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SIM7000 Series_PING_Application Note_V1.00



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Version History

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Scope

This document presents the AT command of PING operation and application examples. This document can apply to SIM7000 series modules with PING function.

1 Description

This chapter introduces the PING application features of SIM7000 series modules

1.1 Features

- 1) SIM7000 supports sending PING (ICMP Echo request) to remote IP address.
- 2) SIM7000 supports setting the mode when it receives an IP packet. At present it can control whether to send an Echo Reply to an IP address pinging it.

2 AT commands

2.1 AT+CIPPING PING Request

AT+CIPPING PING Request	
Test Command AT+CIPPING=?	Response +CIPPING: (list of supported <retryNum>s),(list of supported <dataLen>s),(list of supported <timeout>s),(list of supported <ttl>s) OK
	Parameters See Write Command
Read Command AT+CIPPING?	Response +CIPPING: <retryNum>,<dataLen>,<timeout>,<ttl> OK
	Parameters See Write Command
Write Command AT+CIPPING=<IPAddr>,<retryNum>,<dataLen>,<timeout>,<ttl>]]	Response +CIPPING: <replyId>,<Ip Address>,<replyTime>,<ttl>[<CR><LF> +CIPPING: <replyId>,<Ip Address>,<replyTime>,<ttl>[...]] OK or ERROR or +CME ERROR: <err>
	Parameters <IPAddr> Address of the remote host, string type. This parameter can be either: - IP address in the format: "xxx.xxx.xxx.xxx" - Host name solved by a DNS query <retryNum> The number of Ping Echo Request to send 1-100 Default: 4 <dataLen> The length of Ping Echo Request data 0-1024 Default: 8 <timeout> The timeout, in units of 100 ms, waiting for a single Echo Reply

	<p>1-600 Default: 100(10 seconds)</p> <p><ttl> Time to live</p> <p>1-255 Default: 64</p> <p><replyId> Echo Reply number</p> <p><IP Address> IP Address of the remote host</p> <p><replyTime> Time, in ms, required to receive the response</p>
Reference	<p>Note</p> <ul style="list-style-type: none"> ● Before sending PING Request the GPRS context must be activated. ● When the Echo Request timeout expires (no reply received on time), the response will contains <replyTime> setting to 600 and <ttl> setting to 255. ● When executing this command, if PDP context is deactivated for some reasons, such as out of service, etc.,the "+PDP: DEACT" URC is reported and the command will end immediately. ● If executing the command in NB-IOT network,please config <timeout> to 300(30 second).For example: AT+CIPPING="www.google.cn",4,8,300,64

2.2 AT+CIPCTL Set the Mode When Receiving an IP Packet

AT+CIPCTL Set the Mode When Receiving an IP Packet	
Test Command AT+CIPCTL=?	<p>Response</p> <p>+CIPCTL: (list of supported <mode>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CIPCTL?	<p>Response</p> <p>+CIPCTL: <mode></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CIPCTL=<mode>	<p>Response</p> <p>OK</p> <p>or</p> <p>ERROR</p> <p>or</p> <p>+CME ERROR: <err></p> <p>Parameters</p> <p><mode> 0 Disable to send Echo Reply</p>

	<ol style="list-style-type: none"> 1 Enable to send Echo Reply to every IP address pinging it 2 Enable to send Echo Reply only to a subset of IP Addresses pinging it. This subset of IP Addresses can be set by "AT+CIPFLT" command.
Reference	Note The value of <mode> is stored in non volatile memory.

2.3 AT+CIPFLT Set the Rules of IP Filter

AT+CIPFLT Set the Rules of IP Filter	
Test Command AT+CIPFLT=?	Response +CIPFLT: (list of supported <action>s),(list of supported <item>s) OK Parameter See Write Command
Read Command AT+CIPFLT?	Response +CIPFLT: <item>,<ipAddr>,<mask> [<CR><LF>+CIPFLT: <item>,<ipAddr>,<mask> [...]] OK Parameter See Write Command
Write Command AT+CIPFLT=<action>[,<item>][,<ipAddr>,<mask>]	Response OK or ERROR or +CME ERROR: <err> Parameter <action> 0 Remove the rule specified by <item>. <item> must be given. 1 Add the rule specified by <item>. If <item> is not given, it can find an empty item automatically. <ipAddr> and <mask> must be given. 2 Delete all of rules <item> The item of IP filter rule 1-20 <ipAddr> Remote IP address,string type. It can be any valid IP address in the format of "xxx.xxx.xxx.xxx"

	<p><mask> Mask to be applied to the <ipAddr>,string type. It can be any valid IP address mask in the format of "xxx.xxx.xxx.xxx"</p>
Reference	<p>Note</p> <ul style="list-style-type: none"> ● When a packet comes from the IP address coming_IP, All rules will be scanned to match the following criteria: $\text{<coming_IP> \& \<mask> = \<ipAddr> \& \<mask>}$ If the criterion is matched, the IP packet will be accepted and the rule scan is finished. If the criterion is not matched, the IP packet will be ignored. ● The rule is stored in non volatile memory.

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3 Supported Unsolicited Result Codes

3.1 Summary of CME ERROR Codes

Final result code +CME ERROR: <err> indicates an error related to mobile equipment or network. The operation is similar to result code ERROR. The following <err> is just the additional <err> code for PING function. About other <err> codes, please refer to [1].

Code of <err>	Meaning
160	DNS resolve failed
161	Socket open failed

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4 Examples

In the "Grammar" columns of following tables, input of AT commands are in black, module return values are in blue.

4.1 Ping Request

Grammar	Description
AT+CGATT? +CGATT: 1 OK	Query attach status of wireless network
AT+CSTT="CMNET" OK	Configure APN
AT+CIICR OK	Bring up wireless connection
AT+CIFSR OK	Get local IP address
AT+CIPPING="www.google.cn" +CIPPING: 1,"203.208.37.99",70,239 +CIPPING: 2,"203.208.37.99",53,238 +CIPPING: 3,"203.208.37.99",60,239 +CIPPING: 4,"203.208.37.99",50,239 OK	Ping request. if sending ping request in NB-IOT network, you can execute the command: AT+CIPPING="www.google.cn",4,8,300,64

4.2 IP Filter Setting

Grammar	Description
AT+CIPFLT=1,1,"198.211.19.12","255.255.0.0" OK	Add a rule
AT+CIPFLT=1,, "10.43.21.69", "255.0.0.0" OK	Add a rule
AT+CIPFLT=0,1 OK	Delete the rule 1
AT+CIPFLT=2 OK	Delete all the rules

4.3 Set the Mode When Receiving an IP Packet

Grammar	Description
AT+CIPCTL=0 OK	Disable the Echo Reply
AT+CIPCTL=1 OK	Enable the Echo Reply
AT+CIPCTL=2 OK	Send Echo Reply only to some specified IP Addresses

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Appendix

A. Related Documents

SN	Document name	Remark
[1]	SIM7000 Series_AT Command Manual	

B. Terms and Abbreviations

Abbreviation	Description
ICMP	Internet Control Message Protocol
APN	Access Point Name
PDP	Packet Data Protocol
CAT-M	LTE Cat. M
NB-IOT	Narrow Band Internet of Things
GPRS	General Packet Radio Service

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