SIM7020 Series_TCPIP_Application Note_V1.00

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Version History

Date	Version	What is new	Author
2018-04-10	1.00	New version	Xiaolun.wang

Scope

This document presents the AT command of TCPIP stack and application examples.
This document can apply to SIM7020 series modules with TCPIP function.

1 Structure

SIM7020 series can be configured as TCP/UDP client, which can establish 5 connections in total.

2 Single Connection

2.1 How to Establish a TCP Client Connection

Firstly, before any TCP/UDP related operation is set up, the module should be connected to NB network. User can use the commands "AT+CREG?" to query the NB network registration status.

Grammar	Description
AT+CPIN? +CPIN: READY OK	Whether some password is required or not
AT+CSQ +CSQ: 20,0 OK	Received signal strength
AT+CREG? +CREG: 0,1 OK	The registration of the ME.

Secondly, user should use the command group AT+CSGACT, AT+CSOC and AT+CSOCON to start the task and activate the wireless connection. If the connection is established successfully, response "OK" will come up from the module. Now user can send data to the server with "AT+CSOSEND". User can close the TCP connection with "AT+CSOCL" command. Below is an example of TCP connection to remote server.

Grammar	Description
AT+CSGACT=1,1,"ctnb" OK +CSGACT: 1,1	Activate a PDN context. Check with local NB provider to get the APN.
AT+CSOC=1,1,1 +CSOC: 0 OK	Create a TCP socket. The TCP socket has been established successfully.
AT+CSOCON=0,5245,"116.247.119.165" OK AT+CSOSEND=0,10,210d0a2121 OK	Start up the connection The TCP connection has been established successfully. Send data to remote server: the format of data should be Hex and the length must be equal to the data_len.

AT+CSOSEND=0,0,"Hello world" OK	Send data to remote server: The data_len should be 0 if you want to send a str to remote server(with double quotation).
AT+CSOSENDFLAG=1 OK	Set TCP send flag
AT+CSOSEND=0,0,"Hello world" OK	Send data to remote server
SEND: 0,11	TCP send ack indicator
AT+CSOACK +CSOACK: 0,44,44,0 OK	Query Previous Connection Data Transmitting State
AT+CSOSTATUS=0 +CSOSTATUS: 0,2 OK	Get soc status
AT+CSOCL=0 OK	Close socket.

2.2 How to Establish a UDP Client Connection

The process of establishing UDP connection is similar to TCP.

Grammar	Description
AT+CSGACT=1,1,"ctnb" OK +CSGACT: 1,1	Activate a PDN context. Check with local NB provider to get the APN.
AT+CSOC=1,2,1 +CSOC: 0 OK AT+CSOCON=0,5246,"116.247.119.165" OK	Create a UDP socket The TCP socket has been established successfully Start up the connection The UDP connection has been established successfully

AT+CSOSEND=0,10,210d0a2121 OK	Send data to remote server: the format of data should be Hex and the lenth must be Equal to the data_len.
AT+CSOSEND=0,0,"Hello world" OK	Send data to remote server: The data_len should be 0 if you want to send a str to remote server(with double quotation).
AT+CSOSTATUS=0 +CSOSTATUS: 0,2 OK	Get soc status
AT+CSOCL=0 OK	Close socket.

3 Multi connection

Being a client, SIM7020 series can establish both TCP and UDP connection to remote server. Total 5 connections are supported. When the connection is established successfully, “OK” will be returned. And then user can use command AT+CSOSEND to send data to the connection. User can use command AT+CSOCL to close one specific connection.

Grammar	Description
AT+CSGACT=1,1,"ctnb" OK +CSGACT: 1,1 AT+CSOSENDFLAG=1 OK	Activate a PDN context. Check with local NB provider to get the APN. Set TCP send flag
AT+CSOC=1,1,1 +CSOC: 0 OK	Create a TCP socket connection number 0
AT+CSOC=1,2,1 +CSOC: 1 OK	Create a UDP socket connection number 1
AT+CSOCON=0,5245,"116.247.119.165" OK	Start up the TCP connection
AT+CSOCON=1,5246,"116.247.119.165" OK	Start up the UDP connection
AT+CSOSEND=0,10,210d0a2121 OK SEND: 0,5 AT+CSOSEND=0,0,"Hello world" OK SEND: 0,11	Send data to connection 0
AT+CSOSEND=1,10,210d0a2121 OK AT+CSOSEND=1,0,"Hello world" OK	Send data to connection 1
AT+CSOCL=0 OK	Close socket connection 0

AT+CSOCL=1 OK	Close socket connection 1

4 Data Sending Related

SIM7020 series provides two types to send data: Hex and Str types.
With AT command "AT+CSOSEND" you can send Str to remote socket with Double quotation，
In this case, the <data_len> should be 0.
Otherwise the format of data should be Hex and the length must be Equal to the <data_len>.

5 Data Receiving Related

The module will receive data automatically if there is data coming from remote server, Socket message arrived indicator: +CSONMI: 0,6,313233
With these information, user can easily know the connection number and details of the received data.

6 Connection Closing Related

User can use the command "AT+CSOCL" to close the TCP or UDP connection. The module will interactive with the server when it closes the TCP connection.

Be noted that command "AT+CSOCL" only closes the Corresponding TCP/UDP connection, but PDN context is still active. Also user can close connection by "AT+CSGACT" to deactivate a PDN context.

7 Error Handling

If an error occurs in TCP/UDP connection, for example TCP sending data error or TCP connection dropping, it is suggested to close the connection by command "AT+CSOCL" and then restart the connection. If the error still occurs, please use "AT+CSGACT" to shut off the PDN context and then restart the connection. If these two methods above can't help to solve it, SIMCom recommends user to reset the module.

Appendix

A Related Documents

SN	Document name	Remark
[1]	SIM7020 Series_AT Command Manual	

B Terms and Abbreviations

Abbreviation	Description
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
APN	Access Point Name
PDN	Public Data Network

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