



# SIM7020 Series\_SNTP \_Application Note

LPWA Module

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# About Document

## Version History

Version	Date	Owner	What is new
V1.00	2018.12.25	Chengliang.Wang	First Release
V1.01	2019.05.10	Wenjie.Lai	Add Sntp Description
V1.02	2020.3.10	Wenjie.Lai	Revised
V1.03	2020.6.10	Wenjie.Lai	All

## Scope

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
SIM7030	NB1	16*18	Band 1/3/5/8
SIM7060	NB1+GNSS	24*24	Band 5/8
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 Introduction

## 1.1 Purpose of the 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.

## 1.2 Related documents

[1] SIM7020 Series\_AT Command Manual

## 1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:

ME (Mobile Equipment);

MS (Mobile Station);

TA (Terminal Adapter);

DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface.

The controlling device at the other end of the serial line is referred to as following term:

TE (Terminal Equipment);

DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

## 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 Bearer Configuration

Usually module will register PS service automatically.

### 3.1 PDN Auto-activation

//Example of PDN Auto-activation.

```
AT+CPIN? // Check SIM card status
+CPIN: READY

OK
AT+CSQ // Check RF signal
+CSQ: 27,99

OK
AT+CGATT? // Check PS service. 1 indicates PS has attached.
+CGATT: 1

OK
AT+CGACT? // PDN active success
+CGACT:1,1

OK
AT+COPS? // Query Network information, operator and
+COPS:0,0,"CHN-UNICOM",9 network mode 9, NB-IOT network

OK
AT+CGCONTRDP // Attached PS domain and got IP address
+CGCONTRDP: automatically
1,5,"shnbiot","10.250.0.213.255.255.255.0"

OK
```

### 3.2 APN Manual configuration

//Example of APN Manual configuration.

```
AT+CFUN=0 // Disable RF
+CPIN: NOT READY

OK
AT*MCGDEFCONT="IP","3GNET" // Set the APN manually

OK
AT+CFUN=1 // Enable RF

OK
+CPIN:READY
AT+CGATT? // Inquiry PS service
+CGATT: 1

OK
AT+CGCONTRDP // Attached PS domain and got IP address
+CGCONTRDP: automatically
1,5,"3GNET","10.250.0.253.255.255.255.0"

OK
```



## 4 SNTP Service

### 4.1 Synchronous UTC Time

//Example of Synchronous UTC Time

**AT+CSNTPSTART="202.112.29.82"**

OK

**+CSNTP: 18/05/16,08:54:20:135**

**AT+CCLK?**

**+CCLK: 18/05/16,08:54:31+32**

OK

**AT+CSNTPSTOP**

OK

//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.

//Query time

//Stop querying network time

### 4.2 Synchronous URC time and time zone

//Example of Synchronous UTC Time and time zone

**AT+CSNTPSTART="202.112.29.82","+32"**

OK

**+CSNTP: 18/05/16,08:54:20:135+32**

**AT+CCLK?**

**+CCLK: 18/05/16,08:54:31+32**

OK

**AT+CSNTPSTOP**

OK

//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.

//Query time

//Stop querying network time

### 4.3 Synchronous RTC time

//Example of Synchronous RTC Time

**AT+CURTC=1**

OK

//After setting the synchronization, CCLK shows the RTC time (this command will take effect after next power up)

**AT+CURTC?**

**+CURTC: 1**

//Query CURTC setting

OK

**AT+CSNTPSTART="jp.ntp.org.cn"**

OK

//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.

**+CSNTP: 18/09/06,05:17:04:18+08**

**AT+CCLK?**

**+CCLK: 18/09/06,13:17:51+08**

//The query is local time at this time.

OK

**AT+CSNTPSTOP**

//Stop querying network time

OK

### 4.4 Synchronous RTC time and time zone

//Example of Synchronous RTC Time and time zone

**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**

//Query CURTC settings

OK

**AT+CSNTPSTART="jp.ntp.org.cn" , "+08"**

OK

//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.

**+CSNTP: 18/09/06,05:17:04:18**

**AT+CCLK?**

**+CCLK: 18/09/06,13:17:51+32**

OK

**AT+CSNTPSTOP**

OK

+08" represents the time zone for the East Second District

//At this time, the query is local time, that is, the local time of the East Second District.

//Stop querying network time

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