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FIBOCOM AT Commands User Manual_TCP&UDP

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Application type

No.	Type	Note
1	NL668-CN-00/01/02/03/04/10	NA
2	NL668-EAU-00	NA
3	NL668-EU-00/01/03	NA
4	NL668-AM-00/01	NA
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6	NL668-LA-00	NA
7	NL661-EU-00	NA

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Versions

Version	Date	Remarks
V1.0.0	2016-12-5	Initial version
V1.0.1	2017-08-22	Change to new template
V1.0.2	2017-11-13	Modify the format of some commands.
V1.0.3	2018-01-16	Modify the format of +MIPRUDP, + MSDNS, +GTSET
V1.0.4	2018-01-31	Modify the format of +MIPCALL, + MSDNS, +MIPODM
V1.0.5	2018-04-21	Add NL668 serial
V1.0.6	2018-11-14	Add NL668-AM serial and NL668-EU
V1.0.7	2018-12-26	Add AT example
V1.0.8	2019-04-17	List all the specific application types
V1.0.9	2019-10-14	Add NL668-CN-10

Contents

1 TCP/IP

1.1 Basic Mode

1.1.1+MIPCALL, Create a Wireless Link

1.1.1.1 Description

This command sets up a PPP (Point to Point Protocol) connection with the GGSN (Gateway GPRS Support Node), and returns a valid dynamic IP for the module.

1.1.1.2 Syntax

Command	Response/Action
+MIPCALL=<Operation>[,<cid>/<APN> [,<User name>,<Password>,[<auth>]]]	OK +MIPCALL: <local IP address> or: OK +MIPCALL: 0 or: ERROR
+MIPCALL?	+MIPCALL: <status>[,< Local IP address>] OK
+MIPCALL=?	+MIPCALL: (list of supported <operation>s) OK

Notes:

- The +MIPCALL command does not have a general ABORT mechanism, therefore a command cannot be issued until the previous command ends.
- Activating a context can take up to 30 seconds. Deactivating a context can take up to 30 seconds.
- If use AT+MIPCALL=1to activate PDP. The APN must be set by AT+CGDCONT command.
- The "User name" and the "Password" parameters can be up to 64 characters each. The "APN" parameter can be up to 99 characters each.

1.1.1.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	No	Yes	< 1s

1.1.1.4 Defined Values

<operation>: integer type and range 0-1

0 disconnect a link

1 establish GPRS link

<status>: integer type and range 0-2

0 Disconnected

1 Connected

2 Busy(disconnecting or connecting)

<cid>: Digit string which specifies a particular PDP context definition (See “+CGDCONT, Define PDP Context”).

<APN>:APN of service provider (in quotation marks). Contact your service provider for details.

<User name>:User name in provider server (in quotation marks). Contact your service provider for details.

<Password>:Password for provider server (in quotation marks). Contact your service provider for details.

<auth>: integer type and range 0-2

Set type of authentication

0 Don’t need authentic

1 PAP

2 CHAP

<Local IP address>: IP address given by server after PPP negotiation.

1.1.2+MIPOPEN, Open a Socket (UDP or TCP)

1.1.2.1 Description

This command causes the Module to initialize a new socket that waits for a connection from a remote machine or opens a common connection with a remote side (according to received parameters).

Note:

MIPxxx is a complete set of GPRS commands. This set should not be used with other GPRS commands, such as CGATT, CGACT, and so on.The +MIPOPEN command returns a +MIPSTAT unsolicited event if it fails, for example, if it was rejected by the remote side. This command will return in 60 sec when DNS is error.

1.1.2.2 Syntax

Command	Response/Action
+MIPOPEN=<Socket_ID>,[<Source_Port>],<Remote_IP>,<Remote_Port>,<Pro	OK +MIPOPEN:

Command	Response/Action
tocol>	<Socket_ID>,<State>[,<Remote_IP>,<RemotePort>] or: OK +MIPSTAT: <Socket_ID>,<Status> or: ERROR
+MIPOPEN?	+MIPOPEN: [list of free <Socket_ID>s] OK For each socket that can be opened or: +MIPOPEN: 0 OK If there are no free sockets.
+MIPOPEN=?	+MIPOPEN: (list of supported<socket_ID>s),(list of supported<source_port>s),(list of supported<"Destination_IP">s), (list of <destination_port>s),(list of supported <protocol>s) OK

1.1.2.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	No	Yes	< 1s

1.1.2.4 Defined Values

<Socket_ID>: A unique number that identifies a connection.Valid socket numbers - 1,2,3,4,5 and 6.

<Source_Port>: Port of source site.Port range: 1-65535 (decimal digits).

<Remote_IP>: IP: IP of the remote site in the format "AAA.BBB.CCC.DDD". The range of each octet is 0-255. Value can be written in 1, 2, or 3 digits. Host name: of remote site. The host-name convention should meet the rules as describe in RFC-1035 section: 2.3 Conventions. Syntax is not validated, except the maximum length (255 characters). In set mode,<Remote_IP> only return in listen mode.

<Remote_Port>: Port of remote site.

Port range: 1-65535 (decimal digits) for outgoing connection.

Port 0 for incoming connection.

In set mode,<Remote_IP> only return in listen mode.

<Protocol>: integer type and range 0-2

Type of protocol stack.

0 TCP

1 UDP

2 SSL

<State>: integer type and range 0-1

0 inactive

1 active

<status>: integer type and range 0-2

0 ACK indication

1 Broken protocol stack

2 Connection closed automatically due to non - fatal alert

Note:

Does not recommend using port numbers below 1024. These numbers are defined to be reserved for operating systems.

1.1.3 +MIPCLOSE, Close a Socket

1.1.3.1 Description

This command causes the module to free the socket accumulating buffer and to close the socket.

Note:

All data stored in the accumulating buffer will be lost.

1.1.3.2 Syntax

Command	Response/Action
+MIPCLOSE=<Socket_ID>[,<Mode>]	OK +MIPCLOSE: <Socket_ID>[,<number_of_acknowledged_bytes>],<close_type> or: ERROR

Command	Response/Action
+MIPCLOSE?	+MIPCLOSE: [list of active <socket_ID>s] OK For all ACTIVE sockets. or: +MIPCLOSE: 0 OK For no ACTIVE socket.
+MIPCLOSE=?	+MIPCLOSE: (list of supported<socket_ID>s),(list of supported< close_type>s) OK

1.1.3.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	No	Yes	< 1s

1.1.3.4 Defined Values

<Socket_ID>: Unique number that identifies a connection.Valid socket numbers - 1,2,3,4,5 and 6.

<Mode>: integer type and range 0-2

This value only used for TCP connection.

0 Wait FIN ack from Server (default)

1 Do not wait FIN response from server

2 Wait 2MSL

<number_of_acknowledged_bytes>: Total number of bytes that were acknowledged.

<close_type>: Connection close type:

0 Connection was closed correctly.

1 The remote side didn't reply, so connection closed by close timeout.

2 Other (The remote side replied with RST,Re-transmission timeout occurred, etc.).

1.1.4 +MIPSETS, Set Size and Timeout for Automatic Push

1.1.4.1 Description

This command causes the Module to set a watermark in the accumulating buffer and set timeout. When the watermark is reached, data is pushed from the accumulating buffer into the protocol stack.

Timeout is used to define interval of time between MIPSEND command and time when data will be automatically pushed from the accumulating buffer into the protocol stack.

Data chunks between the terminal and the Module are limited to be smaller than 1024 characters (2048 characters in coded form). In order to reduce the overhead of sending small amounts of data over the air, the Module uses an accumulating buffer. The terminal can specify a watermark within the accumulating buffer size limits to indicate how much data should be accumulated. When the data in the accumulating buffer exceeds the watermark, only data equal to the watermark is sent. Data remaining in the buffer is sent with the next packet.

Arriving data to accumulating buffer triggers a start of time (defined in timeout) countdown. When counter reaches zero, data is moved into the protocol stack. If new data arrived before time is reached zero, it is re-initialized. If data in accumulating buffer reached watermark it is pushed to the accumulating buffer as usual, but if after automatic push there is some remaining data, time countdown is started.

Note:

If there is data in the accumulating buffer, the +MIPSETS command will be rejected.

1.1.4.2 Syntax

Command	Response/Action
+MIPSETS=<Socket_ID>,<Size>[,<Timeout>]	+MIPSETS: < Status > OK or ERROR
+MIPSETS?	+MIPSETS: <Socket_ID>,<Current Size Settings>,< Timeout> OK For all ACTIVE sockets. Or +MIPSETS: 0

Command	Response/Action
	OK For no ACTIVE socket.
+MIPSETS=?	+MIPSETS: (list of supported <Socket_ID>s),(list of supported <size>s),(list of supported <Timeout>s) OK

1.1.4.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.1.4.4 Defined Values

<Socket_ID>: Unique number that identifies a connection.Valid socket numbers - 1,2,3,4,5 and 6.

<Size>: Size of the buffer,1< = size <= 2048.

The default value is 2048.

<Timeout>: integer type and range 0-1000ms

0 means no timeout is used (default).

< Status >integer type

0 Success

3 Operation not allowed

1.1.5 +MIPDSETS, Set Size and Timeout for Output Data

1.1.5.1 Description

This command causes the module to set a max length and time span when send received data to TE. The max length means the data which module send to TE must less than this length. Time span is used to define interval of time between two package when send data to TE

1.1.5.2 Syntax

Command	Response/Action
AT+MIPDSETS=<Socket_ID>,<Size>[,<Time span>]	+MIPDSETS: 0

Command	Response/Action
	OK or: ERROR
AT+MIPDSETS?	+MIPDSETS: <Socket_ID>,<Current Size Settings>,< Time span> OK For all ACTIVE sockets. or +MIPDSETS: 0 OK For no ACTIVE socket.
AT+MIPDSETS=?	+MIPDSETS: (list of supported <Socket_ID>s),(list of supported <size>s),),(list of supported <Timespan>s) OK

1.1.5.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.1.5.4 Defined Values

<Socket_ID>: Unique number that identifies a connection.Valid socket numbers - 1,2,3,4,5 and 6.

<Size>: Size of the buffer,1< = size <= 2048.

The default value is 2048.

<Time span>: integer type and range 0-1000ms.

The default value is 0.

1.1.6 +MIPSEND, Send Data

1.1.6.1 Description

This command causes the module to store the data that the terminal provides in the accumulating buffer, and then send this data using an existing protocol stack when the amount of data reaches the predefined amount (see “+MIPSETS, Set Size and Timeout for Automatic Push” on. Before sending data, a valid connection must be created using the +MIPCALL and +MIPOPEN commands.

Recommends that the terminal sets the watermark in the accumulating buffer prior to this command, using the +MIPSETS command. By default, the watermark is set to 2048 bytes of data.

1.1.6.2 Syntax

Command	Response/Action
+MIPSEND=<Socket_ID>,<Data>	ERROR or +MIPSEND: <Socket_ID>,<Status>,<FreeSize> OK
+MIPSEND?	+MIPSEND: <Socket_ID>,<FreeSize> OK For all ACTIVE sockets. or +MIPSEND: 0 OK For no ACTIVE socket.

1.1.6.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.1.6.4 Defined Values

<socket_ID>: 1,2,3,4,5,6 Number of valid socket.

<Data>: User data string is sent encoded with 0-F hexadecimal digits (String ends with a <CR>)

<Status>: integer type and range 0-1

0 Send data to socket buffer OK

1 MIPXOFF received before, send failed

<FreeSize>: Free space in current buffer. Free size is calculated from the 2048.

0< = Free Size< = 2048.

1.1.7 +MIPPUSH, Push Data into Protocol Stack

1.1.7.1 Description

This command causes the Module to push the data accumulated in its accumulating buffers into the protocol stack. It is assumed that before using this command, some data should exist due to previous +MIPSEND commands.

1.1.7.2 Syntax

Command	Response/Action
+MIPPUSH=<Socket_ID>[,<"Destination_IP" >,<Destination_Port>]	+MIPPUSH: <Socket_ID>,<Status>[,<accumulated_sent_length>] OK or: ERROR
+MIPPUSH?	+MIPPUSH: [list of active <socket_ID>s] OK For all ACTIVE sockets or +MIPPUSH: 0 OK For no ACTIVE socket.
+MIPPUSH=?	+MIPPUSH: (list of supproted <socket_ID>s),< Destination_IP >,(list of supproted < Destination_Port >s) OK

1.1.7.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	Yes	Yes	Yes	< 1s

1.1.7.4 Defined Values

<socket_ID>: 1,2,3,4,5,6 Number of valid socket.

<Destination_IP>: IP of destination site in the format AAA.BBB.CCC.DDD. The value can be written in1, 2 or 3 digits.

<Destination_Port>: 0-65535Port of destination site. Written in decimal digits.

Notes:

<Destination_IP> and <Destination_Port> are used only for UDP connections. If <Destination_IP> and <Destination_Port>are not provided by the user, a datagram is sent to the last target (or the default target provided by the +MIPOPEN command).

<accumulated_sent_length>: accumulatedsentlength

<Status>: integer type and range 0-2

0 Success

1 socket is flowed off

2 there is no data in socket to send

1.1.8 +MIPFLUSH, Flush Data from Buffers

1.1.8.1 Description

This command causes the Module to flush (delete) data accumulated in its accumulating buffers.

1.1.8.2 Syntax

Command	Response/Action
+MIPFLUSH = <Socket_ID>	+MIPFLUSH: <Socket_ID> OK or: ERROR
+MIPFLUSH?	+MIPFLUSH: [list of active <socket_ID>s] OK For all ACTIVE sockets or

Command	Response/Action
	+MIPFLUSH: 0 OK For no ACTIVE socket.
+MIPFLUSH=?	+MIPFLUSH: (list of supported <Socket_ID>s) OK

1.1.8.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.1.8.4 Defined Values

<Socket_ID>: 1,2,3,4,5,6 - Number of valid sockets.

1.1.9 +MIPRUDP, Receive Data from UDP Protocol Stack

1.1.9.1 Description

This unsolicited event is sent by the Module to the terminal when data is received from the UDP protocol stack.

1.1.9.2 Syntax

Command	Response/Action
Unsolicited Response	+MIPRUDP: <Source_IP>,<Source_Port><socket_ID>,<Left/Data_len>,<Data>

1.1.9.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
NA	NA	NA	NA	NA

1.1.9.4 Defined Values

<Source_IP>: IP of the source.

<Source_Port>: Port of the source.

<Socket_ID>: 1,2,3,4,5,6 - Number of valid sockets.

<Left>: Size of received Data still left in protocol stack, when IPRFMT set 0 by +GTSET command.

<Data_len>:Size of output data, when IPRFMT set 2 by +GTSET command.

<Data>: Data string received with 0-F hexadecimal digits. String ends with a <CR>.

1.1.10 +MIPRTCP, Receive Data from TCP Protocol Stack

1.1.10.1 Description

This unsolicited event is sent by the Module to the terminal when data is received from the TCP protocol stack.

1.1.10.2 Syntax

Command	Response/Action
Unsolicited Response	+MIPRTCP: <socket_ID>,<Left>,<Data>

1.1.10.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
NA	NA	NA	NA	NA

1.1.10.4 Defined Values

<Socket_ID>: 1,2,3,4,5,6 - Number of valid sockets.

<Left>: Size of received Data still left in protocol stack.

<Data>: Data string received with 0-F hexadecimal digits. String ends with a <CR>.

1.1.12 +MIPSTAT, Status Report

1.1.12.1 Description

This unsolicited event is sent to the terminal indicating a change in status. Currently there are two possible sources of failure, a broken logical connection or a broken physical connection.

1.1.12.2 Syntax

Command	Response/Action
Unsolicited Response	+MIPSTAT: <socket_ID>,<Status >[,<number_of_acknowld_bytes >]

1.1.12.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
NA	NA	NA	NA	NA

1.1.12.4 Defined Values

<Socket_ID>: A unique number that identifies a connection.Valid socket numbers - 1,2,3,4,5 and 6.

< Status >: integer type and range 0-2

0 ACK indication

1 Broken protocol stack

2 Connection closed automatically due to non – fatal alert

<number_of_acknowl d_bytes>: Total number of bytes that were acknowledged.

1.1.13 +MIPCONF, Configure Internal TCP/IP Stack

1.1.13.1 Description

This command allows configuring TCP stack parameters, such as re-transmissions number, upper and bottoming limits of re-transmission timeout, close delay. It can be used to configure TCP socket parameters before socket activation. Configuration values will be stored in Module until power circle.

1.1.13.2 Syntax

This command must used under MIPCALL is enabled.

Command	Response/Action
+MIPCONF=<socket_ID>[[,<retr_num>][,<min_TO>][,<max_TO>][,<max_close_delay>] [,<is_nack_ind_req>]]	OK or: ERROR
+MIPCONF?	+MIPCONF: 1,<retr_num>,<min_TO>,<max_TO>,<max_close_delay>,<is_nack_ind_req> +MIPCONF: 2,<retr_num>,<min_TO>,<max_TO>,<max_close_delay>,<is_nack_ind_req> +MIPCONF: 3,<retr_num>,<min_TO>,<max_TO>,<max_close_delay>,<is_nack_ind_req>

Command	Response/Action
	+MIPCONF: 4,<retr_num>,<min_TO>,<max_TO>,<max_close_delay>,<is_nack_ind_req> [+MIPCONF: 5,<retr_num>,<min_TO>,<max_TO>,<max_close_delay>,<is_nack_ind_req> +MIPCONF: 6,<retr_num>,<min_TO>,<max_TO>,<max_close_delay>,<is_nack_ind_req>] OK
+MIPCONF=?	+MIPCONF: (list of supported <socket_ID>s),(list of supported <retr_num>s),(list of supported <min_TO>s),(list of supported <max_TO>s),(list of supported <max_close_delay>s),(list of support <is_nack_ind_req>s) OK

1.1.13.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.1.13.4 Defined Values

<socket_ID>: Number of configured TCP socket (1 to 6).

<retr_num>: Number of re-transmissions (1 to 12) Default: 5.

<min_TO>: Bottom limit to re-transmit timeout (100 ms to 1 sec.) Default: 5*100ms.

<max_TO>: Upper limit to re-transmit timeout (1 sec. to 60 sec.) Default: 600*100ms

<max_close_delay>: Closing delay required by RFC 793 (100 ms to 7500 ms) Default: 75*100mS.

<is_nack_ind_req>: integer type and range 0-2

NACK/ACK TCP indication feature.

Activating this parameter enables Module to report the user, in case of losing a TCP connection, what data was received by the remote TCP layer.

0feature inactive.

1NACK indication active.

2ACK indication active.

• Default value is 0

This parameter resets after power cycle.

1.1.14 + MIPKEEPCONF, Set TCP Keep Alive Time

1.1.14.1 Description

This command is used to set the TCP live mechanism of related parameters, including whether to open the mechanism, and how long a failure detection shake hands, shake hands how long resend and resend.(when power supply drop, setting parameter will be saved.)

1.1.14.2 Syntax

Command	Response/Action
+MIPKEEPCONF=<mode>[,<keepidle>,<keepintvl>,<keepcnt >]	OK or ERROR
+MIPKEEPCONF?	+MIPKEEPCONF:<mode>[,<keepidle>,<keepintvl>,<keepcnt >] OK
+MIPKEEPCONF=?	+MIPKEEPCONF: (listofsupported<mode>s),(listofsupported<keepidle>s),(listofsupported<keepintvl>s),(listofsupported<keepcnt>s), OK

1.1.14.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	Yes	Yes	Yes	< 1s

1.1.14.4 Defined Values

<mode>: integer type and range 0-1

0 – switch off (default)

1 – switch on. Only mode = 1,need <keepidle>,<keepintvl>,<keepcnt > Parameter.

Used to set whether open living mechanism

<keepidle>: Used to set send TCP handshake detection time(1 sec to 36000 sec).

Default value 7200 sec

ps： As a result of protocol stack processing, real time interval and the set value will have small deviation, the actual effect shall prevail.

<keepintvl>: Used to set the TCP handshake failed, handshake messages again(1 sec to 750 sec).

Default value 65 sec

<keepcnt>: Used to set the TCP handshake failed, handshake messages retry count(1 to 50).

Default value 9

1.1.15 +MPING, Start Ping Execution (ICMP Protocol)

1.1.15.1 Description

This command allows verifying IP connectivity to another remote machine (computer) by sending one or more Internet Control Message Protocol (ICMP) Echo Request messages.

The receipt of corresponding Echo Reply messages are displayed, along with round trip times.

Valid IP address must be obtained using AT+MIPCALL command prior to starting ping execution.

Only one ping request execution will be allowed at any given moment.

The set command shall send a <count> Internet Control Message Protocol (ICMP) Echo Request messages to a target node defined by <"Destination IP/hostname"> parameter. If <mode> is equal 0, no parameters trailing <mode> parameter are allowed, otherwise ERROR message will be reported to DTE. If <mode> is equal 0, MS will abort sending Echo Request messages if ping request is in process, otherwise ERROR message will be reported to DTE.

1.1.15.2 Syntax

Command	Response/Action
+MPING=<mode>[,<"Destination_IP/hostname">[,<count>[,<size>[,<TTL>[,<TOS>[,<TimeOut>]]]]]]	OK or: ERROR
Unsolicited Response	+MPING: <"Destination_IP">,<type>,<code> [,<RTT>]
+MPING?	+MPING: <count>,<size>,<TTL>,<TOS>,<TimeOut> OK
+MPING=?	+MPING: <count>,<size>,<TTL>,<TOS>,<TimeOut>

Command	Response/Action
	OK

1.1.15.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	No	Yes	< 1s

1.1.15.4 Defined Values

These contents shows the +MPING command parameters.

<mode>: integer type and range 0-1

0Abort current ping request execution.

1Launch new ping request.

<"Destination_IP/hostname">: Specifies the target machine (computer), which is identified either by IP address 4 octets long in dotted decimal notation or by host name of maximum 255 (not including double quotes) characters long in dotted notation. Each octet of IP address has valid value range of 0 to 255. Host names are not case sensitive and can contain alphabetic or numeric letters or the hyphen. There is no default value - appropriate ERROR will be displayed if parameter is not supplied.

<count>:Specifies a number of Internet Control Message Protocol (ICMP) Echo Request messages to send. Valid value range is from 1 to 255.The default value is 4.

<size>:Specifies the length, in bytes, of the Data field in the Echo Request messages sent. The minimum size is 0.The maximum size is 1372.The default value is 32.

<TTL>:Time To Live (TTL). Specifies number of hops (hop is one step, from one router to the next, on the path of a datagram on an IP network), which the Echo Request message may be routed over. The value is set by using TTL field in IP header. Valid value range is from 1 to 255.The default value is 64.

<TOS>:The Type Of Service (TO S) is for internet service quality selection. The type of service is specified along the abstract parameters precedence, delay, throughput, and reliability. These abstract parameters are to be mapped into the actual service parameters of the particular networks the datagram traverses. Minimum and maximum values for TOS are 0 and 255 respectively. Refer to RFC 791 and RFC 2474 which obsoletes RFC 791 for TOS defined values.The default value is 0.

<TimeOUT>:Specifies the amount of time, in milliseconds, to wait for the Echo Reply message that corresponds to a sent Echo Request message, measured after Echo Request message was sent. If the Echo Reply message is not received within the time-out, +MPINGSTAT. The default value is 4000 ms.

These contents shows the +MPING unsolicited response parameters.

<"Destination_IP">:Specifies the message sender machine (computer), which is identified by IP address 4 octets long in dotted decimal notation. Each octet of IP address has valid value range of 0 to 255. The message sender machine (computer) may be either the target of Echo Request message (if a response was an Echo Reply message) ora gateway (router) in a path of Echo Request message passage for any other ICMP response message.

<type>:The first octet of the ICMP header is an ICMP type field, which specifies the format of the ICMP message. Referto IETF RFC 792 for <type> valid values.

<code>:The reasons for the non-delivery of a packet are described by code field value of ICMP header. Every <type> has its own defined <code> values. Refer to IETF RFC 792 for <code> valid values.

<RTT>:Specifies Round Trip Time (RTT) measured in milliseconds. This parameter will be reported in command response only if Echo Reply message was received.

Note:

Ping request is being executed from the moment the valid AT+MPING set command was received by Module until +MPINGSTAT unsolicited report with <status> equal either to 0 or 2 is sent to DTE or ping request execution was aborted with AT+MPING=0 command. Refer to description of +MPINGSTAT unsolicited response for details.

In some cases, the reply message for an Echo Request message might be not an Echo Reply messages but rather some other ICMP message, which is reporting an error in datagram processing. For purpose of reporting an exact type of response for sent Echo Request message, unsolicited response includes <type> and <code> fields. The first octet of the data portion of the IP datagram is an ICMP <type> field. The value of this field determines the format of the remaining data. The <type> and <code> fields jointly define ICMP message type.

For example, a case when an Echo Request message encapsulated in IP datagram to be forwarded by a gateway has exceeded TTL (equal zero). In this case the gateway must discard the datagram and may return an ICMP Time Exceeded message.

1.1.16 +MPINGSTAT, Status Update for +MPING Execution

1.1.16.1 Description

This is the unsolicited response that the Module sends to the terminal to inform of ping execution status update and provides summary statistics of ping request when ping request execution is completed.

1.1.16.2 Syntax

Command	Response/Action
Unsolicited Response	+MPINGSTAT: <status>[,<"Destination_IP">,<SentMessages>,<ReceivedMessages>[,<AverageRTT>]]

1.1.16.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
NA	NA	NA	NA	NA

1.1.16.4 Defined Values

<status>: integer type and range 0-4.Specifies a status of ping request execution.

0 - The unsolicited response with this <status> will be sent to DTE upon completion of ping request. If ping request was aborted or socket connection was terminated for any reason, this unsolicited response will not be reported to DTE.

1 - The unsolicited response with this <status> will be sent to DTE if no ICMP reply message was received within timeout.

2 - The unsolicited response with this <status> will be sent to DTE if socket connection was terminated for any reason. This status essentially means that ping request execution was aborted.

3 - Flow Control OFF. The unsolicited response with this <status> will be sent to DTE if phone doesn't have enough memory to process sending an Echo Request message.

4 - Flow Control ON. The unsolicited response with this <status> will be sent to DTE if phone has enough memory to send an Echo Request message after flow control was OFF.

<"Destination_IP">:Specifies the target machine (computer) for ping request, which is identified by IP address 4 octets long in dotted decimal notation. Each octet of IP address has valid value range of 0 to 255.

<SentMessages>:Specifies a total number of sent Echo Request messages.

<ReceivedMessages>:Specifies a total number of received Echo Reply messages corresponding to Echo Request messages.

<AverageRTT>:Specifies average Round Trip Time (RTT) for this ping request. This value will be reported if and only if <ReceivedMessages> value is greater than zero. Calculation of this value comprises of accumulating all RTT values and dividing total accumulated RTT by <ReceivedMessages> value. Only an integral part of a result will be reported and any digits of a fraction part will be truncated.

1.1.17 +MSDNS, Set DNS IP Address

1.1.17.1 Description

This command set/read DNS (Domain Name Server) IP address (primary/secondary) for each socket. If the user doesn't specify DNS servers by AT+MSDNS, Module will use default DNS from NW. The defined value(s) will be saved during disconnect PDP context (can be used in next PDP context), but will reset after power cycle.

1.1.17.2 Syntax

Command	Response/Action
+MSDNS=<Socket_ID>[,<Primary_DNS_server_IP>[,<Secondary_DNS_server_IP>]]	OK or: ERROR
+MSDNS?	+MSDNS: 1,<Primary_DNS_server_IP>,<Secondary_DNS_server_IP> +MSDNS: 2,<Primary_DNS_server_IP>,<Secondary_DNS_server_IP> +MSDNS: 3,<Primary_DNS_server_IP>,<Secondary_DNS_server_IP> +MSDNS: 4,<Primary_DNS_server_IP>,<Secondary_DNS_server_IP> +MSDNS: 5,<Primary_DNS_server_IP>,<Secondary_DNS_server_IP> +MSDNS: 6,<Primary_DNS_server_IP>,<Secondary_DNS_server_IP> +MSDNS: 7,<Primary_DNS_server_IP>,<Secondary_DNS_server_IP> OK
+MSDNS=?	+MSDNS: (List of supported <Socket_id>s),(<IP>),(<IP>) OK

1.1.17.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.1.17.4 Defined Values

<Socket_ID>:A unique number that identifies a connection (provided by the terminal application).

1,2,3,4,5,6 - Valid socket number

7 - Valid socket number dedicated to +MPING, +MIPDNS, +MIPNTP.

If set Socket_ID parameter only, clear the DNS server IP, but when set two parameters, another dns server ip don't clear.

<Primary_DNS_server_IP>,<Secondary_DNS_server_IP>:IP of the destination site in the format "AAA.BBB.CCC.DDD". The range of each octant is 0-255. The value can be written in 1, 2, or 3 digits.

1.1.18 +MIPODM, Open a Socket (UDP or TCP) in Online Data Mode

1.1.18.1 Description

This command causes the Module to initialize a new socket that waits for a connection from a remote machine or opens a common or TCP connection with a remote side (according to received parameters) and switch it to Online (raw data transfer) Data Mode and open a connection with a remote side.

Notes:

MIPxxx is a complete set of GPRS commands. This set should not be used with other GPRS commands, such as CGATT, CGACT, and so on. Online Data Mode allows the user to transfer raw data from terminal to Network and vice versa over a GPRS channel. Currently, only RS232 connection to terminal with hardware flow control is supported.

Each socket allocates an accumulating buffer whose size is 1372 bytes(1372 byte is for 2G module, 8192 byte is for 3G/4G module). When the user sends amount of data, less then buffer size, the data is being sent to Network after a spooling timeout (200 ms is for 2G module, and 50ms is for 3G/4G module), otherwise the data is being sent to Network immediately. Only one socket is allowed at the same time in Online Data Mode.

1.1.18.2 Syntax

The +MIPODM command returns a +MIPSTAT <Socket_ID><Status> unsolicited event if it fails. For example, if it was rejected by the remote side.

Command	Response/Action
+MIPODM=<Socket_ID>,[<Source Port>], <Remote IP>, <Remote Port>, <Protocol>[,<Pseudo-Command Mode On/Off>]	OK +MIPODM: <Socket_ID>, <State>[, <Remote IP>, <Remote Port>] or: OK +MIPSTAT: <Socket_ID>,<Status> or: ERROR
+MIPODM?	+MIPODM: [list of free <Socket_ID>s] OK for each socket that can be opened or: +MIPODM: 0 OK if there are no free sockets.
+MIPODM=?	+MIPODM: (list of supported<socket_ID>s),(list of supported<source port>s),(list ofsupported<"Destination"IP">s),(list of supported<destination port>s),(list ofsupported <protocol>s), (list of supported <Pseudo-Command Mode state>s) OK

1.1.18.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	No	Yes	< 1s

1.1.18.4 Defined Values

<Socket_ID>:A unique number that identifies a connection.Valid socket number–s - 1,2,3,4,5 and 6.

<Source Port>:Port of source site.Port range: 1-65535 (decimal digits).

<Remote IP>:IP of the remote site in the format "AAA.BBB.CCC.DDD". The range of each octet is 0-255. The value can be written in 1, 2, or 3 digits.Host-name of remote site. The host-name convention should meet the rules as describe in RFC-1035 section: 2.3 Conventions. Syntax is not validated, except the maximum length (255 characters).

<Remote Port>:Port of remote site.

Port range: 1-65535 (decimal digits) for outgoing connection.

Port 0 for incoming connection.

Notes:

The Set command returns <Remote IP> and <Remote Port> parameters only for sockets opened in Listen mode.

It does not recommend using port numbers below 1024. These numbers are defined to be reserved for operating systems.

<Protocol>: integer type and range 0-2

Type of protocol stack.

0 TCP

1 UDP

2 SSL

<State>: integer type and range 0-1

0 inactive

1 active

<Pseudo-Command Mode On/Off>: integer type and range 0-1.

Optional parameter enables / disables Pseudo Command Mode when ODM executed and Module is in PREMUX state.

0 Enable (default value, when Module is in PREMUX state)

1 Disable

< Status >: integer type and range 0-2

0 ACK indication

1 Broken protocol stack

2 Connection closed automatically due to non – fatal alert

1.1.19 +MIPXOFF, Flow Control - Xoff

1.1.19.1 Description

This command is the unsolicited response that the Module sends to the terminal to stop sending data until it receives the +MIPXON command, when it does not have enough memory to process new +MIPSEND requests. The Module uses the accumulating buffer prior to pushing data into the protocol stack. This memory resource is protected by a Xoff_upper watermark.

1.1.19.2 Syntax

Command	Response/Action
Unsolicited Response	+MIPXOFF: <Socket ID>

1.1.19.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
NA	NA	NA	NA	NA

1.1.19.4 Defined Values

<Socket_ID>:A unique number that identifies a connection.Valid socket number–s - 1,2,3,4,5 and 6.

1.1.20 +MIPXON, Flow Control - Xon

1.1.20.1 Description

This command is the unsolicited event that the Module sends to the terminal when it detects that it has free memory in the accumulating buffer and can process new +MIPSEND requests, after the +MIPXOFF event.

1.1.20.2 Syntax

Command	Response/Action
Unsolicited Response	+MIPXON: <Socket ID>

1.1.20.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
NA	NA	NA	NA	NA

1.1.20.4 Defined Values

<Socket_ID>:A unique number that identifies a connection.Valid socket number–s - 1,2,3,4,5 and 6.

1.1.21 +MIPDNS, Resolve Domain name

1.1.21.1 Description

This command is used to resolve the domain name.

1.1.21.2 Syntax

Command	Response/Action
+MIPDNS =<”domain name”>	+MIPDNS: <”domain name”>,< IP> OK or: ERROR

1.1.21.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.1.21.4 Defined Values

<”domain name”> : domain name to resolve.

<IP> : resolved IP address.

1.1.22 +MIPNTP, Synchronize the local time via NTP

1.1.22.1 Description

This command causes the Module to synchronize the local time from the NTP time server.

1.1.22.2 Syntax

Command	Response/Action
+MIPNTP=<Remote_IP>,<Remote_Port>	OK +MIPNTP: <Result> or:

Command	Response/Action
	ERROR
+MIPNTP?	+MIPNTP:<Remote_IP>,<Remote_Port> OK
+MIPNTP=?	+MIPNTP: (list of supported<"Remote_IP">s),(list of supported<Remote_Port>s) OK

1.1.22.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	Yes	No	Yes	< 1s

1.1.22.4 Defined Values

<Remote_IP>:The address of the NTP time server which could be a dotted decimal IP or a domain name.

<Remote_Port>:The port of the NTP time server.Port range: 1-65535 (decimal digits)

<Result>:int type and range is 0-1.

0: Fail to synchronize to local time.

1:Successfully synchronize the local time;

1.1.23 +MIPREAD, Receive data from buffer

1.1.23.1 Description

This command receives data from buffer. Before executing this command, you must run the **AT+GTSET="IPRFMT",5** command to open the receiving cache mode.

1.1.23.2 Syntax

Command	Response/Action
+MIPREAD=<Socket_ID>,<ReadDataLen>	+MIPDATA:<Socket_ID>,<ActualReadDataLen> <DATA> OK

Command	Response/Action
	or: +MIPREAD:<Socket_ID>,0 OK or ERROR
+MIPREAD?	OK or: +MIPREAD:<Socket_ID>,<ActualDataLen> OK

1.1.23.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.1.23.4 Defined Values

<Socket_ID>:A unique number that identifies a connection.Valid socket number–s - 1,2,3,4,5 and 6.

<ReadDataLen>: Data length to read.

<ActualReadDataLen>: Data length actually read.

<DATA>: Data output.

<ActualDataLen>: Data length unread.

1.2 HEX Mode

Base on the basic mode, Module achieve the TCP/IP stack by AT command. In additional, Module supports another mechanism to complete the TCP/IP stack in HEX mode. The data will be sending in HEX when we use +MIPSEND command.

1.2.1 +MIPSEND (Ctrl-Z)

1.2.1.1Description

This command cause data will be sending in HEX . After command received, Module will respond

“><CR><LF>”. Send any data in HEX. The data buffer range is 0<=buffer<=2048 bytes.<CTRL+Z> ends the prompt HEX mode and returns to regular AT command mode.

1.2.1.2Syntax

Command	Response/Action
+MIPSEND=<Socket_ID>	OK +MIPPUSH: <Socket_ID>,<Status> +MIPSEND: <Socket_ID>,<Status>,<FreeSize> OK (Depends on TCP Protocol) or: OK +MIPSEND: <Socket_ID>,<Status>,<FreeSize> OK (Depends on UDP Protocol) or ERROR

1.2.1.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.2.1.4 Defined Values

<Socket_ID>:Socket id.1< = Socket_ID <= 6.

<Status>: integer type and range 0-2

0 Success

1 socket is flowed off

2 there is no data in socket to send

<FreeSize>: Free space in current buffer. Free size is calculated from the 2048.

0<= Free Size <= 2048.

1.2.2 +MIPSEND (Timeout)

1.2.2.1 Description

This command cause data will be sending in HEX . After command received, Module will respond "><CR><LF>". Send any data without encode. The data buffer range is 0<=buffer<=2048 bytes. After timeout, the data will be push automatic and returns to regular AT command mode.

The default timeout is 12s.

1.2.2.2 Syntax

Command	Response/Action
+MIPSEND=<Socket_ID>	OK +MIPPUSH: <Socket_ID>,<Status> +MIPSEND: <Socket_ID>,<Status>,<FreeSize> OK (Depends on TCP Protocol) or: OK +MIPSEND: <Socket_ID>,<Status>,<FreeSize> OK (Depends on UDP Protocol) Or ERROR

1.2.2.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 12s

1.2.2.4 Defined Values

<Socket_ID>:Socket id.1< = Socket_ID < =6.

<Status>: integer type and range 0-2

0 Success

1 socket is flowed off

2 there is no data in socket to send

<FreeSize>: Free space in current buffer. Free size is calculated from the 2048.

0<=Free Size <=2048.

1.2.3 +MIPSEND (Data length)

1.2.3.1 Description

This command cause data will be sending in HEX . After command received, Module will respond "><CR><LF>". Send any data in HEX. The data buffer range is 0<=data_len<=2048 bytes. When Module receive the corresponding length data, the data will be push automatic and returns to regular AT command mode.

Notes: The redundant data will be lost.

1.2.3.2 Syntax

Command	Response/Action
+MIPSEND=<Socket_ID>,<Data_len>	OK +MIPPUSH: <Socket_ID>,<Status> +MIPSEND: <Socket_ID>,<Status>,<FreeSize> OK (Depends on TCP Protocol) or: OK +MIPSEND: <Socket_ID>,<Status>,<FreeSize> OK (Depends on UDP Protocol) or

Command	Response/Action
	ERROR

1.2.3.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	No	Yes	Yes	< 1s

1.2.3.4 Defined Values

<Socket_ID>:Socket id.1< = Socket_ID <= 6.

<Status>: integer type and range 0-2

0 Success

1 socket is flowed off

2 there is no data in socket to send

<FreeSize>: Free space in current buffer. Free size is calculated from the 2048.

0<= Free Size <= 2048.

1.2.4 +GTSET, HEX mode configuration

1.2.4.1 Description

This command cause data will be sending in HEX .

1.2.4.2 Syntax

Command	Response/Action
+GTSET=<future>,<value>	OK or: ERROR

1.2.4.3 Attributes

Pin Restricted	Persistent	Sync Mode	Effect Immediately	Time of duration
Yes	Yes	Yes	Yes	< 1s

1.2.4.4 Defined Values

1) <future>: "SENDTIME": Set the auto push timeout.

<value>: 1-30 seconds.The default value is 12.

2) <future>: "IPRFMT" : The format of received data.

<value>: integer type and range 0、1、2、5

0 Received data with “+MIPRTCP:” or “+MIPRUDP: ” and the data is encoded.

1 Received data only and the data are without encoded. In received character string, Module doesn’t accede to any <CR><LF> symbol.

2 Received data with “+MIPRTCP:” or “+MIPRUDP: ” and the data is without encoded. In received character string, Module will accede to <CR><LF> before “+MIPRTCP:” or “+MIPRUDP: ”.

5 Data read mode

The default value is 0.

2 Error Code

2.1 CME Error

Parameter	Description
<Err>	0, "phone failure" 1, "no connection to phone" 2, "phone-adaptor link reserved" 3, "operation not allowed" 4, "operation not supported" 5, "PH-SIM PIN required" 6, "PH-FSIM PIN required" 7, "PH-FSIM PUK required" 10, "SIM not inserted" 11, "SIM PIN required" 12, "SIM PUK required" 13, "SIM failure" 14, "SIM busy" 15, "SIM wrong"

Parameter	Description
	16, "incorrect password" 17, "SIM PIN2 required" 18, "SIM PUK2 required" 19, "incorrect PUK1" 20, "memory full" 21, "invalid index" 22, "not found" 23, "memory failure" 24, "text string too long" 25, "invalid characters in text string" 26, "dial string too long" 27, "invalid characters in dial string" 30, "no network service" 31, "network timeout" 32, "network not allowed - emergency calls only" 40, "network personalisation PIN required" 41, "network personalisation PUK required" 42, "network subset personalisation PIN required" 43, "network subset personalisation PUK required" 44, "service provider personalisation PIN required" 45, "service provider personalisation PUK required" 46, "corporate personalisation PIN required" 47, "corporate personalisation PUK required" 48, "hidden key required" (NOTE: This key is required when accessing hidden phonebook entries.) 49, "EAP method not supported" 50, "Incorrect parameters" 100, "unknown" 103, "Illegal MS" 106, "Illegal ME" 107, "GPRS services not allowed" 111, "PLMN not allowed" 112, "location area not allowed"

Parameter	Description
	113, "roaming not allowed in this location area" 114, "GPRS services not allowed in this PLMN" 116, "MSC temporarily not reachable" 117, "Network failure" 132, "Service not supported" 133, "Service not subscribed" 134, "service option temporarily out of order" 135, "NS-api already used" 148, "Unspecified GPRS error" 149, "PDP authentication error" 150, "invalid mobile class" 244, "Attach failure" 257, "Invalid error mapping" 258, "APN not listed in APN Control List (ACL)" 701, "incorrect security code" 702, "max attempts reached" 1001, "Unassigned (unallocated) number" 1003, "No route to destination" 1006, "Channel unacceptable" 1008, "Operator determined barring" 1016, "Normal call clearing" 1017, "User busy" 1018, "No user responding" 1019, "User alerting, no answer" 1021, "Call rejected" 1022, "Number changed" 1026, "Non selected user clearing" 1027, "Destination out of order" 1028, "Invalid number format (incomplete number)" 1029, "Facility rejected" 1030, "Response to STATUS ENQUIRY" 1031, "Normal, unspecified" 1034, "No circuit/channel available"

Parameter	Description
	1038, "Network out of order" 1041, "Temporary failure" 1042, "Switching equipment congestion" 1043, "Access information discarded" 1044, "requested circuit/channel not available" 1047, "Resources unavailable, unspecified" 1049, "Quality of service unavailable" 1050, "Requested facility not subscribed" 1055, "Incoming calls barred within the CUG" 1057, "Bearer capability not authorized" 1058, "Bearer capability not presently available" 1063, "Service or option not available, unspecified" 1065, "Bearer service not implemented" 1068, "ACM equal to or greater than ACMmax" 1069, "Requested facility not implemented" 1070, "Only restr. digital information bearer capability" 1079, "Service or option not implemented, unspecified" 1081, "Invalid transaction identifier value" 1087, "User not member of CUG" 1088, "Incompatible destination" 1091, "Invalid transit network selection" 1095, "Semantically incorrect message" 1096, "Invalid mandatory information" 1097, "Message type non-existent or not implemented" 1098, "Message type not compatible with protocol state" 1099, "Information element non-existent or not implemented" 1100, "Conditional IE error" 1101, "Message not compatible with protocol state" 1102, "Recovery on timer expiry" 1111, "Protocol error, unspecified" 1127, "Interworking, unspecified" 1279, "Number not allowed" 1283, "CCBS possible"

2.2 CMS Error

Parameter	Description
<Err>	1, "Unassigned (unallocated) number" 8, "Operator determined barring" 10, "Call barred" 17, "Network failure" 21, "Short message transfer rejected" 22, "Memory capacity exceeded" 27, "Destination out of service" 28, "Unidentified subscriber" 29, "Facility rejected" 30, "Unknown Subscriber" 38, "Network out of order" 41, "Temporary failure" 42, "Congestion" 47, "Resources unvailable, unspecified" 50, "Requested facility not subscribed" 69, "Requested facility not implemented" 81, "Invalid short message reference value" 95, "Invalid message, unspecified" 96, "Invalid mandatory information" 97, "Message type non-existent or not implemented" 98, "Message not compatible with short message protocol state" 99, "Information element non-existent or not implemented" 111, "Protocol error, unspecified" 127, "Interworking unspecified" 128, "Telematic interworking not supported" 129, "Short message type 0 not supported" 130, "Cannot replace short message" 143, "Unspecified TP-PID error" 144, "Data coding scheme (alphabet) not supported" 145, "Message class not supported" 159, "Unspecified TP-DCS error"

Parameter	Description
	160, "Command cannot be actioned" 161, "Command unsupported" 175, "Unspecified TP-Command error" 176, "TPDU not supported" 192, "SC busy" 193, "No SC subscription" 194, "SC system failure" 195, "Invalid SME address" 196, "Destination SME barred" 197, "SM Rejected-Duplicate SM" 198, "TP-VPF not supported" 199, "TP-VP not supported" 208, "SIM SMS storage full" 209, "No SMS storage capability in SIM" 210, "Error in MS" 211, "Memory Capacity Exceeded" 212, "SIM Application Toolkit Busy" 213, "SIM data download error" 224, "TP_FCS_APPL_ERR_START" 254, "TP_FCS_APPL_ERR_STOP" 255, "TP_FCS_UNSPECIFIED" 300, "ME failure" 301, "SMS service of ME reserved" 302, "operation not allowed" 303, "operation not supported" 304, "Invalid PDU mode param" 305, "invalid text mode parameter" 310, "SIM not inserted" 311, "SIM PIN required" 312, "PH-SIM PIN necessary" 313, "SIM failure" 314, "SIM busy" 315, "SIM wrong"

Parameter	Description
	317, "SIM PIN2 required" 318, "SIM PUK2 required" 319, "incorrect PUK1" 320, "memory failure" 321, "invalid memory index" 322, "memory full" 330, "SMSC address unknown" 331, "no network service" 332, "network timeout" 340, "no +CNMA acknowledgement expected" 512, "MN_SMS_RP_ACK" 513, "MN_SMS_TIMER_EXPIRED" 514, "MN_SMS_FORW_AVAIL_FAILED" 515, "MN_SMS_FORW_AVAIL_ABORTED" 516, "MS invalid TP-Message-Type-Indicator" 517, "MS no TP-Status-Report in Phase 1" 518, "MS no TP-Reject-Duplicate in Phase 1" 519, "MS no TP-Reply-Path in Phase 1" 520, "MS no TP-User-Data-Header in Phase 1" 521, "MS missing TP-Validity-Period" 522, "MS invalid TP-Service-Centre-Time-Stamp" 523, "MS missing TP-Destination-Address" 524, "MS invalid TP-Destination-Address" 525, "MS missing Service-Centre-Address" 526, "MS invalid Service-Centre-Address" 527, "MS invalid alphabet" 528, "MS invalid TP-User-Data-Length" 529, "MS missing TP-User-Data" 530, "MS TP-User-Data too long" 531, "MS no Command-Request in Phase 1" 532, "MS Cmd-Req invalid TP-Destination-Address" 533, "MS Cmd-Req invalid TP-User-Data-Length" 534, "MS Cmd-Req invalid TP-User-Data"

Parameter	Description
	535, "MS Cmd-Req invalid TP-Command-Type" 536, "MN MNR creation failed" 537, "MS CMM creation failed" 538, "MS network connection lost" 539, "MS pending MO SM transfer" 540, "RP-Error OK" 541, "RP-Error OK no icon display" 542, "SMS-PP Unspecified" 543, "SMS rejected By SMS CONTROL"

2.3 TCP/IP Error

Parameter	Description
<Err>	2000, "TCPIP Param wrong " 2001, "TCPIP not supported in ppp mode" 2002, "TCPIP dns convert to ip fail" 2003, "TCPIP socket number limited" 2004, "TCPIP invalid operation" 2005, "TCPIP protol error" 2006, "TCPIP send data too long" 2007, "TCPIP send data memory failed" 2008, "TCPIP service not in correct state " 2009, "TCPIP pdp not defined " 2010, "TCPIP new socket failed" 2011, "TCPIP socket bind fail" 2012, "TCPIP socket connect fail" 2013, "TCPIP socket send fail " 2014, "TCPIP socket close fail" 2015, "TCPIP get socket receive buffer failed" 2016, "TCPIP receive data failed" 2017, "TCPIP socket used" 2018, "TCPIP get send buffer size failed"

Parameter	Description
	2019, "TCPIP socket send data failed" 2020, "TCPIP socket send data size limited" 2021, "TCPIP socket set listening mode failed" 2022, "TCPIP socket listen fail" 2023, "TCPIP socket error" 2024, "TCPIP socket not opened " 2025, "TCPIP tcp stack confige failed" 2026, "TCPIP socket no data to send " 2027, "TCPIP socket send invalid data state" 2028, "TCPIP socket close client" 2029, "TCPIP ping error " 2030, "TCPIP ppp not connected " 2031, "TCPIP mipcall not active" 2032, "TCPIP etcpip not active" 2033, "TCPIP not def4 "

3 Example

3.1 +MIPCALL

//Active pdn context

AT+MIPCALL=1,"CTNET"

OK

+MIPCALL: 10.34.7.211

3.2 +MIPOPEN

//TCP connect

AT+MIPOPEN=1,,"111.231.250.105",3000,0

OK

+MIPOPEN: 1,1

//UDP connect

AT+MIPOPEN=2,,"111.231.250.105",5000,1

OK

+MIPOPEN: 2,1

//TCPS connect

AT+MIPOPEN=3,,"www.baidu.com",443,2

OK

+MIPOPEN: 3,1

Note: TCPS Connect need SSL certification, User can refer to 《FIBOCOM AT Commands User Manual_SSL_V1.0.7.docx》

3.3 +MIPSEND

//Basic mode

AT+MIPSEND=1,"313233343536"

+MIPSEND: 1,0,2042

OK

AT+MIPPUSH=1

+MIPPUSH: 1,0,6

OK

+MIPRTCP: 1,0,313233343536

Note: Basic Mode , MIPSEND will save data to temp buffer, MIPPUSH will send data to server

// HEX Mode

AT+MIPSEND=1,10

>1234567890 //input 10 bytes or timeout (12s) exit data input mode

OK

+MIPPUSH: 1,0

+MIPSEND: 1,0,2048

OK

+MIPRTCP: 1,0,31323334353637383930

Note: the data will be push automatic and returns to regular AT command mode

AT+MIPSEND=1

>12345678901234567890

OK

+MIPPUSH: 1,0

+MIPSEND: 1,0,2048

OK

+MIPRTCP: 1,0,3132333435363738393031323334353637383930

NOTE: Keyboard input Ctrl+Z or timeout 12s, exit data input mode. The data is automatically pushed to the TCP server.

3.4 +MIPRTCP

// unsolicited receive data from TCP server “111.231.250.105”

at+mipopen=1,,"111.231.250.105",3000,0

OK

+MIPOPEN: 1,1

at+mipsend=1,10

>1234567890

OK

+MIPPUSH: 1,0

+MIPSEND: 1,0,2048

OK

+MIPRTCP: 1,0,31323334353637383930

3.5 +MIPRUDP

// unsolicited receive data from UDP server “111.231.250.105”

at+mipopen=1,,"111.231.250.105",5092,1

OK

+MIPOPEN: 1,1

at+mipsend=1,10

>1234567890

OK

+MIPPUSH: 1,0

+MIPSEND: 1,0,2048

OK

+MIPRUDP: 111.231.250.105,5092,1,0,31323334353637383930

Note:receive data from “111.231.250.105”,Port:5092,Socket Id : 1, left size:0,

receive data : ”31323334353637383930”

3.6 +MPING

//Ping 111.231.250.105

AT+MPING=1,"111.231.250.105"

OK

+MPING: "111.231.250.105",0,0,3491

+MPING: "111.231.250.105",0,0,1874

+MPING: "111.231.250.105",0,0,618

+MPING: "111.231.250.105",0,0,2202

+MPINGSTAT: 0,"111.231.250.105",4,4,2046

3.7 +MIPNTP

// synchronize the local time via NTP from “cn.pool.ntp.org”

AT+MIPNTP="cn.pool.ntp.org",123

OK

+MIPNTP: 1

3.8 +MIPDNS

//parse the domain name of ''www.baidu.com'

AT+MIPDNS="www.baidu.com"

+MIPDNS: "www.baidu.com",180.97.33.107

OK

3.9 +MIPODM

AT+MIPODM=1,,"111.231.250.105",3000,0

OK

+MIPODM: 1,1

1234567890123456790

+++ //Not echo,exit data input mode

OK

AT+MIPCLOSE=1

OK

+MIPCLOSE: 1,0

Note: After exiting the data mode, the data will be automatically pushed to the TCP server.

3.10 +MIPREAD

// set data read mode

AT+GTSET="IPRFMT",5

OK

AT+MIPOPEN=1,,"111.231.250.105",3000,0

OK

+MIPOPEN: 1,1

AT+MIPSEND=1,10

>1234567890

OK

+MIPPUSH: 1,0

+MIPSEND: 1,0,2048

OK

+MIPREAD: 1,10

AT+MIPREAD?

+MIPREAD: 1,10

OK

AT+MIPREAD=1,10

+MIPDATA: 1,10

1234567890

OK

3.11 +MIPCLOSE

//Close socket 1

AT+MIPCLOSE=1

OK

+MIPCLOSE: 1,0