



SIM7020 Series_Sntp_Application Note

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About Document

Document Information

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1.01	May 10, 2019	Wenjie.lai	First Release

Related Documents

[1] SIM7020 Series_AT Command Manual_V1.03

This document applies to the following products:

Name	Type	Size (mm)	Comments
SIM7020C	NB1	17.6*15.7	Band 1/3/5/8
SIM7020E	NB1	17.6*15.7	Band 1/3/5/8/20/28
SIM7020G	NB2	17.6*15.7	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85
SIM7060G	NB2+GNSS	24*24	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85

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1 Purpose of this document

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

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

2 SNTP Introduction

The Network Time Protocol (NTP) is a protocol used to synchronize computer time. It allows the computer to synchronize its server or clock source (such as quartz clock, GPS, etc.), which provides high accuracy. Degree of time correction (on the LAN with standard time difference of less than 1 millisecond, tens of milliseconds on the WAN), and can be used to prevent malicious protocol attacks by means of cryptographic confirmation.

Simple Network Time Protocol (SNTP) is defined in RFC2030 and adapted from NTP, is mainly used to synchronize computer clocks on the Internet.

The SNTP protocol works in a client/server manner and can operate in unicast (peer-to-peer) or broadcast (point-to-multipoint) mode. The SNTP server uses the GPS signal or its own atomic clock as the time base for the system. In unicast mode, the SNTP client can obtain accurate time information by periodically accessing the SNTP server, which is used to adjust the time of the client's own system to achieve synchronization time. In broadcast mode, the SNTP server periodically sends a message to a specified IP broadcast address or IP multicast address. The SNTP client obtains time information by listening to these addresses.

Currently SIM7020 Series only supports SNTP function.

3 SNTP Process

3.1 Bearer Configuration

Usually module will register PS service automatically.

3.1.1 PDN Auto-activation

AT Command	Response	Description
AT+CPIN?	+CPIN:READY	Check SIM card status
	OK	
AT+CSQ	+CSQ: 20,0	Check RF signal

	OK	
AT+CGREG?	+CGREG: 0,1	Check PS service
	OK	
AT+CGACT?	+CGACT: 1,1	Activated automatically
	OK	
AT+COPS?	+COPS: 0,2,"46000",9	Check operator information 46000 is Numeric <oper> 9 is NB-IOT network
	OK	
AT+CGCONTRDP	+CGCONTRDP: 1,5,"cmnbiot","100.80.73.123.255.255.0"	Attached PS domain and got IP address automatically
	OK	

3.1.2 APN Manual configuration

If not attached automatically, could configure correct APN setting.

AT Command	Response	Description
AT+CFUN=0	+CPIN: NOT READY	Disable RF
	OK	
AT*MCGDEFCONT ="IP","cmnbiot"	OK	Set the APN manually
AT+CFUN=1	OK	Enable RF
	+CPIN: READY	
AT+CGREG?	+CGREG: 0,1	Inquiry PS service
	OK	
AT+CGCONTRDP	+CGCONTRDP: 1,5,"cmnbiot","100.80.73.123.255.255.0"	Attached PS domain and got IP address automatically
	OK	

3.2 Synchronous UTC time

AT Command	Response	Description
AT+CSNTPSTART="jp.ntp .org.cn"	OK	Configure the SNTP server instance and connect to start querying the network

	+CSNTP: 18/05/16,08:54:20:135	time. The parameters include the server: jp.ntp.org.cn. The server can be an IP address or a domain name. It can also be 202.112.29.82; 223.113.97.99; 182.92.12.11.
AT+CCLK?	+CCLK: 18/05/16,08:54:31+32	Query time
	OK	
AT+CSNTPSTOP	OK	Stop querying network time

3.3 Synchronous UTC time and time zone

AT Command	Response	Description
AT+CSNTPSTART="jp.ntp.org.cn","+32"	OK +CSNTP: 18/05/16,08:54:20:135+32	Configure the SNTP server instance and connect to start querying the network time. The parameters include the server: jp.ntp.org.cn. The server can be an IP address or a domain name. It can also be 202.112.29.82; 223.113.97.99; 182.92.12.11.
AT+CCLK?	+CCLK: 18/05/16,08:54:31+32 OK	Query time
AT+CSNTPSTOP	OK	Stop querying network time

3.4 Synchronous RTC time

AT Command	Response	Description
AT+CURTC=1	OK	After setting the synchronization, CCLK shows the RTC time (this command will take effect after next power up)
AT+CRESET		Reset module
AT+CURTC?	+CURTC: 1 OK	Query CURTC setting
AT+CSNTPSTART="jp.ntp.org.cn"	OK +CSNTP: 18/09/06,05:17:04:18	Configure the SNTP server instance and connect to start querying the network time. The parameters include the server: jp.ntp.org.cn. The server can be an IP address or a domain name. It can also be 202.112.29.82; 223.113.97.99; 182.92.12.11.

AT+CCLK?	+CCLK: 18/09/06,13:17:51+32	The query is local time at this time.
	OK	
AT+CSNTPSTOP	OK	Stop querying network time

3.5 Synchronous RTC time and time zone

AT Command	Response	Description
AT+CURTC=1	OK	After setting the synchronization, CCLK shows the RTC time (this command needs to be set before the restart takes effect)
AT+CURTC?	+CURTC: 1 OK	Query CURTC settings
AT+CSNTPSTART="jp.nt p.org.cn", "+08"	OK +CSNTP: 18/09/06,05:21:39:28+08	Configure the SNTP server instance and connect to start querying the network time. The parameters include the server: jp.ntp.org.cn; the server can be an IP address or a domain name, or 202.112.29.82; 223.113.97.99; 182.92.12.11. +08" represents the time zone for the East Second District
AT+CCLK?	+CCLK: 18/09/06,07:22:31+08 OK	At this time, the query is local time, that is, the local time of the East Second District.
AT+CSNTPSTOP	OK	Stop querying network time

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