



SIM7000 Series_HTTPS_Application Note

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1.00	Sept 28, 2018	Xiaobao.qu	First Release
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Related Documents

[1] SIM7000 Series AT Command Manual V1.04

This document applies to the following products:

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SIM7000E-N	NB1	24*24	N/A
SIM7000C-N			

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1 Purpose of this document

Based on module AT command manual, this document will introduce HTTPS application process.

Developers could understand and develop application quickly and efficiently based on this document.

2 AT Commands for HTTPS

2.1 Overview

Command	Description
AT+SHCONF	Set HTTP(s) Parameter
AT+CSSLCFG	Analysis SSL Configure
AT+SHSSL	Select SSL Configure
AT+SHCONN	HTTP(s) Connection
AT+SHBOD	Set Body
AT+SHAHEAD	Add Head
AT+SHPARA	Set HTTP(s) Para
AT+SHCHEAD	Clear Head
AT+SHSTATE	Query HTTP(s) Connection Status
AT+SHREQ	Set Request Type
AT+SHREAD	Read Response Value
AT+SHDISC	Disconnect HTTP(s)

2.2 Detailed Descriptions of Commands

2.2.1 AT+SHCONF Set HTTP(s) Parameter

AT+SHCONF Set HTTP(s) Parameter	
Test command AT+SHCONF=?	Response +SHCONF: "HTTPParamTag","HTTPParamValue"

	OK												
Read command AT+SHCONF?	Response +SHCONF: <HTTPParamTag>,<HTTPParamValue>												
	OK												
Write command AT+SHCONF=<HTTPParamTag>,<HTTPParamValue>	Response OK or ERROR												
	<table> <tr> <th><HTTPParamTag></th><th><HTTPParamValue></th></tr> <tr> <td>"URL"</td><td>Server URL address (max is 64 bytes) "server domain[: tcpPort]"</td></tr> <tr> <td>"TIMEOUT"</td><td>Hold once request time. Unit is second. Default 60s. range: 30-1800</td></tr> <tr> <td>"BODYLEN"</td><td>Set body max length(max is 1024 bytes)</td></tr> <tr> <td>"HEADERLEN"</td><td>Set head max length(max is 350 bytes)</td></tr> <tr> <td>"IPVER"</td><td>Set IP version 0 IPv4 1 IPv6</td></tr> </table>	<HTTPParamTag>	<HTTPParamValue>	"URL"	Server URL address (max is 64 bytes) "server domain[: tcpPort]"	"TIMEOUT"	Hold once request time. Unit is second. Default 60s. range: 30-1800	"BODYLEN"	Set body max length(max is 1024 bytes)	"HEADERLEN"	Set head max length(max is 350 bytes)	"IPVER"	Set IP version 0 IPv4 1 IPv6
<HTTPParamTag>	<HTTPParamValue>												
"URL"	Server URL address (max is 64 bytes) "server domain[: tcpPort]"												
"TIMEOUT"	Hold once request time. Unit is second. Default 60s. range: 30-1800												
"BODYLEN"	Set body max length(max is 1024 bytes)												
"HEADERLEN"	Set head max length(max is 350 bytes)												
"IPVER"	Set IP version 0 IPv4 1 IPv6												
Parameter Saving Mode	AUTO_SAVE												
Max Response Time	-												
Reference	Note: Must set URL,BODYLEN,HEADERLEN value, TIMEOUT default is 60 s, URL format must "http://xxx.xx.xx" or "https://xxx.xx.xx"												

2.2.2 AT+CSSLCFG SSL Configure

AT+CSSLCFG SSL Configure	
Write command AT+CSSLCFG="convert",<ssltype>,<cname>,[<keyname>],[<passkey>]]	Response OK If failed: +CME ERROR: <err>
	Parameters <ssltype> 1 QAPI_NET_SSL_CERTIFICATE_E

	2 QAPI_NET_SSL_CA_LIST_E 3 QAPI_NET_SSL_PSK_TABLE_E <cname> String type(string should be included in quotation marks): name of cert file <keyname> String type(string should be included in quotation marks):name of key file <passkey> String type (string should be included in quotation marks):value of passkey
Parameter Saving Mode	-
Max Response Time	-
Reference	-

2.2.3 AT+SHSSL Select SSL Configure

AT+SHSSL Select SSL Configure	
Test command AT+SHSSL=?	Response +SHSSL: (0-5), "ca list", "cert name" OK
Read command AT+SHSSL?	Response +SHSSL: <index>,<ca list>,<cert name> OK
Write command AT+SHSSL=<index>,<ca list>,<certname>	Response OK or ERROR Parameters <index> CSSLCFG set Configure index <ca list> Ca Certificate name <cert name> Cert Certificate name
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	-

2.2.4 AT+SHCONN HTTP(s) Connection

AT+SHCONN HTTP(s) Connection

Executive command AT+SHCONN	Response OK or ERROR
Parameter Saving Mode	-
Max Response Time	-
Reference	-

2.2.5 AT+SHBOD Set Body

AT+SHBOD Set Body	
Test command AT+SHBOD=?	Response +SHBOD: "body",<bodylen> OK
Read command AT+SHBOD?	Response +SHBOD: <body>,<bodylen> OK
Write command AT+SHBOD=<body>,<bodylen>	Response OK or ERROR Parameters <body> Set body value (max length is SHCONF Set value) <bodylen> Set body length (max length is SHCONF Set value)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must be executed after the connection

2.2.6 AT+SHAHEAD Add Head

AT+SHAHEAD Add Head	
Test command AT+SHAHEAD=?	Response +SHAHEAD: "type","value"

	OK
Read command AT+SHAHEAD?	Response +SHAHEAD: <type>,<value> OK
Write command AT+SHAHEAD=<type>,<value>	Response OK OR ERROR Parameters <type> Head type (max length is SHCONF Set value) <value> Head value (max length is SHCONF Set value) Note: The sum of type and value max length is 350
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must be executed after the connection

2.2.7 AT+SHPARA Set HTTP(s) Para

AT+SHPARA Set HTTP(s) Para	
Test command AT+SHPARA=?	Response +SHPARA: "key","value" OK
Read command AT+SHPARA?	Response +SHPARA: <key>,<value> OK
Write command AT+SHPARA=<key>,<value>	Response OK or ERROR Parameters <key> Set key (max is 64 bytes) <value> Set value (max is 64 bytes)
Parameter Saving Mode	AUTO_SAVE

Max Response Time	-
Reference	Note: Must be executed after the connection

2.2.8 AT+SHSTATE Query HTTP(s) Connection Status

AT+SHSTATE Query HTTP(s) Connection Status	
Read command AT+SHSTATE?	<p>Response</p> <p>+SHSTATE: <status></p> <p>OK</p> <p>Parameters</p> <p><status></p> <p>0 Expression HTTP(s) disconnect state;</p> <p>1 Expression HTTP(s) connect state;</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	-

2.2.9 AT+SHCHEAD Clear Head

AT+SHCHEAD Clear Head	
EXECUTIVE COMMAND AT+SHCHEAD	<p>Response</p> <p>OK</p> <p>or</p> <p>ERROR</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Must be executed after the connection

2.2.10 AT+SHREQ Set Request Type

AT+SHREQ Set Request Type	
Test command AT+SHREQ=?	<p>Response</p> <p>+SHREQ: url,(1-5)</p>

	OK
Read command AT+SHREQ?	Response +SHREQ: <url>,<type> OK
Write command AT+SHREQ=<url>,<type>	Response OK or ERROR Unsolicited Result Code +SHREQ: <type string>,<StatusCode>,<DataLen> Parameters <url> Request server domain (max is 512 bytes) <type> <ol style="list-style-type: none"> 1 GET 2 PUT 3 POST 4 PATCH 5 HEAD <type string> String of type are GET ,PUT,POST,PATCH,HEAD. <timeout> Waiting for Response time(default is 60 sec) <StatusCode> HTTP(s) Status Code responded by remote server, it identifier refer to HTTP1.1(RFC2616) <ol style="list-style-type: none"> 100 Continue 101 Switching Protocols 200 OK 201 Created 202 Accepted 203 Non-Authoritative Information 204 No Content 205 Reset Content 206 Partial Content 300 Multiple Choices 301 Moved Permanently 302 Found 303 See Other 304 Not Modified 305 Use Proxy 307 Temporary Redirect 400 Bad Request 401 Unauthorized 402 Payment Required 403 Forbidden

	404 Not Found 405 Method Not Allowed 406 Not Acceptable 407 Proxy Authentication Required 408 Request Time-out 409 Conflict 410 Gone 411 Length Required 412 Precondition Failed 413 Request Entity Too Large 414 Request-URI Too Large 415 Unsupported Media Type 416 Requested range not satisfiable 417 Expectation Failed 500 Internal Server Error 501 Not Implemented 502 Bad Gateway 503 Service Unavailable 504 Gateway Time-out 505 HTTP(s) Version not supported <DataLen> The length of data got
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Must be executed after the connection

2.2.11 AT+SHREAD Read Response Value

AT+SHREAD Read Response Value	
Test command AT+SHREAD=?	Response +SHREAD: (0-306176),(1-306176) OK
Write command AT+SHREAD=<start address>,<datalen>	Response OK +SHREAD: <data_len> <data> +SHREAD: <data_len> <data>

	<p>or ERROR</p> <p>If<datalen> is bigger than the data size received, it's error If <datalen> is bigger than 2048, will got multi URC +SHREAD</p> <p>Parameters <startaddress> Start address of data <datalen> Set read values length <data_len> Return data length max is 2048 bytes once, if more than 2048 bytes, will return many timer until all data are read out <data> Response data</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Read data after request

2.2.12 AT+SHDISC Disconnect HTTP(s)

AT+SHDISC Disconnect HTTP(s)	
Executive Command AT+SHDISC	Response OK or ERROR
Parameter Saving Mode	-
Max Response Time	-
Reference	-

3 Bearer Configuration

Usually module will register PS service automatically.

3.1 PDN Auto-activation

AT Command	Response	Description
AT+CPIN?	+CPIN:READY OK	Check SIM card status
AT+CSQ	+CSQ: 20,0 OK	Check RF signal
AT+CGREG?	+CGREG: 0,1 OK	Check PS service
AT+COPS?	+COPS: 0,0,"460 01",9 OK	Query Network information, operator and network mode 9, NB-IOT network
AT+CGNAPN	+CGNAPN: 1,"ctnb" OK	Query CAT-M or NB-IOT network after the successful registration of APN
AT+CNACT=1,"ctnb"	AT+CNACT=1,"ctnb" OK +APP PDP: ACTIVE	Activating network bearing

3.2 HTTP Function

AT Command	Response	Description
AT+CNACT=1,"cmnet"	OK +APP PDP: ACTIVE	Open wireless connection parameter CMNET is APN, this parameter needs to set different APN values according to different cards
AT+CNACT?	+CNACT: 1,"10.181.182.177" OK	Get local IP
AT+SHCONF="URL","http://www.baidu.com"	OK	Set up server URL
AT+SHCONF="BODYLEN",1024	OK	Set HTTP body Set HTTP head length

AT+SHCONF="HEADERLEN",350	OK	
AT+SHCONN	OK	HTTP build
AT+SHBOD="SIMCOMBODY",10	OK	Set body value
AT+SHAHEAD="Content-Length", "120"	OK	Add head value
AT+SHSTATE?	+SHSTATE: 1 OK	Get HTTP status
AT+SHREQ="http://www.baidu.com",1	OK +SHREQ: "GET",200,7382	Set request type is GET. Get data size is 7382.
AT+SHBOD="SIMCOMBODY",10	OK	
AT+SHREQ="http://www.baidu.com",3	+SHREQ: "POST",302,225	Set request type is POST Get data size is 225.
AT+SHREQ="http://www.baidu.com",2	+SHREQ: "PUT",200,116848	Set request type is PUT Get data size is 116848.
AT+SHREAD=0,10	OK +SHREAD: 10 <!doctype	Read data length is 10 Data is <!doctype
AT+SHDISC	OK	Disconnect HTTP connect

3.3 HTTPS Function

AT Command	Response	Description
AT+CNACT=1,"cmnet"	OK +APP PDP: ACTIVE	Open wireless connection parameter CMNET is APN, this parameter needs to set different APN values according to different cards
AT+CNACT?	+CNACT: 1,"10.181.182.177" OK	Get local IP
AT+CFSINIT	OK	Init FS AT command
AT+CFSWFILE=3,"baidu.cer",0,2110,1000	DOWNLOAD OK	After download, sent certificate file through the serial port. 2110 is certificate size. Send ca file success
AT+CFSTERM	OK	Free data buffer
AT+CSSLCFG="convert",2,"baidu.cer"	OK	Conversion CA certificate format. 2 means CA type. baidu.cer is CA certificate name.
AT+SHSSL=1,"baidu.cer"	OK	Set HTTP SSL Configure
AT+SHCONF="URL", "https://www"	OK	Set connect server parameter

.baidu.com"		
AT+SHCONF="BODYLEN",1024	OK	
AT+SHCONF="HEADERLEN",350	OK	
AT+SHCONN	OK	Connected
AT+SHBOD="SIMCOMBODY",10	OK	Set body value
AT+SHAHEAD="Content-Length", "120"	OK	Add head value
AT+SHSTATE?	+SHSTATE: 1	Get HTTP status
	OK	
AT+SHREQ="https://www.baidu.com",1	OK	Set request type is GET. Get data size is 227
	+SHREQ: "GET",200,227	
AT+SHBOD="SIMCOMBODY",10	OK	
AT+SHREQ="https://www.baidu.com",3	+SHREQ: "POST",302,225	Set request type is POST Get data size is 225.
AT+SHREQ="https://www.baidu.com",2	+SHREQ: "PUT",302,225	Set request type is PUT Get data size is 225.
AT+SHREAD=0,10	OK	Read data length is 10 Data is <!doctype
	+SHREAD: 10 <!doctype	
AT+SHDISC	OK	Disconnect HTTP connect

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