISTEN: 0,local link closed	The host closes the connection or network abnormalities occur.
	AT+CLOSELISTEN +CLOSELISTEN: 0,local link closed	The local link will be closed if there is any connection to the client.

	AT+CLOSELISTEN +CLOSELISTEN: Transparent local link closed	Transparent mode
Remarks	This function might not work because carriers' networks do not support.	

4.3 Closing Connections with the Client: +CLOSECLIENT

Description	To close all connections with the client	
Format	AT+CLOSECLIENT[=<socket>]<CR>	
Parameter	<Socket>: Socket ID	
Return Value	<CR><LF>+CLOSECLIENT: <socket>,remote link closed<CR><LF>	
Example	AT+CLOSECLIENT +CLOSECLIENT: 1,remote link closed +CLOSECLIENT: 2,remote link closed	There is no parameter in this command. All connections with the client are closed successfully.
	AT+CLOSECLIENT=1 +CLOSECLIENT: 1,remote link closed	There is a parameter in this command. Close the connection on socket 1 with the client.
	AT+CLOSECLIENT=1 ERROR	No client on socket 1.
	AT+CLOSECLIENT +CLOSECLIENT: All remote link closed	All clients are closed.
Remarks	This function might not work because carriers' networks do not support.	

4.4 Receiving Data from the Client: +TCPRECV(S)

Description	To receive data from the client	
Format	+TCPRECV(S): <n>,<length>,<data><CR>	
Parameter	<n>: Socket ID, ranging from 0 to 5 <length>: The length of the data received <data>: The data received Add 0x0d 0x0a to the end of the data. We can identify the end based on <length> .	
Return Value	See the Example.	
Example	+TCPRECV(S): 1,10,1234567899	Socket 1 receives 10-byte data in char format from the client.
Remarks	<ul style="list-style-type: none"> Additional (s) makes this command different from the receive mode of the client mode in format. 	

- This function might not work because carriers' networks do not support.

4.5 Sending Data to the Client: +TCPSENDS

Description	To send data to the client	
Format	AT+TCPSENDS=<socket>[,<length>]<CR>	
Parameter	<socket>: The value of AcceptSocket , that is, the socket of the module. See the description of the AT+TCPLISTEN command. <length>: The length of the data to be sent, value ranges from 1 to 4096 , unit: byte.	
Return Value	See the Example.	
Example	AT+TCPSENDS=0,10 > OK +TCPSENDS: 0,10	10-byte data is successfully sent through socket 0.
	AT+TCPSENDS=0,536 > +TCPSENDS: Buffer not enough,439	536-byte data is sent on socket 0. Fails to transmit the data because internal buffer is insufficient.
	AT+TCPSENDS=0 > OK +TCPSENDS: 0,21	Send 21-byte data on socket 0. (e.g.: 012345678901234567890).
	AT+TCPSENDS=0,10 +TCPSENDS: 0 is not link	No connection is set up on socket 0.
	AT+TCPSENDS=0,5 > +TCPSENDS: 0,OPERATION EXPIRED	No data is input within 30 seconds after > is displayed
	Remarks	<ul style="list-style-type: none"> • Ensure that the TCP connection has been set up before sending TCP data. • This function might not work because carriers' networks do not support.

4.6 Querying the Connection Status on the Client: +CLIENTSTATUS

Description	To query the status of the connection with the client
Format	AT+CLIENTSTATUS=<socket><CR>
Parameter	<socket>: The value of AcceptSocket , that is, the socket of the module. See the description of the AT+TCPLISTEN command.

Return Value	<p>+CLIENTSTATUS: <socket>,<CONNECT or DISCONNECT>,<TCP or INVALID>,<send-buffer-size></p> <p><CONNECT or DISCONNECT>: Socket status, value: CONNECT or DISCONNECT</p> <p><TCP or INVALID >: Link type, value: TCP or INVALID</p> <p><send-buffer-size>: The size of the available send buffer on the module, in decimal ASCII mode, unit: byte</p>	
Example	<p>AT+CLIENTSTATUS=0</p> <p>+CLIENTSTATUS: 0,CONNECT,TCP,61440</p>	<p>A TCP connection has been set up to the socket 0 client and the buffer size is 61440 bytes.</p>
	<p>AT+CLIENTSTATUS=4</p> <p>+CLIENTSTATUS: 4,DISCONNECT</p>	<p>No connection is set up on Socket 4.</p>
	<p>AT+CLIENTSTATUS=1</p> <p>+CLIENTSTATUS: 1,CONNECT,INVALID</p>	<p>The connection does not exist.</p>
Remarks	<ul style="list-style-type: none"> If the socket is invalid, it may be listened by TCP/UDP client or server instead of the TCP connection listened. This function might not work because carriers' networks do not support. 	

4.7 Querying the Status of Data Sent by the TCP Link: +TCPACK

Description	<p>To query the size of data successfully sent by the TCP server and the size of the data successfully received</p>	
Format	<p>AT+TCPACKS=<socket><CR></p>	
Parameter	<p><socket>:Socket ID, ranging from 0 to 5</p>	
Return Value	<p>+TCPACKS: <socket>,<data_sent>,<acked_rcv></p> <p>< data_sent >: Data successfully sent through this socket</p> <p><acked_rcv>: Data acknowledged by the receiver</p> <p>+TCPACK: <socket>,<DISCONNECT></p> <p>No connection is set up on this socket.</p>	
Example	<p>AT+TCPACK=0</p> <p>+ TCPACK: 0,20,20</p>	<p>20-byte data has been transmitted from socket 0 and the receiver acknowledged 20-byte data.</p>
	<p>AT+TCPACK=0</p> <p>+ TCPACK: 0,128,120</p>	<p>128-byte data has been transmitted from socket 0 and the receiver acknowledged 120-byte data.</p>
	<p>AT+TCPACK=1</p> <p>+ TCPACK: 1,DISCONNECT</p>	<p>No connection is set up on socket 1.</p>
Remarks	<ul style="list-style-type: none"> The values of <data_sent> and <acked_rcv> are unsigned 64-bit integers in decimal ASCII. The unit is byte. This function might not work because carriers' networks do not support. 	

5 Transparent TCP/UDP Commands

5.1 Setting Up Transparent TCP Link: +TCPTRANS

Description	To set up transparent TCP link	
Format	AT+TCPTRANS=<ip>,<port><CR>	
Parameter	<ip>: Destination IP address, in xx.xx.xx.xx format or domain name format (www.XXXXXX.com) <port>: Destination port ID in decimal ASCII code	
Return Value	See the Example.	
Example	AT+TCPTRANS=220.199.66.56,6800 OK +TCPTRANS:OK	A transparent TCP link is set up successfully.
	AT+TCPTRANS=neowayjsr.oicp.net,60010 OK +TCPTRANS:OK	A transparent TCP link is set up by using domain name 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	Failed to set up a transparent TCP link.
	AT+TCPTRANS=220.199.66.56,6800 ERROR	ERROR is returned after the command is executed because a transparent (TCP, UDP, TCP server) link has been set up.
Remarks	<ul style="list-style-type: none"> The UART does not display the data transmitted to the server after the transparent TCP link is set up successfully. Use +++ to switch the server to the command mode and ATO to switch it to the data mode. The module will disconnect the transparent link if a call or message is incoming. At most 4096-byte data can be sent or received in transparent mode. TCP data can be transparently transmitted after the transparent TCP link is set up successfully and +TCPTRANS:OK is returned. 	

5.2 Setting Up Transparent UDP Link: +UDPTRANS

Description	To set up a transparent UDP link	
Format	AT+UDPTRANS=<ip>,<port><CR>	
Parameter	<ip>: Destination IP address, in xx.xx.xx.xx format or in domain name format (www.XXXXX.com). <port>: Destination port ID in decimal ASCII code	
Return Value	See the Example.	
Example	AT+UDPTRANS =220.199.66.56,6800 OK +UDPTRANS:OK	A transparent UDP link is set up successfully.
	AT+UDPTRANS=neowayjsr.oicp.net,60010 OK +UDPTRANS:OK	A transparent UDP link is set up by using domain name successfully.
	AT+UDPTRANS=220.199.66.56, +UDPTRANS:ERROR	The command format is incorrect.
	AT+UDPTRANS=220.199.66.56,6800 OK +UDPTRANS:FAIL	Failed to set up a transparent UDP link.
	AT+UDPTRANS=220.199.66.56,6800 ERROR	ERROR is returned after the command is executed because a transparent (TCP, UDP, TCP server) link has been set up.
Remarks	<ul style="list-style-type: none"> The UART does not display the data transmitted to the server after the transparent UDP link is set up successfully. Use +++ to switch the server to the command mode and ATO to switch it to the data mode. The module will disconnect the transparent link if a call or message is incoming. At most 4096-byte data can be sent or received in transparent mode. UDP data can be transparently transmitted after the transparent UDP link is set up successfully and +UDPTRANS:OK is returned. 	

5.3 Querying the Status of Data Sent by the TCP Link: +TCPACK

Description	To query the size of data successfully sent by the transparent TCP link and the size of the data successfully received
Format	AT+TCPACK<CR>

Parameter	N/A	
Return Value	+TCPACK:<data_sent>,<acked_recv> <data_sent>:Data transparently transmitted through this socket successfully <acked_recv>:Transparently transmitted data acknowledged by the receiver +TCPACK:<DISCONNECT> No transparent link in mode has been set up. +TCPACK:NO TCP LINK A transparent UDP link has been set up.	
Example	AT+TCPACK +TCPACK:1024,1024	1024-byte data is successfully sent and received in transparent TCP mode.
	AT+TCPACK +TCPACK:DISCONNECT	No transparent link has been set up.
	AT+TCPACK +TCPACK:NO TCP LINK	A transparent UDP link has been set up.
Remarks	The values of <data_sent> and <acked_recv>are unsigned 64-bit integers in decimal ASCII. The unit is byte.	

5.4 Querying TCP/UDP Link Status: +IPSTATUS

Description	To query the TCP/UDP link status	
Format	AT+IPSTATUS<CR>	
Parameter	N/A	
Return Value	+IPSTATUS:<CONNECT or DISCONNECT>[,<TCP or UDP>, <send-buffer-size> <TRANSPARENT>] <CONNECT or DISCONNECT>: Socket status, value: CONNECT or DISCONNECT <TCP or UDP>: Link 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+IPSTATU ERROR	The AT command is not complete.
	AT+IPSTATUS +IPSTATUS:CONNECT,TCP, 61440	A transparent TCP link has been set up. The available buffer is 61440 bytes.
	AT+IPSTATUS +IPSTATUS:CONNECT,UDP, 61440	A transparent UDP link has been set up. The available buffer is 61440 bytes.
	AT+IPSTATUS +IPSTATUS:DISCONNECT	No transparent link has been set up.
Remarks	This command can be used to query the status of the transparent link.	

5.5 Closing Transparent Link: +TRANSCLOSE

Description	To close the transparent link	
Format	AT+TRANSCLOSE<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+TRANSCLOSE +TRANSCLOSE:0,OK	A transparent TCP link is closed successfully.
	AT+TRANSCLOSE ERROR	No transparent TCP/UDP link is set up.
	AT+TRANSCLOSE +TRANSCLOSE:1,OK	A transparent UDP link is closed successfully.
	+TCPTRANS:Link Closed	The transparent TCP link is closed by the server or because of network abnormality.
	+UDPTRANS:Link Closed	The transparent UDP link is closed by the server or because of network abnormality.
Remarks	N/A	

6 TCP Transparent Server Commands

6.1 Setting Transparent Listening for the TCP: +TCPSRVTRANS

Description	To set transparent listening for the TCP server	
Format	<ul style="list-style-type: none"> AT+TCPSRVTRANS=<port><CR> AT+TCPSRVTRANS?<CR> 	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+TCPSRVTRANS=6800 +TCPSRVTRANS:OK	Listening port ID: 6800 The transparent listening of the TCP server is started.
	AT+TCPSRVTRANS=6800 +TCPSRVTRANS:bind error	Failed to bind
	AT+TCPSRVTRANS=6800 Transparent Listening...	Transparent listening has been set.
	AT+TCPSRVTRANS? + TCPSRVTRANS:listening status	Query the listening status. The server is listened.
	AT+TCPSRVTRANS? +TCPSRVTRANS:not listening	Query the listening status. The server is not listened.
	AT+TCPSRVTRANS=5000 PLEASE BUILD PPP LINK FIRST!	PDP is not inactivated.
	Connect AcceptSocket=0,ClientAddr=119.123.77.133,ClientPort=8000 Receive the connection request from the client. The client has set up link 1 with the module and 119.123.77.133 is the IP address of the client, 8000 is the port ID of the client.	
Remarks	<ul style="list-style-type: none"> A link must be set up between the server and the client through a socket before the server transparently transmits TCP data. Use +++ to switch the server to the command mode and ATO to switch it to the data mode. Only the SIM cards with fixed IP addresses can be used as servers. The server set up in transparent mode can be connected to only one TCP client (transparent mode or non-transparent mode). The server will automatically disconnect from the client if a call or message is incoming. This function might not work because carriers' networks do not support. 	

6.2 Querying the Link Status on the Client: +CLIENTSTATUS

Description	To query the status of the link with the client	
Format	AT+CLIENTSTATUS<CR>	
Parameter	N/A	
Return Value	+CLIENTSTATUS:<CONNECT or DISCONNECT>,<TCP>, <send-buffer-size> <CONNECT or DISCONNECT>: Link status, value: CONNECT or DISCONNECT <TCP>: Link type, value: TCP <send-buffer-size>: The size of the available send buffer on the module, in decimal ASCII mode, unit: byte	
Example	AT+CLIENTSTATUS +CLIENTSTATUS:CONNECT,TCP,61440	A TCP link has been set up with the non-transparent client and the buffer size is 61440 bytes.
	AT+CLIENTSTATUS +CLIENTSTATUS:DISCONNECT,TCP,61440	No transparent TCP link is set up. The available buffer is 61440.
Remarks	This function might not work because carriers' networks do not support.	

7 FTP AT Commands

7.1 Logging in to the FTP Server: +FTPLOGIN

Description	To log in to the FTP server	
Format	AT+FTPLOGIN=<ip>,<port>,<user>,<pwd><CR>	
Parameter	<p><ip>: FTP server address</p> <p><port>: Port ID of the FTP server, 21</p> <p><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 (,).</p> <p><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 (,).</p>	
Return Value	<ul style="list-style-type: none"> • +FTPLOGIN: Error: The format of the AT command is incorrect • +FTPLOGIN: Have Logged In: The user has logged in to the FTP server. • +FTPLOGIN: AT Busy: Last FTP AT command has not been executed completely. • +FTPLOGIN: User logged in: The user logged in to the FTP server successfully. • +FTPLOGIN: 530 Not logged in: The user failed to log in to the FTP server because the user account or password is incorrect. • +FTPLOGIN: GPRS DISCONNECTION: The user logged in to the FTP server before a PPP link is set up. 	
Example	AT+FTPLOGIN=219.134.179.52,21,user1,pwd2009 OK +FTPLOGIN: User logged in	user1 logs in to the server 219.134.179.52 through port 21 successfully. And the password for user1 is pwd2009.
	AT+FTPLOGIN=58.60.184.213,21,neoway,neoway OK +FTPLOGIN: Error Connect Server Fail	Fails to log in to the FTP server using neoway because the connection times out.
	AT+FTPLOGIN=58.60.184.213,21,neowayftp,neowayftp OK +FTP:Server Control Link Disconnect	Fail to log in to the FTP server.
Remarks	<ul style="list-style-type: none"> • The FTP functions cannot be used together with the internal protocol stack TCP/UDP function. • Data can be read or written on the FTP server only after login. 	

7.2 Logging Out from the FTP Server: +FTPLOGOUT

Description	To log out from the FTP server	
Format	AT+FTPLOGOUT<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+FTPLOGOUT +FTPLOGOUT: User logged out OK	Log out from the FTP server
	AT+FTPLOGOUT +CME ERROR: INVALID SOCKET ID ERROR	Log out of the FTP server because the FTP server is offline.
Remarks	N/A	

7.3 Downloading Data from the FTP Server: +FTPGET

Description	To download data from the FTP server	
Format	AT+FTPGET=<dir&filename>,<type>,<Content or Info>[,offset[,length]] <CR>	
Parameter	<dir&filename>: Path and name of the file to be read (Note: The file directory under the FTP root directory) <type>: File transfer mode: 1: ASCII 2: Binary <content or info>: File content or file (or specified directory) information 1: Obtain the file content 2: Obtain the information of the file or the specified path <offset>: Specifies offset of file content. <length>: Length of file downloaded from the start point, ranging from 1 to 8192	
Return Value	<ul style="list-style-type: none"> ERROR: The format of the AT command is incorrect +FTPGET: Error Not Login: The user has not logged in to the FTP server. +FTPGET: Error!TimeOut: 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. +FTPGET: <length>,<data>: <length> indicates the data length; <data> indicates the data content. +FTPGET: OK.total length is <n>: The module reads data successfully and the data length is n. 	
Example	AT+FTPGET=,1,2 +FTPGET: 446,drw-rw-rw- 1 user group 0	Obtain information in the root directory.

	Apr 14 15:55 . 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 +FTPGET: OK.total length is 446 +FTP: Server Data Link Disconnect	
	AT+FTPGET=test.txt,1,2 +FTPGET: 65,-rw-rw-rw- 1 user group 10 Jan 15 15:01 test.txt +FTPGET: OK.total length is 65 +FTP: Server Data Link Disconnect	Obtain the information about test.txt.
	AT+FTPPUT=test.txt,1,2,10 > +FTPPUT: OK,10	Upload 10-byte data.
	AT+FTPGET=test.txt,1,1 +FTPGET: 10,0123456789 +FTPGET: OK.total length is 10 +FTP: Server Data Link Disconnect	Obtain the information in test.txt.
	AT+FTPGET=test.txt,1,1,2 +FTPGET: 8,23456789 +FTPGET: OK.total length is 8 +FTP: Server Data Link Disconnect	Read all data after the first byte.
	AT+FTPGET=test.txt,1,1,2,4 +FTPGET: 4,2345 +FTPGET: OK.total length is 4 +FTP: Server Data Link Disconnect	Read 4-byte data after the first byte.
	Remarks	N/A

7.4 Uploading Data to the FTP Server: +FTPPUT

Description	To upload data to the FTP server
Format	AT+FTPPUT=<filename>,<type>,<mode>,<size><CR>
Parameter	<filename>: The name of the file to be uploaded

	<p><type>: File transfer mode</p> <p>1: ASCII</p> <p>2: Binary</p> <p><mode>: Operation mode</p> <p>1: STOR mode. Create a file on the FTP server and write the data to the file. If the file exists, the original file will be overwritten.</p> <p>2: APPE mode. Create a file on the FTP server and write the data to the file. If the file exists, the data is attached to the end of the file.</p> <p>3: DELE mode. Delete a file.</p> <p><size>: Data length. The data length cannot exceed 8192.</p>	
Return Value	<ul style="list-style-type: none"> • ERROR: The format of the AT command is incorrect. • +FTPPUT: Error Not Login: The user has not logged in to the FTP server. • +FTPPUT: AT Busy: Last FTP AT command has not been executed completely. • +FTPPUT: SIZE Error: The value of <length> is greater than 8192. • +FTPPUT: OK,<n>: The file is sent successfully and the file length is n. • +FTPPUT: Delete File OK: The file is deleted successfully. • +FTPPUT: Error TimeOut: No data input for long time. 	
Example	AT+FTPPUT=test.txt,1,1,10 >1234567890 +FTPPUT: OK,10	Upload the text.txt file, which is 10 bytes. The file is transferred in ASCII and the operated in STORE.
	AT+FTPPUT=test.txt,1,2,10 >1234567890 +FTPPUT: OK,10	Upload the text.txt file, which is 10 bytes. The file is transferred in ASCII and the operated in APPE.
	AT+FTPPUT=test.txt,1,3,0 +FTPPUT: Delete File OK	Delete the test.txt file.
Remarks	N/A	

7.5 Querying FTP Link Status: +FTPSTATUS

Description	To query the FTP link status	
Format	AT+FTPSTATUS<CR>	
Parameter	N/A	
Return Value	+FTPSTATUS: <status>,<ip>, <port> <status>: 0: The FTP link has not been set up. 1: The FTP link has been set up. <ip>: The IP address of the FTP server <port>: The port of the FTP server	
Example	AT+FTPSTATUS +FTPSTATUS: 1,119.139.221.66,21	Query the FTP link status. The module is successfully connected to the

		FTP server. The IP address of the FTP server is 119.139.221.66 and the port is 21.
	AT+FTPSTATUS +FTPSTATUS: 0,0.0.0.0,21	Not logged in
Remarks	N/A	

Neoway
Confidential

8 GPS AT Commands

8.1 Switching GPS: \$MYGPSPWR

Description	To switch GPS	
Format	AT\$MYGPSPWR=<n><CR>	
Parameter	<n>: 0: disable GPS service 1: enable GPS service	
Return Value	<CR><LF>OK<CR><LF> <CR><LF>ERROR<CR><LF>	
Example	AT\$MYGPSPWR=1 OK	Enable GPS service
	AT\$MYGPSPWR=0 OK	Disable GPS service
Remarks	<ul style="list-style-type: none"> GPS service occupies a lot of resources. If not necessary, disable it. After the request is sent successfully, it will take the module some time to enable the GPS service and get GPS position. It depends on the circumstance. Ensure that a matched antenna is used. 	

8.2 Querying GPS Status: \$MYGPSSTATE

Description	To query GPS status	
Format	AT\$MYGPSSTATE<CR>	
Parameter	N/A	
Return Value	<CR><LF>\$MYGPSSTATE: gps closed<CR><LF> <CR><LF>\$MYGPSSTATE: gps opened<CR><LF>	
Example	AT\$MYGPSPWR=1 OK AT\$MYGPSSTATE \$MYGPSSTATE: gps opened	Enable GPS Query GPS status.
Remarks	N/A	

8.3 Obtaining NMEA Data: \$MYGPSPOS

Description	To obtain NMEA data
Format	AT\$MYGPSPOS=<TYPE>,<Mode><CR>

Parameter	<p><TYPE>: GPS data type, integer</p> <p>0: NMEA\$GPGGA 1: NMEA\$GPGSA 2: NMEA\$GPGSV 3: NMEA\$GPRMC 4: NMEA\$GPVTG 5: NMEA\$GPGLL 6: Output all GPS sentences</p> <p><Mode>: Output mode</p> <p>0: output only once (default) 1: circulating output of fix information 2: disable circulating output of fix information</p>
Return Value	<p>0: NMEA\$GPGGA <CR><LF>\$MYGPSPOS: \$GPGGA,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,<10>,<11>,<12>,<13>,<14>*<hh><CR><LF>OK<CR><LF></p> <p><1>: UTC time of position fix, hh mm ss <2>: latitude of position, dd mm mmmm <3>: North & South Hemispheres N: north S: south <4>: longitude of position, ddd mm mmmm <5>: Western & Eastern Hemispheres E: east W: west <6>: Fix quality indicator 0: no fix 1: GPS fix 2: differential GPS fix 3: not valid 6: estimated <7>: Number of satellites in use <8>: Horizontal Dilution of Precision (HDOP) <9>: altitude above mean sea level (geoid) <10>: units of altitude M: Meter <11>: geoidal height <12>: unit of geoidal height <13>: time since last DGPS update <14>: DGPS reference station ID <hh>: checksum</p>

1: NMEA\$GPGSA format

```
<CR><LF>$MYGPSPOS:
```

```
$GPGSA,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,<10>,<11>,<12>,<13>,<14>,<15>,<16>,<17>,*<hh><CR><LF>OK<CR><LF>
```

<1>: Mode

A: Automatic

M: Manual

<2>: fix mode

1: invalid fix

2: 2D fix

3: 3D fix

<3>: PRN number of satellite used for fix

<4>: PRN number in second channel

<5>: PRN number in third channel

<6>: PRN number in fourth channel

<7>: PRN number in fifth channel

<8>: PRN number in sixth channel

<9>: PRN number in seventh channel

<10>: PRN number in eighth channel

<11>: PRN number in ninth channel

<12>: PRN number in tenth channel

<13>: PRN number in eleventh channel

<14>: PRN number in twelfth channel

<15>: position (3D) dilution of precision (PDOP) (0.5 - 99.9)

<16>: HDOP (0.5 - 99.9)

<17>: VDOP (0.5 - 99.9)

<hh>: checksum

2: NMEA\$GPGSV format

```
<CR><LF>$MYGPSPOS:
```

```
<1>,<2>,<3>,<4>,<5>,<6>,<7>[,<4>,<5>,<6>,<7>...]*<hh><CR><LF>
```

```
$GPGSV,
```

```
$GPGSV,<1>,<2>,<3>,<4>,<5>,<6>,<7>[,<4>,<5>,<6>,<7>...]*<hh><CR><LF>
```

...

```
<CR><LF>OK<CR><LF>
```

<1>: Total number of messages of this type in this cycle

<2>: Message number

<3>: Total number of satellites in view, ranging from 00 to 12.

<4>: SV PRN number, ranging from 01 to 32.

<5>: Evaluation in degrees, ranging from 00 to 90 degree.

<6>: Azimuth, degrees from true north, 000 to 359

<7>: SNR (C/No), 00-99 dB (null when not tracking)

<hh>: checksum

8-11: Information about second SV, same as field 4-7

12-15: Information about third SV, same as field 4-7

16-19: Information about fourth SV, same as field 4-7

The number of \$GPGSV sentences is same as the value of <1>.

3: NMEA\$GPRMC

<CR><LF>\$MYGPSPOS:

\$GPRMC,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,<10>,<11>,<12>*<hh><CR><LF>
OK<CR><LF>

<1>: UTC time of position fix, hhmmss

<2>: status of position fix

A: valid

V: invalid

<3>: latitude of fix, ddmn.mmmmm

<4>: N or S

N: North

S: South

<5>: longitude, dddmm.mmmmm

<6>: E or W

E: East

W: West

<7>: Speed over ground in knots, 000.0~999.9

<8>: Track made good in degrees, 000.0~359.9, True

<9>: UTC date, ddmmyy

<10>: Magnetic variation degrees (Easterly var. subtracts from true course), 000.0~180.0

<11>: E or W

E: Eastern

W: Western

<12>: GPS quality indicator

A: Automatic

D: DGPS

E: Estimated

N: invalid

<hh>: Checksum

4: NMEA\$GPVTG

<CR><LF>\$MYGPSPOS:

\$GPVTG,<1>,T,<2>,M,<3>,N,<4>,K,<5>*<hh><CR><LF>OK<CR><LF>

<1>: True track made good (degrees)

<2>: Magnetic track made good

<3>: Ground speed, knots

<4>: Ground speed, Kilometers per hour

<5>: GPS quality indicator

A: Autonomous

	<p>D: DGPS E: Estimated N: Invalid <hh>: Checksum</p> <p>5: NMEA\$GPGLL <CR><LF>\$MYGPSPOS: \$GPGLL,<1>,<2>,<3>,<4>,<5>,<6>*<hh><CR><LF>OK<CR><LF> <1>: Latitude, ddmm.mmmm <2>: N or S N: North S: South <3>: Longitude, dddmm.mmmm <4>: E or W E: East W: West <5>: UTC time of position fix, hhmmss.sss <6>: Status A: Fix V: No fix <hh>: Checksum</p>	
Example	<p>AT\$MYGPSPOS=0 \$MYGPSPOS: \$GPGGA,060239.00,2241.170914,N,11359.187225,E,2 ,16,2.5,116.6,M,,,*39 OK</p>	<p>Obtain the position information.</p>
	<p>AT\$MYGPSPOS=1 \$MYGPSPOS: \$GPGSA,A,2,01,11,16,22,,,,,,,,,2.4,2.2,1.0*32 OK</p>	<p>Obtain GPGSA message.</p>
	<p>AT\$MYGPSPOS=2 \$MYGPSPOS: \$GPGSV,5,1,19,01,57,160,50,11,84,151,31,16,09,090,4 1,22,10,140,49*74 \$GPGSV,5,2,19,04,40,184,,07,57,314,,08,87,050,,10,03 ,164,*7B \$GPGSV,5,3,19,15,15,270,,19,,,,,20,,,,,21,50,071,*78 \$GPGSV,5,4,19,24,13,196,,26,05,309,,28,,,,,32,,,,*7A \$GPGSV,5,5,19,41,,,41,42,,,43,50,,,43*72 OK</p>	<p>Obtain GPGSV message.</p>
	<p>AT\$MYGPSPOS=3 \$MYGPSPOS: \$GPRMC,074855.00,A,2241.207019,N,11359.188919, E,0.0,78.5,050517,2.3,W,A*16</p>	<p>Obtain GPRMC message.</p>

	OK	
	AT\$MYGPSPOS=4 \$MYGPSPOS: \$GPVTG,78.5,T,80.8,M,0.0,N,0.0,K,A*29 OK	Obtain GPVTG message
	AT\$MYGPSPOS=5 \$MYGPSPOS: \$GPGLL,2241.207179,N,11359.188345,E,074856.00,A *0F OK	Obtain GPGLL message
Remarks	<ul style="list-style-type: none"> • The obtained data is GPS coordinates. • It takes time to fix the position for the first time after GPS is enabled. 	

9 Other AT Commands

9.1 Powering Off the Module: \$MYPOWEROFF

Description	To power off the module	
Format	AT\$MYPOWEROFF<CR>	
Parameter	N/A	
Return Value	<CR><LF>OK<CR><LF>	
Example	AT\$MYPOWEROFF OK	Power off the module.
Remarks	N/A	

9.2 Controlling the Indicator of Socket Status: \$MYSOCKETLED

Description	To control the indicator of socket status	
Format	AT\$MYSOCKETLED=<ONOFF><CR>	
Parameter	<ONOFF>: Indicates the socket status, integer type. 0: The LED status when the socket is not connected. 1: The LED status when the socket is connected.	
Return Value	<CR><LF>OK<CR><LF>	
Example	AT\$MYSOCKETLED=1 OK	
Remarks	This command is used to control the LED indicator when the socket is connected complying with external protocol stack.	

9.3 Obtaining the Version Information of the Module: \$MYGMR

Description	To obtain the version information of the module firmware and hardware	
Format	AT\$MYGMR<CR>	
Parameter	N/A	
Return Value	<CR><LF><module_manufacture> <CR><LF><module_model> <CR><LF><firmware_version> <CR><LF><firmware_release date>	

	<pre><CR><LF><module_hardware_version> <CR><LF><module_hardware_release_date> <CR><LF>OK<CR><LF></pre> <p><module_manufacture>: Manufacture code, 4 bytes in ASCII format. <module_model>: Module mode, 8 bytes in ASCII format. <firmware_version>: Firmware version, 4 bytes in ASCII format. <firmware_release_date>: Firmware release date, DDMMYY, 6 bytes in ASCII format. <module_hardware_version>: Hardware version, 4 bytes in ASCII format. <module_hardware_release_date>: Hardware release date</p>	
Example	<pre>AT\$MYGMR NEO6 N20 V001 110917 V1.0 080817 OK</pre>	Five spaces follows N20 to make up 8 bytes.
Remarks	N/A	

9.4 Obtaining the CCID of the SIM Card: \$MYCCID

Description	To obtain the circuit card identifier (CCID) of the SIM card	
Format	AT\$MYCCID<CR>	
Parameter	N/A	
Return Value	<pre><CR><LF>\$MYCCID: <SIM_CCID> <CR><LF>OK<CR><LF></pre> <p><SIM_CCID>: The CCID of the SIM card, character string type.</p>	
Example	<pre>AT\$MYCCID \$MYCCID: "89860112965403839541" OK</pre>	
	<pre>AT\$MYCCID ERROR</pre>	<p>Query the CCID of the SIM card. Error is returned because no SIM card is installed.</p>
Remarks	N/A	

9.5 Querying the Type of the Module: \$MYMODEM (CSG Standard)

Description	To query the type of the module
Format	AT\$MYMODEM?<CR>
Parameter	N/A
Return Value	<pre><CR><LF>\$MYMODEM: <mode>,<network_type> <CR><LF>OK<CR><LF></pre> <p><mode>: Work mode. Extensible bytes are indicated by bit. 1 at bit 0: supporting transparent mode 1 at bit 1: supporting non-transparent mode</p> <p><network_type>: Network type. Extensible bytes are indicated by bit, 16-bit 1 at bit 0: GPRS 1 at bit 1: CDMA network 1 at bit 2: TD-SCDMA network 1 at bit 3: WCDMA 1 at bit 4: CDMA EVDO 1 at bit 5: TDD-LTE 1 at bit 6: FDD-LTE Bits 8 to 15: Reserved</p>
Example	<pre>AT\$MYMODEM? \$MYMODEM: 03,7F00 OK</pre>
Remarks	N/A

A Reference Process of AT Command Programming

A.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.



NOTE

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

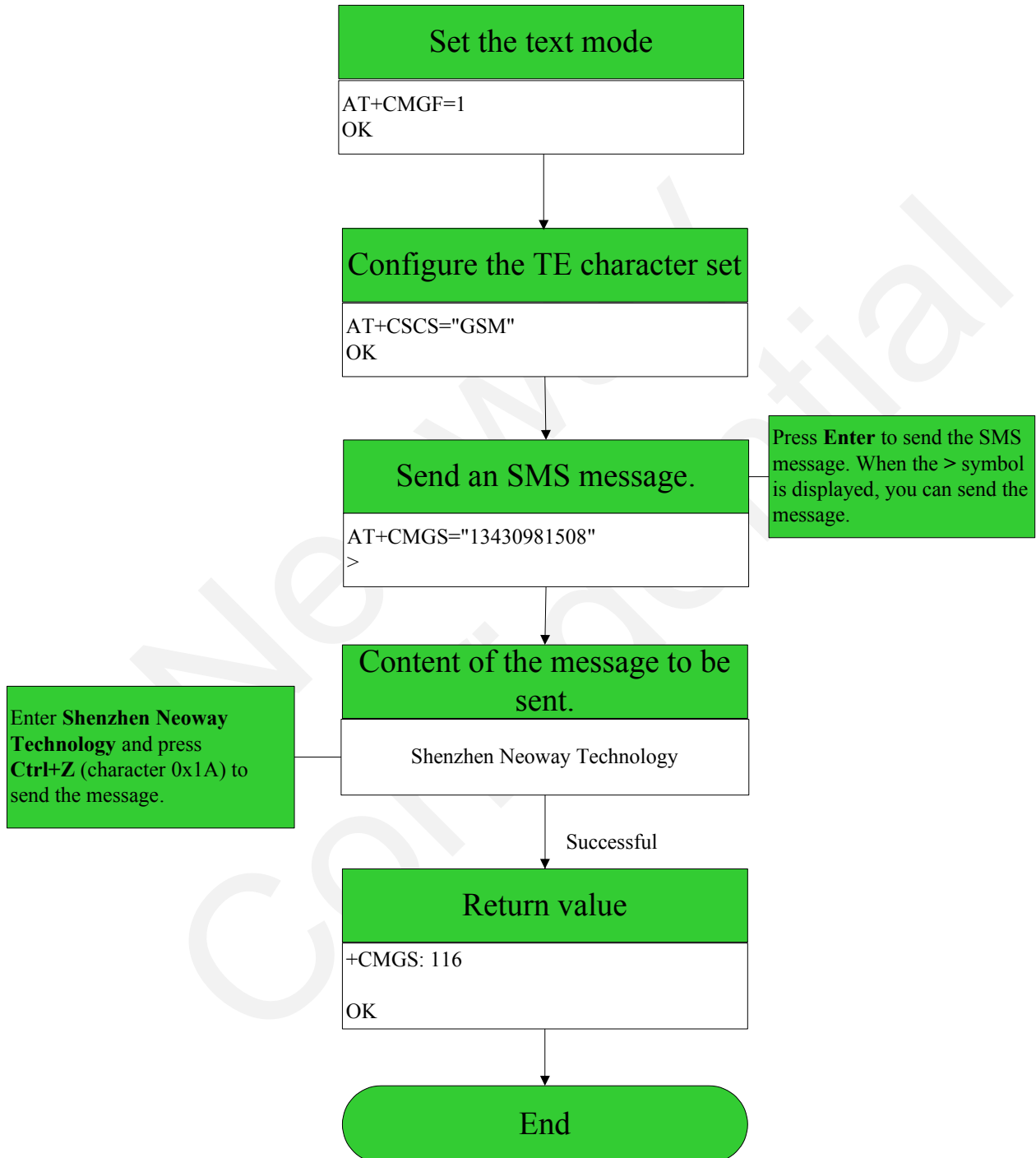
00680065006C006C006F: SMS message content

SMS message content: hello

The SMS message content starts from 0100, so the value of LENGTH in AT+CMGS=LENGTH is 23.

A.2 Flowchart of Sending Text SMS Messages (Through UART)

Figure A-1 Flowchart of sending text format SMS messages



A.3 Flowchart of Sending PDU SMS Messages (Through UART)

Figure A-2 Flowchart of Sending PDU SMS messages

