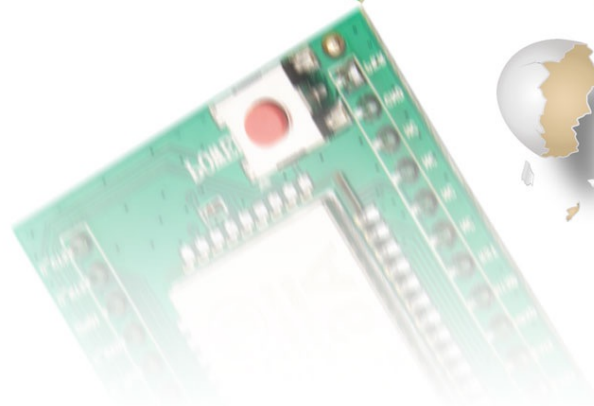
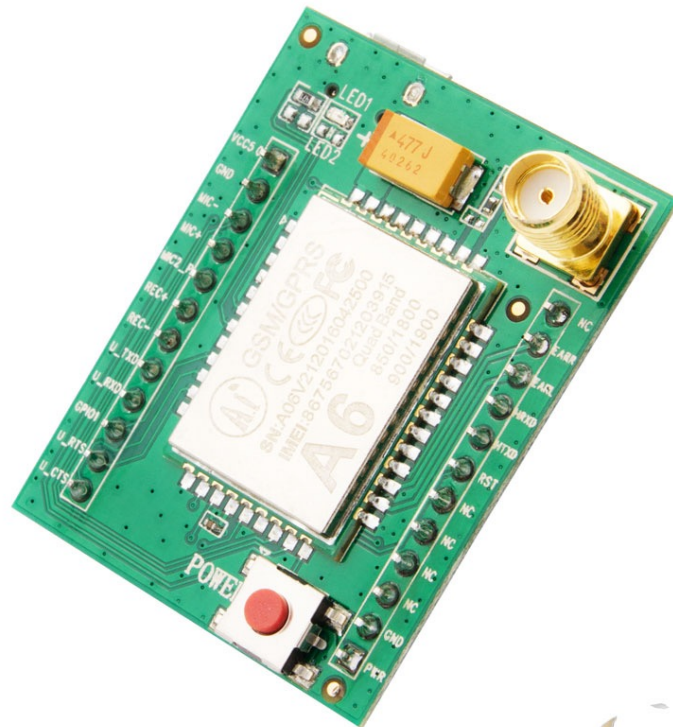


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Technical Informations:

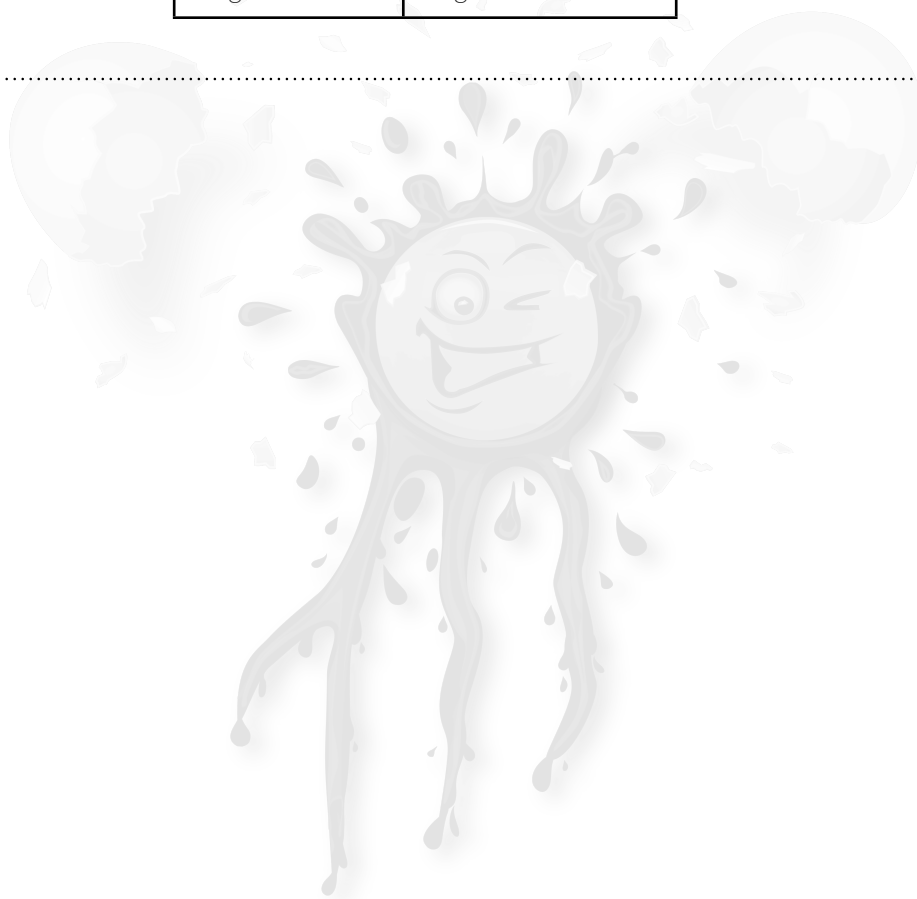
AI Thinker GSM/GPRS quad-band Module

Features:

- 
- ✓ Power Voltage 5.0V
 - ✓ Standby Current 8mA
 - ✓ Quad Band Support
 1. 850 MHz. Band
 2. 900 MHz. Band
 3. 1800 MHz. Band
 4. 1900 MHz. Band
 - ✓ GPRS Class 10
 - ✓ GPRS data service
 1. up to 85.6 Kbps downstream
 2. up to 42.8 Kbps. upstream
 - ✓ Voice call support
 - ✓ Textmessage SMS support
 - ✓ GPRS location support
 - ✓ GSM Standard Support
 1. GSM 07.07 Standard
 2. GSM 07.05 Standard
 - ✓ 2 UART Interface
 1. AT command UART
 2. download / upload UART
 - ✓ 3 GPIO Interface (only module)
 - ✓ 2.8V GPIO Level
 - ✓ 24 Pin connector 2.54 mm Pitch
 - ✓ Antenna connector
 - ✓ Power Switch
 - ✓ USB Micro connector (only 5V power supply)

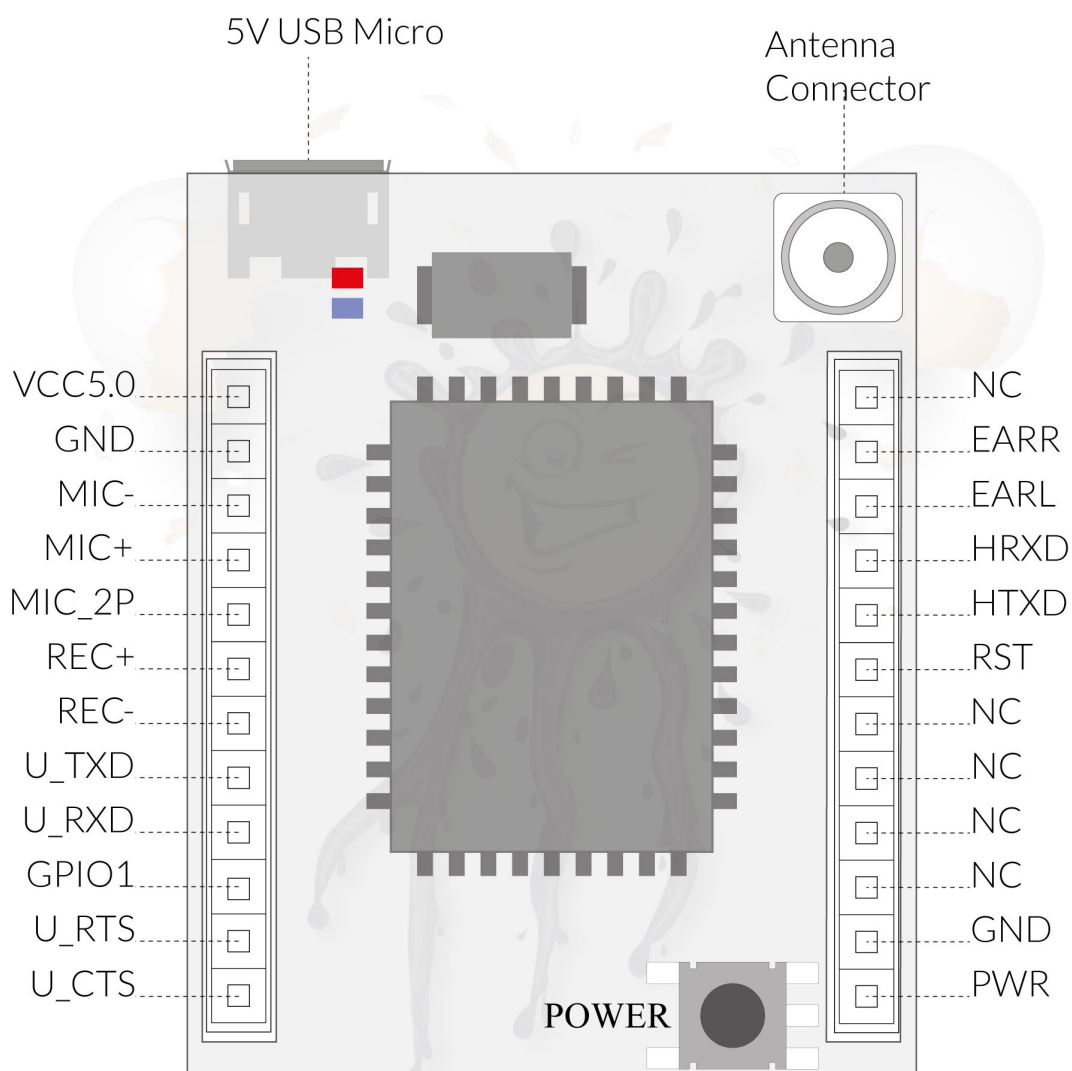
Dimensions:

length	44 mm
width	32 mm
height	18 mm
weight	16 gr.



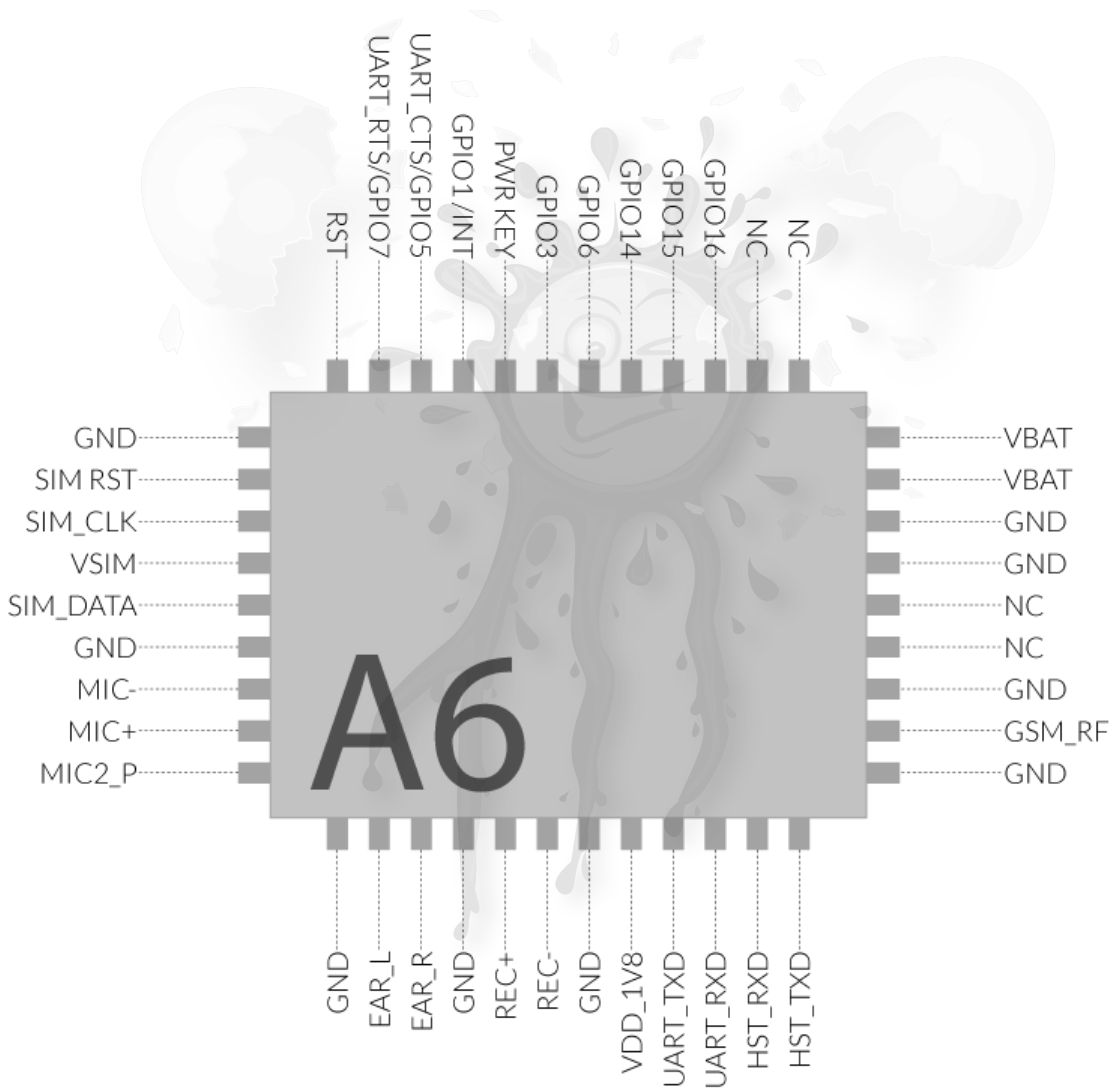
Board Pinout:

AI Thinker Quad Band GSM GPRS Board Pinout



Board Pinout:

AI Thinker Quad Band GSM GPRS Module Pinout



Basic Setup AT Mode

Serial Port Settings:

Parameter	Value
Baudrate	115200
Data Bits	8
Parity	none
Stop Bits	1
Terminal Mode	Line Mode
Line Mode	CR + LF

AT Command Overview

AT Commands are based on GSM 07.07 Standard, also extended AT Commands for AI Thinker GSM GPRS Quad Band Module support.

Convention

The following style conventions and terminology are used throughout this document.

Name	Description
AT	Attention Command
TE	Terminal equipment
TA	Terminal adapter
MT	Mobile termination
MT Message	Mobile terminated message
MO Message	Mobile originated message
SMS	Short message services
USSD	Unstructured supplementary services data
CC	Call control
SS	Supplementary services
CRSS	Call related Supplementary services
ID	Identification
NW	Network

Syntax Format of documentation

Syntax Format Description:

The “T” in the status table means the AT command type is the “TEST”.

The “R” in the status table means the AT command type is the “READ”.

The “S” in the status table means the AT command type is the “SET”.

The “E” in the status table means the AT command type is the “EXE”.

The “Y” in the status table means the AT command has been finished.

The “N” in the status table means that the work for this AT command has not been started.

The “P” in the status table means a part of all the functions of the AT command has been finished, leaving the remaining undone.

Test command

[If this command supports ‘test’, the instance should be inputted here.]

Description

...

Response

...

Read command

[If this command supports ‘read’, the instance should be inputted here.]

Description

...

Response

...

Parameter

...

Set command

[If this command supports ‘Set’, the instance should be inputted here.]

Description

...

Response

...

Parameter

...

Exe command

[If this command supports ‘exe’, the instance should be inputted here.]

Description

...

Response

...

Parameter

...

Standard References

V.25ter : Serial asynchronous automatic dialing and control ([click here for details](#))

3GPP TS 27.007 AT command set for User Equipment (UE) 2G 3G LTE ([click here for details](#))

3GPP TS 27.005 Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS) 2G 3G LTE ([click here for details](#))

AT Command Syntax

The "AT" or "at" prefix must be set at the beginning of each command line.

To terminate a command line enter <CR>. Commands are usually followed by a response that includes "<CR><LF><response><CR><LF>".

Throughout this document, only the responses are presented, <CR><LF> are omitted intentionally.

AT Command type	Syntax	Description
Test command	AT+CXXX=?	The mobile equipment returns the list of parameters and value ranges set with the corresponding Write command or by internal processes.
Read command	AT+CXXX?	This command returns the currently set value of the parameter or parameters.
Set command	AT +CXXX=<...>	This command sets user-definable parameter values.
Exec(ution) command	AT+CXXX	The execution command reads non-variable parameters determined by internal processes.

AT Command Syntax is based on V.25ter : Serial asynchronous automatic dialing and control.

Syntax rules

- 1) Command line must begin with "AT" or "at", otherwise it would be treated as invalid command line except "A/" and "+++". Especially, command line begin with "aT" or "At" are also invalid.
- 2) There is only one "at"/"AT" when it includes several commands which should be at the beginning of a command line.
- 3) Basic command can be followed either by basic command or by extended command in one command line. So does the extended command, but there should be a ";" between the extended command and others.
- 4) The maximum length of the command name is 20 bytes.
- 5) The maximum length of the parameter string is 80 bytes.
- 6) There should be no more than 256 characters in one command line including characters defined by S5 and S3.
- 7) There should be no spacing in "at"/"AT" and command name.
- 8) The command line is ended with the character defined by command S3;
- 9) If error happened during parser it return error and none of the command will be execute in the command line; but if error happened when execute one of a commands in a command line, system will return error and the rest part of the command line will be discard.
- 10) Command line will be break when receiving a new one, the rest part and the new command line will both be discarded.
- 11) The character of command line is not sensitive;
- 12) 'a' 'z' 'A' 'Z' '1' '9', '&', '%', '\\', '!', ':', ';', ',', '/', '_', are available for command name.
- 13) Terminate character ";" is optional for each commands except for "D". At the same time, "#" can also terminate the "D" command at the data service.
- 14) Valid Dial numbers are:

1 2 3 4 5 6 7 8 9 * = ; # + > A B C D

And also the modifier such as:

, T P ! W @

- 15) If the basic command's parameter is omitted, parser will set the default value to 0.
- 16) There should be no spacing in numeric parameter.
- 17) Unicode string in the command line should be converted to hex string.
- 18) If the string type parameter of a command include the character "'", '\and '"', it need to append transferred meaning character "\" before it.

Examples

Basic command

ATOI

```
Ai Thinker  
A6 MODULE  
VERSION 1.0  
OK
```

Extended command +COPS?

ATI+COPS?

```
+COPS: 0,0,"CMCC"  
OK
```

Extended command +CIMI;+COPS?

The +CIMI command ends with ';' and +COPS? Command at the end of the command line," is omitted in the last one

AT+CIMI ;+COPS?

```
460000381603828  
+COPS: 0,0,"CMCC"  
OK
```

Extended command +CIMI;I

AT+CIMI ;I

```
460000381603828  
Ai Thinker  
OK
```


Extended command I,D;+CIMI

ATID13240089312;+CIMI

Ai Thinker
A6 MODULE
VERSION 1.0
OK
CONNECT

Extended command I, E, +CIMI, E1, I, +COPS?

ATIE+CIMI;E1I+COPS?

Ai Thinker
A6 MODULE

VERSION 1.0

460001255014827

Ai Thinker
A6 MODULE

VERSION 1.0+COPS: 0,0,"CMCC"
OK

General Commands

The AT Commands described in this chapter allow the external application to access system related information in the A6 AT module.

AT

Return to online command state from online data state.

AT

OK

AT+CPOF Switch off mobile station

Return to online command state from online data state.

AT+CPOF=?

OK

+CME ERROR

AT+CPOF

Description:

Device will be switched off (power down mode)

Do not send any command after this command.

Response

+CPOF: MS OFF OK

+CME ERROR

Test this command will lead to the dev board switch off. But as soon as the board switches off, it will automatically power on.

ATSO automatic answering

The S-parameter controls the automatic answering feature of the DCE. If set to 0, automatic answering is disabled. If set to a non-zero value, the DCE shall cause the DCE to answer when the incoming call ringing has occurred the number of times indicated by the value.

Test Command:

ATSO=?

0-255

OK

on error:

ERROR

Read Command:

ATSO?

<n>

OK

on error:

ERROR

Set Command:

ATSO=[n]

OK

on error:

+CME ERROR <err>

n Parameter:

- auto answering time range from 0~255
- time range 0 disable auto answering

ATS3 Response formatting character

The S-parameter represents the decimal IA5 value of the character recognized by the DCE from the DTE to terminate an incoming command line. It is also generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S4 parameter. .

Read Command:

ATS3?

<n>

OK

on error:

ERROR

Set Command:

ATS3=<n>

OK

on error:

+CME ERROR <err>

n Parameter:

- Command line termination character 0-31
- default 13

Remark:

Using other value than 13 may cause problems when entering commands.

If ATS3,ATS4,ATS5 be set to the same value, it may be cause some problem.

Reference:

V.25ter : Serial asynchronous automatic dialing and control ([click here for details](#))

ATS4 Response formatting character

This S-parameter represents the decimal IA5 value of the character generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter.

Read Command:

ATS4?

<n>

OK

on error:

ERROR

Set Command:

ATS4=<n>

OK

on error:

+CME ERROR <err>

n Parameter:

- Command line termination character 0-31
- default 10

Remark:

Using other value than 13 may cause problems when entering commands.

If ATS3, ATS4, ATS5 be set to the same value, it may be cause some problem.

Reference:

V.25ter : Serial asynchronous automatic dialing and control ([click here for details](#))

+++ Switch from online data or PPP mode to CMD mode

Return to online command state from online data state.

Exec Command:

+++

OK

<Note>

on error:

ERROR

Reference:

V.25ter : Serial asynchronous automatic dialing and control ([click here for details](#))

ATO Switch from command mode to data mode/PPP online mode

Causes the DCE to return to online data state and issue a CONNECT or CONNECT text result code.

Exec Command:

ATO [<value>]

Responses:

If connection is not successfully resumed

NO CARRIER

DCE returns to data mode from command mode

CONNECT<text>

value Parameter:

- [0] Switch from command mode to data mode

Reference:

V.25ter : Serial asynchronous automatic dialing and control ([click here for details](#))

AT&F Set all current parameters to manufacturer defaults

The command instructs the DCE to set all parameters to default values specified by the manufacture, which may take hardware configuration switches and other manufacture-defined criteria into consideration.

Read Command:

AT&F?

<n>

OK

Responses:

returns the list of current active alarm settings in the MT

Exec Command:

AT&F [<value>]

Responses:

valid value

OK

unsupported value

ERROR

value Parameter:

- [0] set all TA parameters to manufacturer defaults.
- (other) reserved for manufacture proprietary use.

Notes:

- List of parameters reset to manufacturer default can be found in Section.
- In addition to the default profile, you can store an individual one with AT&W. To alternate between the two profiles enter either ATZ (loads user profile) or AT&F (restores factory profile).
- Configuration table see Appendix B

Reference:

V.25ter : Serial asynchronous automatic dialing and control ([click here for details](#))

ATV Set result code format mode

The setting of this parameter determines the contents of the header and trailer transmitted with result codes and information responses. It also determines whether result codes are transmitted in a numeric form or an alphabetic (or "verbose") form. The text portion of information responses is not affected by this setting.

Exec Command:

ATV[<value>]

Responses:

If value is 0 (because numeric response text is being used).

0

supported value 1

OK

For unsupported values (if previous value was V0)

4

For unsupported values (if previous value was V1)

ERROR

value Parameter:

- [0] Information response: <text><CR><LF>
Short result code format: <numeric code><CR>
Information response: <CR><LF><text><CR><LF>
- [1] Long result code format: <CR><LF><verbose code><CR><LF>

Reference:

V.25ter : Serial asynchronous automatic dialing and control ([click here for details](#))

ATE Enable command echo

This setting determines whether or not the TA echoes characters received from TE during command state.

Exec Command:

ATE [<value>]

Responses:

If value is valid

OK

On unsupported values

ERROR

value Parameter:

- [0] Echo mode off
- [1] Echo mode on

Notes:

In case of using the command without parameter, <value> is set to 0.

Reference:

V.25ter : Serial asynchronous automatic dialing and control ([click here for details](#))

AT&W save current configuration as user defined profile

This command stores the currently set parameters to a user defined profile in the non-volatile memory .

Exec Command:

AT&W[<value>]

Responses:

If value is valid

OK

On unsupported values

ERROR

value Parameter:

- [0] Profile Number

Notes:

- The user defined profile will be restored automatically after power-up. Use ATZ to restore user profile and AT&F to restore factory settings. Until the first use of AT&W, ATZ works as AT&F.
- A list of parameters stored to the user profile can be found in Section chapter 29, appendix B, AT Command Settings storable with AT&W.

ATQ configure result code presentation mode

This parameter setting determines whether or not the DCE transmits result codes to the DTE.

Exec Command:

ATQ[<value>]

Responses:

If value is valid

OK

if result code suppressed

-None-

if result code suppressed

-None-

On unsupported values

ERROR

value Parameter:

- [0] DCE transmits result code.
- [1] Result codes are suppressed and not transmitted

Notes:

- ATQ without value will not change current ATQ settings and response is OK

ATX configure connect result code format and call monitoring

This parameter setting determines whether or not the DCE detects the presence of dial tone and busy signal and whether or not DCE transmits particular result codes.

Exec Command:

ATX[<value>]

Responses:

If value is valid

OK

On unsupported values

+ CME ERROR: [ERR_ID]

value Parameter:

- [0] CONNECT result code only returned; dial tone and busy detection are both disable.
- [1] CONNECT <text> result code only returned; dial tone and busy detection are both disable.
- [2] CONNECT <text> result code returned; dial tone detection is enabled, busy detection is disabled.
- [3] CONNECT <text> result code returned, dial tone detection is disabled, busy detection is enabled.
- [4] CONNECT <text> result code returned; dial tone and busy detection are both enabled.

AT+CFUN configure phone functionality

Set command currently can only be used to switch off and on the CSW platform.

Test Command:

AT+CFUN=?

<n>

OK

n represents list of valid values

on error:

+ CME ERROR: [ERR_ID]

Read Command:

AT+CFUN?

restart CSW platform

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CFUN=<fun>[,<rst>]

Responses:

If value is valid

OK

On unsupported values

+ CME ERROR: [ERR_ID]

<fun> value Parameter:

- 0 Minimum functionality
- 1 Full functionality
- 2 *Disable phone transmit RF circuits only*
- 3 *Disable phone receive RF circuits only*
- 4 *Disable phone both transmit and receive RF circuits*
- 5 *Switch on CSW platform*
- 6 *Switch off CSW platform*

Notes:

- currently only fun Parameter 0 and 1 are supported

<rst> value Parameter:

- [0] fun without reset MT
Do not reset the MT before setting it to <fun> power level.
NOTE: this shall be always default when <rst> is not given.
- [1] Reset the MT before setting it to <fun> power level.

Notes:

- When <fun> is to 0 and 1, the second parameter <rst> is ignored.
- *For CSW only do the de-registering when switch off, when parameter is set by 0 or 1, CSW will operate the network job independent.*
- *If AT modem can't register the network when parameter is set to 5, please check pin1 status.*

AT+CMEE configure report mobile equipment error

This command controls the presentation of the result code +CME ERROR: <err> that indicates errors relating to ME functionality.

Test Command:

AT+CMEE=?

<n>

OK

n represents list of valid values

on error:

+ CME ERROR: [ERR_ID]

Read Command:

AT+CMEE?

<value>

OK

value represent actual CMEE state

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CMEE=<n>

Responses:

If value is valid

OK

On unsupported values

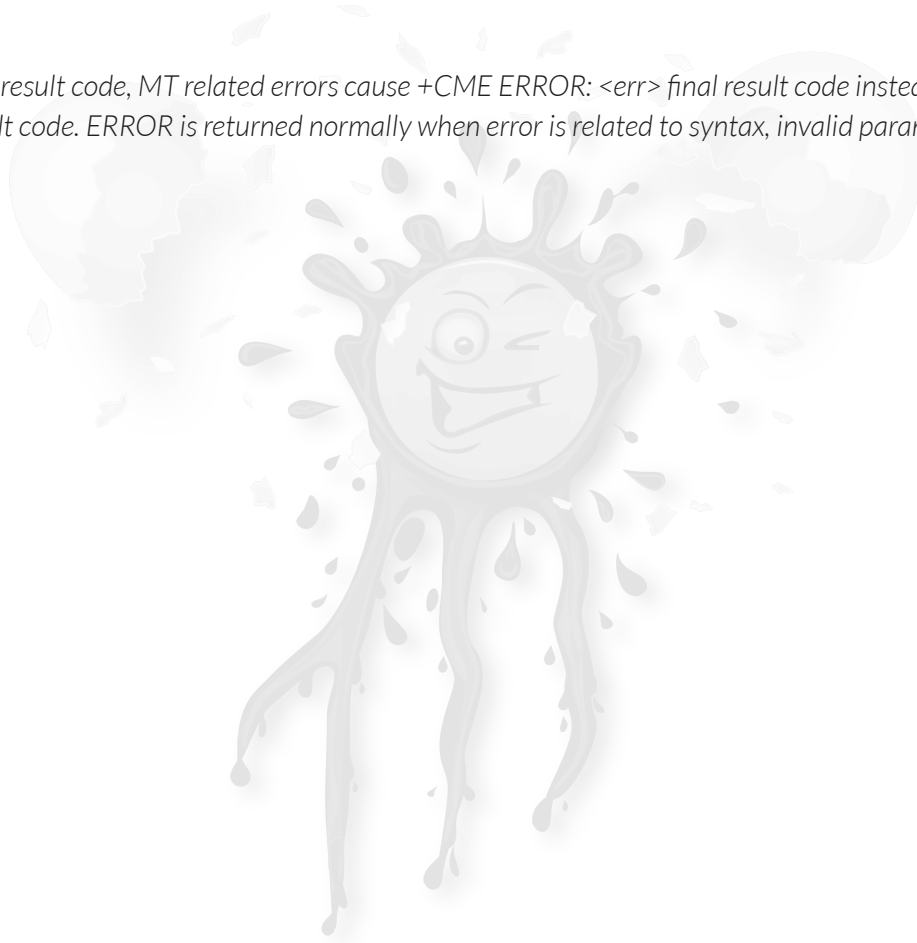
+ CME ERROR: [ERR_ID]

value Parameter:

- [0] Disable +CME ERROR: <err> code and use ERROR instead
- [1] Enable +CME ERROR: <err> code and use numeric <err> values (refer next sub clause)
- [2] Enable +CME ERROR: <err> result code and use verbose <err> values refer next sub clause)

Notes:

When enable the result code, MT related errors cause +CME ERROR: <err> final result code instead of the regular ERROR final result code. ERROR is returned normally when error is related to syntax, invalid parameters, or TA functionality.



AT+CSCS Select TE character set

Write command informs DCE which character set <chset> is used by the TE. DCE is then able to convert character strings correctly between TE and ME character sets.

Test Command:

AT+CSCS=?

<n>

OK

n represents list of valid values

on error:

+ CME ERROR: [ERR_ID]

Read Command:

AT+CSCS?

<value>

OK

value represent actual CME state

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CSCS=<n>

Responses:

If value is valid

OK

On unsupported values

+ CME ERROR: [ERR_ID]

value Parameter:

- ["GSM"] GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems.
- ["UCS2"] 16-bit universal multiple-octet coded character set (ISO/IEC 10646 [32]); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99.
- ["HEX"] Hexadecimal mode. No character set used; the user read or write directly hexadecimal values.
- ["PCCP936"] PC Set.

Notes:

Value Parameter has to be passed as String "value"



AT+CMUX Multiplexing mode

This command is used to enable the multiplexing protocol control channel.

Test Command:

AT+CMUX=?

<n>

OK

n represents list of valid values

on error:

+ CME ERROR: [ERR_ID]

Read Command:

AT+CMUX?

<value>

OK

value represent actual CMUX state

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CMUX=<n>

Responses:

If value is valid

OK

On unsupported values

+ CME ERROR: [ERR_ID]

value Parameter:

- [0] basic mode multiplexing protocol control channel

Notes:

At present only basic mode is supported



AT+ICF DTE DCE character framing

This extended-format compound parameter is used to determine the local serial port start-stop (asynchronous) character framing that the DCE shall use while accepting DTE commands and while transmitting information text and result code, if this is not automatically determined

Test Command:

AT+ICF=?

<format>,<parity>

OK

response represents list of supported character framing values

on error:

+ CME ERROR: [ERR_ID]

Read Command:

AT+ICF?

<format>,<parity>

OK

value represent actual configuration of ICF state

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+ICF=[<format>[' <parity>]]

Responses:

If value is valid

OK

On unsupported values

ERROR

format Parameter:

- [0] auto detect
- [1] 8 Data 2 Stop
- [2] 8 Data 1 Parity 1 Stop
- [3] 8 Data 1 Stop
- [4] 7 Data 2 Stop
- [5] 7 Data 1 Parity 1 Stop
- [6] 7 Data 1 Stop

parity Parameter:

- [0] Odd
- [1] Even
- [2] Mark
- [3] Space

Notes:

Implementation of this parameter is optional. If the format specified is not supported by the DCE, an ERROR result code shall be returned.

AT+IPR configure local baudrate

This numeric extended-format parameter specifies the data rate at which the DCE will accept commands, in addition to 1200 bit/s or 9600 bit/s .

Test Command:

AT+IPR=?

(2400,4800,9600,14400,19200,28800,33600,38400,57600,115200,230400,460800,921600)

OK

response represents auto detected baud rate and list of fixed baud rates

on error:

+ CME ERROR: [ERR_ID]

Read Command:

AT+IPR?

<value>

OK

value represent actual baud rate

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+IPR=<baudrate>

Responses:

If value is valid

OK

On unsupported values

ERROR

baudrate Parameter:

- [2400] 2400 bits/s
- [4800] 4800 bits/s
- [9600] 9600 bits/s
- [14400] 14400 bits/s
- [19200] 19200 bits/s
- [28800] 28800 bits/s
- [33600] 33600 bits/s
- [38400] 38400 bits/s
- [57600] 57600 bits/s
- [115200] 115200 bits/s
- [230400] 230400 bits/s
- [460800] 460800 bits/s
- [921600] 921600 bits/s

Notes:

The <baudrate> value specified shall be the rate in bits per second at which the DTE-DCE interface should operate, e.g. "19200" or "115200". The rates supported by a particular DCE are manufacturer-specific; operation. Rates which include a non-integral number of bits per second should be truncated to the next lower integer (e.g. 134.5 bit/s should be specified as 134; 45.45 bit/s should be specified as 45). If unspecified or set to 0, automatic detection is selected for the range determined by the DCE manufacturer

AT+GSN request TA serial number identification

This command request TA serial number identification

Test Command:

AT+GSN=?

OK

Read Command:

AT+GSN

<sn>

OK

value represent serial number of device

on error:

+ CME ERROR: [ERR_ID]

Notes:

Please refer to GSM 07.07 Standard.

AT+GMM request TA model identification

This command request TA model identification (may equal to +CGMM)

Test Command:

AT+GMM=?

OK

Read Command:

AT+GMM

<model>

OK

value represent model identification of device

on error:

+ CME ERROR: [ERR_ID]

Notes:

Please refer to GSM 07.07 Standard.

AT+CGMM request TA model identification

This command request TA model identification (may equal to +CGMM)

Test Command:

AT+CGMM=?

OK

Read Command:

AT+CGMM

<model>

OK

value represent model identification of device

on error:

+ CME ERROR: [ERR_ID]

Notes:

Please refer to GSM 07.07 Standard.

AT+GMR Request revision identification

The command request TA revision identification (may equal to +CGMR)

Test Command:

AT+GMR=?

OK

Read Command:

AT+GMR

<revision>

OK

value represent revision of device

on error:

+ CME ERROR: [ERR_ID]

Notes:

Please refer to GSM 07.07 Standard.

AT+CGMR Request revision identification

This command causes the TA to return one or more lines of information text <revision>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the version, revision level or date, or other pertinent information of the MT to which it is connected to. Typically, the text will consist of a single line containing the version of the product, but manufacturers may choose to provide more information if desired. Refer subclause 9.2 for possible <err> values.

Test Command:

AT+CGMR=?

OK

Read Command:

AT+CGMR

<revision>

OK

value represent revision of device

on error:

+ CME ERROR: [ERR_ID]

Notes:

Please refer to GSM 07.07 Standard.

AT+GMI Request TA manufacturer identification

Request TA manufacturer identification (may equal to +CGMI).

Test Command:

AT+GMI=?

OK

Read Command:

AT+GMI

<manufacturer>

OK

value represent manufacturer (Ai Thinker Co.LTD) of device

on error:

+ CME ERROR: [ERR_ID]

Notes:

Please refer to GSM 07.07 Standard.

AT+CGMI Request manufacturer identification

This command causes the TA to return one or more lines of information text <manufacturer>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the manufacturer of the MT to which it is connected to. Typically, the text will consist of a single line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired. Refer subclause 9.2 for possible <err> values.

Test Command:

AT+CGMI=?

OK

Read Command:

AT+CGMI

<manufacturer>

OK

value represent manufacturer (Ai Thinker Co.LTD) of device

on error:

+ CME ERROR: [ERR_ID]

Notes:

Please refer to GSM 07.07 Standard.

ATI Request manufacturer specific information about the TA

Request manufacturer specific information about the TA (software cannot use this command to determine the capabilities of a TA)

Test Command:

ATI=?

+ CME ERROR: [ERR_ID]

Read Command:

ATI

<value>

OK

value represent module name and module version

on error:

+ CME ERROR: [ERR_ID]

Notes:

Please refer to GSM 07.07 Standard.

AT+CIMI Request international mobile subscriber identity

This command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual active application in the UICC (GSM or USIM) or SIM card which is attached to MT. Refer subclause 9.2 for possible <err> values.

Test Command:**AT+CIMI=?**

OK

Read Command:**AT+CIMI**

<value>

OK

value represent IMSI of TA

on error:

+ CME ERROR: [ERR_ID]**Notes:***If no SIM is installed an error will occur*

AT+EGMR Read and write IMEI

This command read IMEI from factory partition,also can write IMEI to factory partition.

Test Command:

AT+EGMR=?

<value>

OK

value represent mode, format, value

Set Command:

AT+EGMR=<mode>,<format>,<data>

<IMEI>

OK

value represent IMEI of device

on error:

+ CME ERROR: [ERR_ID]

modeParameter:

- [1] write mode
- [2] read mode

format Parameter:

- [7] 7 only can set this value,to match ap

data Parameter:

- IMEI number

Notes:

AT+EGMR=2,7 will response actual IMEI

AT+CALA Set an alarm time

The command is used to set/list alarms or date/time in the ME.

Test Command:

AT+CALA=?

<value>

OK

Test command returns supported array index values (1-15), alarm types, and maximum length of the text to be displayed.

Read Command:

AT+CALA?

<value>

OK

Read command returns list of current active alarm settings in the MT

if no current alarm settings available:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CALA=<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]

<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]

OK

Set command sets an alarm time in the MT. There can be an array of different types of alarms, and each alarm may cause different text to be displayed in the MT display

on error:

+ CME ERROR: [ERR_ID]

time Parameter:

- string type value, the format is "yy/mm/dd,hh:mm:ss+zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -12...+13). E.g. 6th of May 2005, 22:10:00 GMT+2 hours equals to "05/05/06,22:10:00+08"

Note: if <time> equals current date and time or is set to an earlier date, returns +CME ERROR: 21.

n Parameter:

- Integer type value Indicating the index (array index) of the alarm. Default is 1, in the range of 1~15.

type:

- Integer type value indicating the type of the alarm (e.g. sound, volume, LED); values and default is 0.

text:

- String type value indicating the text to be displayed when alarm time is reached; maximum length

length

- Integer type value indicating the maximum length of <text>

recurr:

- String type value indicating day of week for the alarm in one of the following formats: "<1..7>[,<1..7>[...]]"
 - Sets a recurrent alarm for one or more days in the week. The digits 1 to 7 corresponds to the days in the week, Monday (1), ..., Sunday (7). Example: The string "1,2,3,4,5" may be used to set an alarm for all weekdays. "0" – Sets a recurrent alarm for all days in the week.

rlength

- Integer type value indicating the maximum length of <recurr>

silent

- Integer type value indicating if the alarm is silent or not. If set to 1 the alarm will be silent and the only result from the alarm is the unsolicited result code +CALV. If set to 0 the alarm will not be silent

Notes:

If you want set a recycle alarm, just import the time

If don't input recur , it will consider it not a recyclable alarm

If don't input index, the alarm index is 1 will be substitute

String format of alarm: "yy/MM/dd,hh:mm:ss".

Maximum number of alarms is 15. Seconds are not taken into account.

Example:

AT+CALA="27/01/08,10:12:13",1,0,"alarm1" will set alarm for 8. Jan 2027 at 10:12:13

AT+VGR Receive gain selection

This refers to the amplification by the TA of audio samples sent from the TA to the computer.

Test Command:

AT+VGR=?

<value>

OK

value represent possible amplification (5-8).

Read Command:

AT+VGR=?

<value>

OK

value represent actual amplification

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+VGR=<value>

<value>

OK

value represent actual amplification

on error:

+ CME ERROR: [ERR_ID]

value Parameter:

- [0] automatic amplification
- [5] amplification
- [6] amplification
- [7] amplification
- [8] amplification mute

AT+VGT Transmit gain selection

This refers to the amplification by the TA of audio samples sent from the computer to the TA.

Test Command:

AT+VGT=?

<value>

OK

value represent possible amplification (0-16).

Read Command:

AT+VGT?

<value>

OK

value represent actual amplification (default value 1)

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+VGR=<value>

<value>

OK

value represent actual amplification

on error:

+ CME ERROR: [ERR_ID]

value Parameter:

- [0] automatic amplification
- [1,...,16] amplification

AT+CLVL Loudspeaker volume level

This command is used to select the volume of the internal loudspeaker of the MT EARR and EARL Pin.

Test Command:

AT+CLVL=?

<value>

OK

value represent possible amplification (default value 16).

Read Command:

AT+CLVL?

<value>

OK

value represent actual amplification (default value 6)

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CLVL=<value>

<value>

OK

value represent actual amplification

on error:

+ CME ERROR: [ERR_ID]

value Parameter:

- [5] amplification
- [6] amplification
- [7] amplification
- [8] amplification

AT+CMUT Mute control

This command is used to enable and disable the uplink voice muting during a voice call.

Test Command:

AT+CMUT=?

<value>

OK

value represent possible mute control values (0,1).

Read Command:

AT+CMUT?

<value>

OK

value represent actual mute value (default value 0)

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CMUT=<value>

<value>

OK

value represent actual mute state

on error:

+ CME ERROR: [ERR_ID]

value Parameter:

- [0] mute disabled
- [1] mute enabled

AT+CCLK Real time clock

Configures the real-time clock date and time of the MT.

Test Command:

AT+CCLK=?

<time>

OK

time represent possible real time clock settings.

Read Command:

AT+CCLK?

<time>

OK

time represent actual date, time and time zone

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CCLK=<time>

<time>

OK

value represent actual date, time and time zone

on error:

+ CME ERROR: [ERR_ID]

time Parameter:

- string type value, the format is "yy/mm/dd, hh:mm:ss+zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -12...+13). E.g. 6th of May 2005, 22:10:00 GMT+2 hours equals to "05/05/06,22:10:00+08"

Note: if <time> equals current date and time or is set to an earlier date, returns +CME ERROR: 21.

AT+CALD Delete one alarm

Action command deletes an alarm in the MT .

Test Command:

AT+CALD=?

<value>

OK

value returns supported array index values of alarm array

Set Command:

AT+CALD=<value>

<value>

OK

value represent index of alarm array

on error:

+ CME ERROR: [ERR_ID]

value Parameter:

- [1,...,15] actual index of alarm array

AT+CBC Battery charging / discharging and charge control

This command is used to set/list alarms or date/time in the ME.

Test Command:

AT+CBC=?

<bcs>, <bcl>

OK

value represent list of supported bcs (state of adapter), and list of bcl (state of load capacity)

Read Command:

AT+CBC?

<bcs>, <bcl>

OK

value represent actual bcs (battery connection status) and bcl (battery charge level)

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CBC=<bcs>,<bcl>

<bcs>, <bcl>

OK

value represent configured bcs (battery connection status) and bcl (battery charge level)

on error:

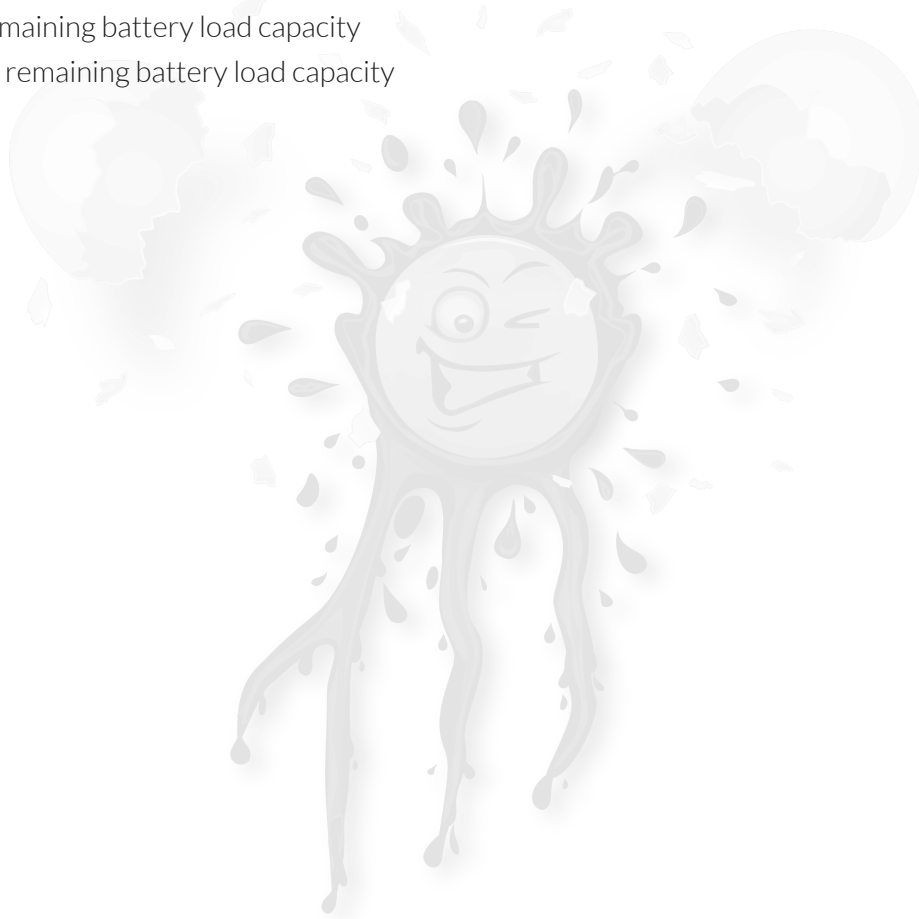
+ CME ERROR: [ERR_ID]

bcs Parameter:

- [0] No charging adapter is connected
- [1] Charging adapter is connected
- [2] Charging adapter is connected, charging in progress
- [3] Charging adapter is connected, charging has finished
- [4] Charging error, charging is interrupted
- [5] False charging temperature, charging is interrupted while temperature is beyond allowed range

bcl Parameter:

- [0] 0% of remaining battery load capacity
- [10] 10% of remaining battery load capacity
- [20] 20% of remaining battery load capacity
- [30] 30% of remaining battery load capacity
- [40] 40% of remaining battery load capacity
- [50] 50% of remaining battery load capacity
- [60] 60% of remaining battery load capacity
- [70] 70% of remaining battery load capacity
- [80] 80% of remaining battery load capacity
- [90] 90% of remaining battery load capacity
- [100] 100% of remaining battery load capacity



AT+CBCM Battery Capacity changed status (not supported)

This command control information display when battery capacity changed.

Test Command:

AT+CBCM=?

<value>

OK

value represent list of supported states (0,1)

Read Command:

AT+CBCM?

<value>

OK

value represent actual configuration (default 0)

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CBC=<value>

<value>

OK

value represent configured bcs (battery connection status) and bcl (battery charge level)

on error:

+ CME ERROR: [ERR_ID]

bcs Parameter:

- [0] battery status event will not be suppressed
- [1] battery status event will be reported

AT+CMER Mobile Termination event reporting

This command set or query the sending mode of unsolicited result codes from TA to TE.

Test Command:

AT+CMER=?

<mode>,<keyp>,<disp>,<ind>,<bfr>

OK

values represent list of supported modes

Read Command:

AT+CMER?

<mode>,<keyp>,<disp>,<ind>,<bfr>

OK

values represent actual configuration of Mobile Termination event reporting

on error:

+ CME ERROR: [ERR_ID]

Set Command:

AT+CMER=<mode>,<keyp>,<disp>,<ind>,<bfr>

<mode>,<keyp>,<disp>,<ind>,<bfr>

OK

values represent configured Mobile Termination event reporting

on error:

+ CME ERROR: [ERR_ID]

mode Parameter:

- [0] buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be buffered in some other place or the oldest ones can be discarded
- [1] discard unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE
- [2] buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE

- [3] forward unsolicited result codes directly to the TE; TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode

key Parameter:

- [0] no keypad event reporting
- [1] keypad event reporting using result code +CKEV: <key>,<press>. <key> indicates the key (refer IRA values defined in table in subclause "Keypad control +CKPD") and <press> if the key is pressed or released (1 for pressing and 0 for releasing). Only those key pressings, which are not caused by +CKPD shall be indicated by the TA to the TE.

NOTE 1: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.

- [2] keypad event reporting using result code +CKEV: <key>,<press>. All key pressings shall be directed from TA to TE.

NOTE 2: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.

disp Parameter:

- [0] no display event reporting
- [1] display event reporting using result code +CDEV: <elem>,<text>. <elem> indicates the element order number (as specified for +CDIS) and <text> is the new value of text element. Only those display events, which are not caused by +CDIS shall be indicated by the TA to the TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS
- [2] display event reporting using result code +CDEV: <elem>,<text>. All display events shall be directed from TA to TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS

ind Parameter:

- [0] no indicator event reporting
- [1] indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator. Only those indicator events, which are not caused by +CIND shall be indicated by the TA to the TE
- [2] indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE

bfr Parameter:

- [0] TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered
- [1] TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode>
- [1,...,3] is entered (OK response shall be given before flushing the codes)

AT+CEER Extended error report

This command causes the TA to return one or more lines of information text <report>, determined by the MT manufacturer, which should offer the user of the TA an extended report of the reason for

- the failure in the last unsuccessful call setup (originating or answering) or in-call modification;
- the last call release;
- the last unsuccessful GPRS attach or unsuccessful PDP context activation;
- the last GPRS detach or PDP context deactivation.

Typically, the text will consist of a single line containing the cause information given by GSM/UMTS network in textual format.

Test Command:

AT+CEER=?

OK

Set Command:

AT+CEER

<value>

OK

value represent maximum of chars in error report

on error:

+ CME ERROR: [ERR_ID]

AT+CPAS Phone activity status

This command returns the activity status <pas> of the MT. It can be used to interrogate the MT before requesting action from the phone. Refer subclause 9.2 for possible <err> values.

Test Command:

AT+CPAS=?

<value>

OK

value represent list of supported phone activity states

Set Command:

AT+CBC=<value>

<value>

OK

value represent configured phone activity states

on error:

+ CME ERROR: [ERR_ID]

value Parameter:

- [0] ready (MT allows commands from TA/TE)
- [1] unavailable (MT does not allow commands from TA/TE)
- [2] unknown (MT is not guaranteed to respond to instructions)
- [3] ringing (MT is ready for commands from TA/TE, but the ringer is active)
- [4] call in progress (MT is ready for commands from TA/TE, but a call is in progress)
- [5] asleep (MT is unable to process commands from TA/TE because it is in a low functionality state) also all other values below 128 are reserved by the present document

AT+RST Soft Reset

This command executes a soft reset

Exec Command:

AT+RST

OK

SIM/PBK Commands

The AT Commands described in this chapter are related to the SIM card. Therefore SIM card must be installed before.

AT+CPIN PIN Authentication

Set command sends to the MT a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).

Test Command:

AT+CPIN=?

OK

Read Command:

AT+CPIN?

<value>

OK

value returns an alphanumeric string indicating whether some password is required or not

on error:

+ CME ERROR: [ERR_ID]

Set Command:

Set command sends to the MT a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards MT and an error message, +CME ERROR, is returned to TE. Refer subclause 9.2 for possible <err> values. If the PIN required is SIM PUK, the second pin is required. This second pin, <newpin>, is used to replace the old pin in the active application in the UICC (GSM or USIM) or SIM card.

AT+CPIN=value

OK

on error:

```
+ CME ERROR: [ERR_ID]
```

value States:

- READY MT is not pending for any password
- SIM PIN MT is waiting UICC/SIM PIN to be given
- SIM PUK MT is waiting UICC/SIM PUK to be given
- SIM PIN2 MT is waiting active application in the UICC (GSM or USIM) or SIM card PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that MT does not block its operation)
- SIM PUK2 MT is waiting active application in the UICC (GSM or USIM) or SIM card PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that MT does not block its operation)

Notes:

Commands which interact with MT that are accepted when MT is pending SIM PIN, SIM PUK, or PH-SIM are: +CGMI, +CGMM, +CGMR, D112; (emergency call), +CPAS, +CFUN, +CPIN, +CDIS (read and test command only), and +CIND (read and test command only).

After input three times wrong PIN, SIM card will be locked!

Examples:

Pin 1234 is required

```
AT+CPIN="1234"
```

OK

```
AT+CPIN="5678"
```

```
+CME ERROR: 3
```

PUK and PIN is required

```
AT+CPIN="123456789", "3344"
```

OK

AT^CPINC total times of access the sim card

Remaining amount accessing the sim card

Test Command:

AT^CPINC=?

<value>

OK

value represent list of supported amount of accessing (Pin1 & Pin2), (Puk1 & Puk2)

Exec Command:

AT^CPINC

<value>

OK

value represent actual amount of accessing (Pin1 & Puk1), (Pin2 & Puk2)

on error:

+ CME ERROR: [ERR_ID]

AT+CLCK Facility lock

This command be used to lock or unlock some functions of the list that be supported by this ME.

Test Command:

AT+CLCK=?

<values>

OK

values represent list of supported functions

Read Command:

AT+CLCK?

<values>

OK

values represent actual configuration list of supported functions

on error:

+ CME ERROR: [ERR_ID]

Set Command:

Execute command is used to lock, unlock or interrogate a MT or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>. Refer subclause 9.2 for possible <err> values. This command should be abortable when network facilities are set or interrogated.

Call barring facilities are based on GSM/UMTS supplementary services (refer 3GPP TS 22.088 [6]). The interaction of these with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standard.

AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]

OK

on error:

+ CME ERROR: [ERR_ID]

fac Parameter:

- ["CS"] CNTRL (lock Control surface (e.g. phone keyboard))
- ["AO"] BAOC (Barr All Outgoing Calls) (refer 3GPP TS 22.088 [6] clause 1)
- ["OI"] BOIC (Barr Outgoing International Calls) (refer 3GPP TS 22.088 [6] clause 1)
- ["OX"] BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer 3GPP TS
- ["2FD"] SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)

mode Parameter:

- [0] unlock
- [1] lock
- [2] query status

status Parameter:

- [0] not active
- [1] active

passwd Parameter:

- ["password"] same as password specified for the facility from the MT user interface or with command Change Password +CPWD

classx Parameter:

- [1] voice (telephony)
- [2] data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
- [4] fax (facsimile services)
- [8] short message service (SMS)
- [16] data circuit sync
- [32] data circuit async
- [64] dedicated packet access
- [128] dedicated PAD access

AT+CPWD Change password

This command is used to change password [pin/pin2]

Test Command:

AT+CPWD=?

<values>

OK

values represent a list of pairs which present the available facilities and the maximum length of their password

Set Command:

AT+CPWD=<fac>,<oldpwd>,<newpwd>

OK

values represent a list with PIN id as string, old password, new password

on error:

+ CME ERROR: [ERR_ID]

fac Parameter:

- ["SC"] CNTRL (lock Control surface (e.g. phone keyboard))
- ["P2"] BAOC (Barr All Outgoing Calls) (refer 3GPP TS 22.088 [6] clause 1)

oldpwd Parameter:

- ["String"] string value of old password

newpwd Parameter:

- ["String"] string value of new password

Examples:

SC: to change SIM PIN

```
AT+CPWD="SC","3333","1234"
```

```
+CME ERROR: 16
```

```
AT+CPINC
```

```
+CPINC: 2
```

```
OK
```

```
AT+CPWD="SC","1234","0000"
```

```
OK
```

P2: to change SIM PIN2

```
AT+CPWD="P2","1111","1234"
```

```
+CME ERROR: 16
```

```
AT+CPINC
```

```
+CPINC: 2
```

```
OK
```

```
AT+CPWD="P2","0000","1234"
```

```
OK
```


AT+CRSM Restricted SIM Access

This command support limited access to SIM database.

Test Command:

AT+CRSM=?

OK

Set Command:

Set command transmits to the MT the SIM <command> and its required parameters.

AT+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>]]]

+CRSM: <sw1>,<sw2>[,<response>]

OK

on error:

+ CME ERROR: [ERR_ID]

command Parameter:

- [176] READ BINARY
- [178] READ RECORD
- [192] GET RESPONSE
- [214] UPDATE BINARY
- [220] UPDATE RECORD
- [242] STATUS

NOTE 1: The MT internally executes all commands necessary for selecting the desired file, before performing the actual command.

<fileid>: integer type; this is the identifier of a elementary datafile on SIM. Mandatory for every command except STATUS

NOTE 2: The range of valid file identifiers depends on the actual SIM and is defined in GSM 11.11 [28]. Optional files may not be present at all.

<P1>,<P2>,<P3>: integer type; parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in GSM 11.11 [28]

data Parameter:

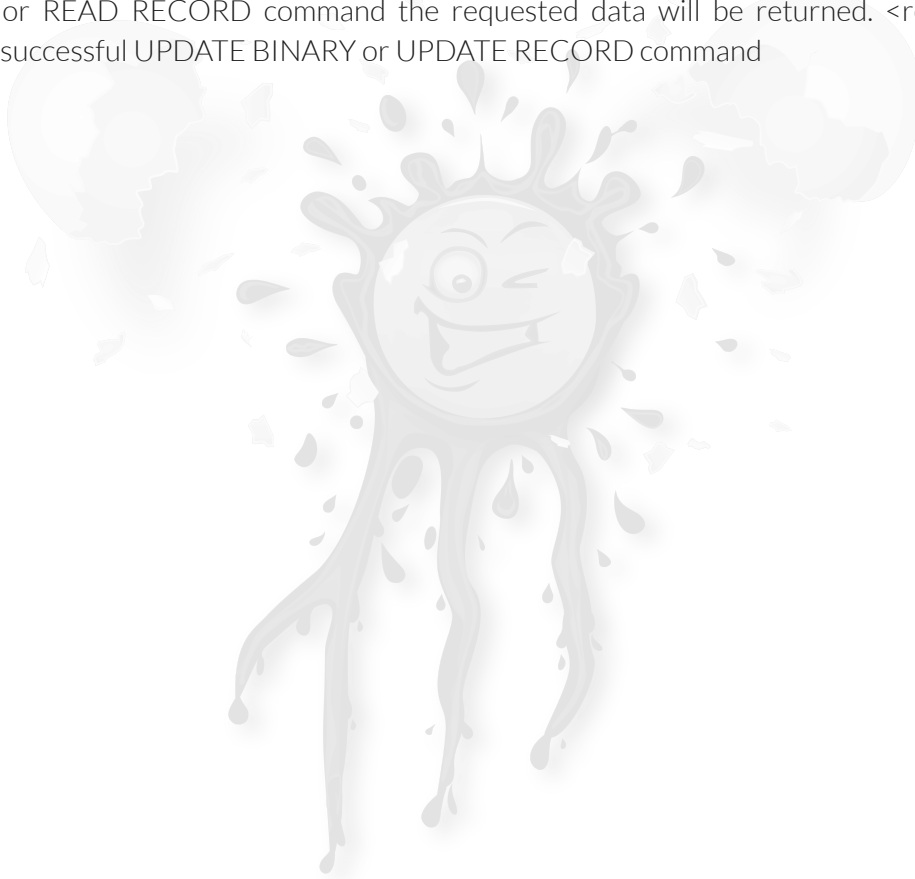
- information which shall be written to the SIM (hexadecimal character format; refer +CSCS)

sw1 sw2 Parameter:

- integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command

response Parameter:

response of a successful completion of the command previously issued (hexadecimal character format; refer +CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary datafield. This information includes the type of file and its size (refer GSM 11.11 [28]). After READ BINARY or READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY or UPDATE RECORD command



AT+CNUM Subscriber number

The MS ISDN related to the subscriber.

Test Command:

AT+CNUM=?

OK

Exec Command:

Set command transmits to the MT the SIM <command> and its required parameters.

AT+CNUM[<alpha1>] ,<number1>,<type1>[<CR><LF>]

+CRSM: <sw1>,<sw2>[,<response>]

OK

on error:

ERROR

alpha[x] Parameter:

- optional alphanumeric string associated with <numberx>; used character set should be the one selected with command Select TE Character Set +CSCS

number[x] Parameter:

- string type phone number of format specified by <typex>

type[x] Parameter:

- type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

text Parameter:

- field of maximum length <tlength>; character set as specified by command +CSCS. The display of text (charset) depending to the storage format in the sim card.

AT+CPBR Read current Phonebook

Read phonebook entries in location number range <index1>...<index2> from the current phonebook memory storage selected. If the <index2> is omitted, only the entry with index of <index1> is returned if exists.

Test Command:

AT+CPBR=?

<values>

OK

values represents a list of parameter ranges

Set Command:

Set command transmits to the MT the SIM <command> and its required parameters.

AT+CPBR=<index1>[,<index2>]

[+CPBR: <index1>,<number>,<type>,<text> [[...] <CR><LF>+CPBR:
<index2>,<number>,<type>,<text>]
]

OK

on error:

ERROR

index1 index2:

- Integer type values in the range of location numbers of phonebook memory

number:

- string type phone number of format <type>

type:

- integer, type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7) ; default 145 when dialing string includes international access code character "+", otherwise 129

text:

- string, character set as specified by command +CSCS. The display of text depending to the storage format in the sim card. If we store the pbk entry with ucs2 format, we show Chinese string here, otherwise, we show NON-Chinese string. We don't care about charsets, it is decided by command +CSCS setting when we store them

nlength:

- integer, value indicating the maximum length of field <number>

tlength:

- integer,maximum length



AT+CPBS Select phonebook memory storage

Select a certain memory storage.

Test Command:

AT+CPBS=?

<values>

OK

values represents a list of available storage

Set Command:

Set command transmits to the MT the SIM <command> and its required parameters.

AT+CPBS=<storage>

OK

on error:

ERROR

storage

- ["SM"] SIM/UICC phonebook
- ["ON"] active application in the UICC (GSM or USIM) or SIM card (or MT) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also)
- ["DC"] MT dialled calls list (+CPBW may not be applicable for this storage)
- ["EN"] active application in the UICC (GSM or USIM) or SIM card (or MT) emergency number (+CPBW is not be applicable for this storage)
- ["FD"] active application in the UICC (GSM or USIM) or SIM card fixdialling-phonebook
- ["LD"] active application in the UICC (GSM or USIM) or SIM card last-dialling-phonebook
- ["MC"] MT missed (unanswered received) calls list (+CPBW may not be applicable for this storage)
- ["ME"] MT phonebook
- ["MT"] combined MT and SIM/UICC phonebook
- ["RC"] MT received calls list (+CPBW may not be applicable for this storage)
- ["TA"] TA phonebook

password:

- string type value representing the PIN2-code required when selecting PIN2-code locked <storage>s above, e.g. "FD".

used:

- integer type value indicating the number of used locations in selected memory

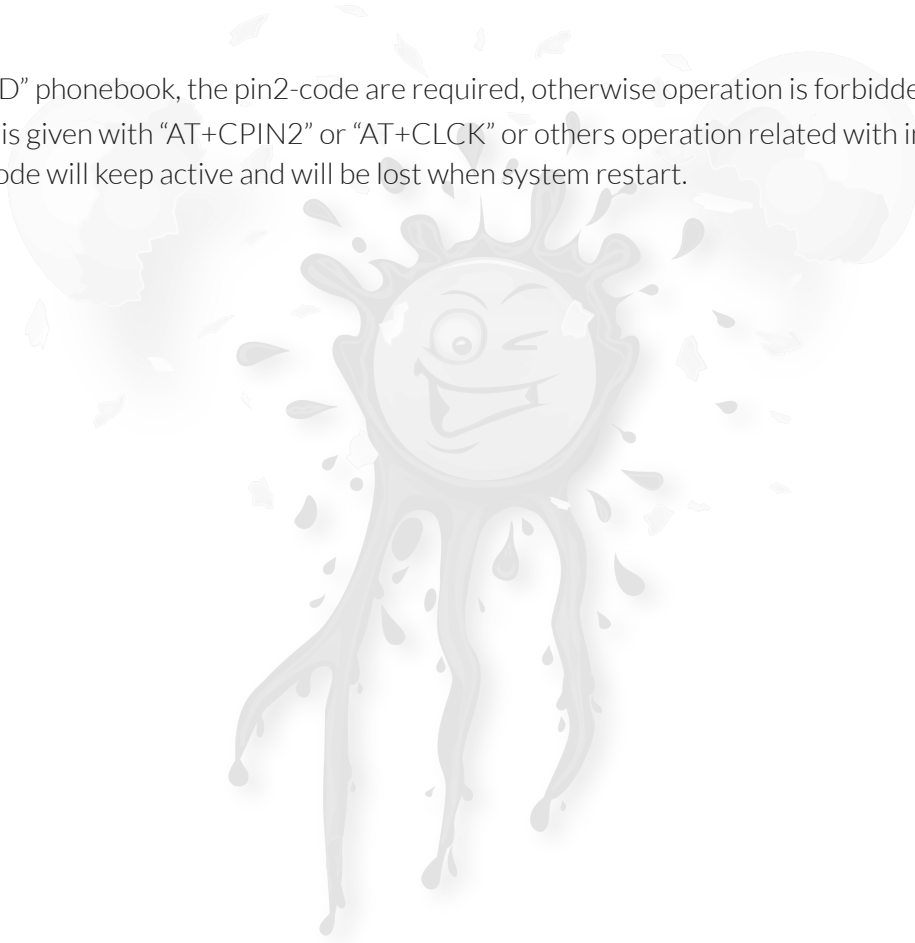
total:

- integer type value indicating the total number of locations in selected memory

Notes:

For writing to "FD" phonebook, the pin2-code are required, otherwise operation is forbidden.

Once pin2-code is given with "AT+CPIN2" or "AT+CLCK" or others operation related with inputting pin2-code, the pin2-code will keep active and will be lost when system restart.



AT+CPBF find phonebook entries

The command returns phonebook entries with alphanumeric field a starting with a given string. The AT+CPBF="" command can be used to display all phonebook entries sorted in alphabetical order.

This command is not allowed for "LD","RC","MC","SN" phonebooks and for the "EN" phonebook, which does not contain alphanumeric fields.

It is possible to use this command with UCS2 strings. If a wrong UCS2 format is entered, the string is considered as an ASCII string..

Test Command:

AT+CPBF=?

<values>

OK

values represents parameter maximum

Set Command:

AT+CPBF=<findtext>

[+CPBF: <index1>,<number>,<type>,<text>[...]
<CR><LF>+CPBF: <index2>,<number>,<type>,<text>]]
OK

on error:

ERROR

index1 index2

- Integer type values in the range of location numbers of phonebook memory

number

- string type, phone number of format <type>

type

- Integer, type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7) ; default 145 when dialing string includes international access code character "+", otherwise 129

findtext

- string, character set as specified by command +CSCS. If we want to find Chinese string in the all pbk entry, we must set charset value with command +CSCS of "ucs2", otherwise we find non-Chinese string with command +CSCS of "non-ucs2". And now the ucs2 supported in our environment is big-ending Unicode, we must input big-ending Unicode string in the field if setting value of cscs is equal to "ucs2".

nlength

- Integer, value indicating the maximum length of field <number>

tlength

- Integer, value indicating the maximum length of field <text>



AT+CPBW write phonebook entries

Writes phonebook entry in location number <index> in the current phonebook memory storage selected. If there is no index parameter in the command line, the record will be written to the free location. If the current phonebook storage is "ON", modification is allowed, but deleting entry is forbidden. We can add entries to the "ON" phonebook when it have free location, otherwise add entry to "ON" is forbidden.

If the current phonebook storage is "LD", deleting is allowed, but adding or modification entry is forbidden.

If the current phonebook storage is "FD", which is locked by pin2, executing the command may be returned ERROR or relevant CME error. To continue the operation, please enter the relevant pin specified by "+cpin?". Input pin2, deleting or adding or modification entry is allowed.

If the current phonebook storage is "SM", deleting or adding or modification entry is allowed.

Test Command:

AT+CPBW=?

<values>

OK

values represents storage overview

Set Command:

AT+CPBW=[<index>] ,<number> [,<type> [,<text>]]

OK

on error:

ERROR

index:

- Integer type values in the range of location numbers of phonebook memory

number:

- string type phone number of format <type>

type:

- integer, type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7) ; default 145 when dialing string includes international access code character "+", otherwise 129

text:

- string, character set as specified by command +CSCS. The display of text depending to the storage format in the sim card. If we store the pbk entry with ucs2 format, we show Chinese string here, otherwise, we show NON-Chinese string. We don't care about charsets, it is decided by command +CSCS setting when we store them

nlength:

- integer, value indicating the maximum length of field <number>

tlength:

- integer,maximum length



Call Control Commands

The AT Commands described in this chapter are related to Mobile Originated (MOC, i.e. outgoing) Calls and Mobile Terminated (MTC, i.e. incoming) Calls.

ATA Answer a call

This command is used to answer an incoming call.

Exec Command:

AT+ATA

CONNECT

connects to an incoming call

on error:

ERROR

NO CARRIER

Notes:

This command should be used only when there is one call. When there are several calls, please use the AT +CHLD to answer a new call.

Unsolicited Result Codes:

RING

CIEV: SOUNDER1

CIEV: CALL 1

ATD Make a call

This command is used to make an outgoing call. The length of dial number is less than 20.

Exec Command:

AT+ATD<number>

OK

NO ANSWER or

NO CARRIER or //connection be released

NO DAILTONE or

BUSY

on error:

ERROR

FAIL

number:

- Integer type 0-9, *, #, +, A-Z

Unsolicited Result Codes:

CONNECT :

CIEV: SOUNDER1

CIEV: CALL 1

Example:

ATD10086;

AT+CLCC

OK

CONNECT

+CLCC: 1,0,0,0,0,"10086",129

OK

AT+DLST Redial last MO call

Redial last outgoing call.

Exec Command:

AT+DLST

OK

NO ANSWER or

NO CARRIER or //connection be released

NO DAILTONE or

BUSY

on error:

ERROR

FAIL

Unsolicited Result Codes:

CONNECT :

CIEV: SOUNDER1

CIEV: CALL 1

Notes:

The usage of the command is the same as the ATD. The other command following this command in the same line is omitted.

ATH Disconnect existing call

Disconnect connected calls, including active, waiting and hold calls

Exec Command:

AT+ATH

OK

on error:

ERROR

FAIL

Unsolicited Result Codes:

CIEV: SOUNDER 0

CIEV: CALL 0

Notes:

When the link is established or ringing, the command will get thru. During establishing connection the command will fail.

AT+CHUP Hang up all existing connected calls

Hang up all existing connected calls, including active, waiting and hold calls

Test Command:

AT+CHUP=?

OK

Exec Command:

AT+CHUP

OK

on error:

ERROR

FAIL

Unsolicited Result Codes:

CIEV: SOUNDER 0

CIEV: CALL 0

Notes:

This command implements the same behavior as ATH.

AT+CHLD Call hold and multiparty

This command deal with call held, retrieve, multiparty and hang up functions and so on.

Test Command:

AT+CHLD=?

OK

Set Command:

AT+CHLD=<value>

OK

on error:

ERROR

FAIL

Unsolicited Result Codes:

CSSU: <code2>

value

- [0] Releases all held calls or sets User Determined User Busy (UDUB) for a waiting call.
- [1] Releases all active calls (if any exist) and accepts the other (held or waiting) call [waiting call is the first].
- [1X] Releases a specific call X it can be in active, hold or waiting state.
- [2] Places all active calls (if any exist) on hold and accepts the other (held or waiting) call.
- [2X] Places all active calls on hold except call X with which communication shall be supported.
- [3] Adds a held call to the conversation.

code2

- [2] call has been put on hold (during a voice call).
- [3] call has been retrieved (during a voice call).
- [4] multiparty call entered (during a voice call).

Notes:

The multiparty call has the MAX connection is 5, at the same time, the phone can also has a waiting call.

AT+CLCC List current calls of ME

List all current calls of ME.

Test Command:

```
AT+CLCC=?
```

OK

Set Command:

```
AT+CLCC
```

```
[ +CLCC: <id1>, <dir>, <stat>, <mode>, <mpty>[,<number>,<type>]  
[<CR><LF>+CLCC: <id2>, <dir>, <stat>, <mode>, <mpty>[,  
<number>,<type>]  
...]
```

OK

on error:

```
+ CME ERROR: [ERR_ID]
```

id[x]

- integer, call identification number as described in 3GPP TS 22.030 [19] sub clause 4.5.5.1; this number can be used in +CHLD command operations

dir

- [0] mobile originated (MO) call
- [1] mobile terminated (MT) call

stat (state of call)

- [0] active
- [1] held
- [2] dialing (MO call)
- [3] alerting (MO call)
- [4] incoming (MT call)
- [5] waiting (MT call)
- [7] release (network release this call)

mode (bearer/teleservice)

- [0] voice
- [1] data
- [2] fax
- [3] voice followed by data, voice mode
- [4] alternating voice/data, voice mode
- [5] alternating voice/fax, voice mode
- [6] voice followed by data, data mode
- [7] alternating voice/data, data mode
- [8] alternating voice/fax, fax mode
- [9] unknown

mpty (multiparty)

- [0] call is not one of multiparty (conference) call parties
- [1] call is one of multiparty (conference) call parties

number

- string type phone number in format specified by <type>

type

- type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7)

AT+VTD Tone duration

Configure tone duration.

Test Command:

AT+VTD=?

<value>

OK

value represents a list from 1-10

Read Command:

AT+VTD?

<value>

OK

value represents actual tone duration

Set Command:

AT+VTD= <value>

OK

on error:

+ CME ERROR: [ERR_ID]

value

- [0,...,10] duration in 1/10 seconds

AT+VTS play special DTMF and Tone

Play special DTMF and tone.

Set Command:

AT+VTSEX= <type>

OK

on error:

+ CME ERROR: [ERR_ID]

type

- [1]



AT+VTS DTMF and Tone generation

Sent DTMF and generate the tone.

Test Command:

AT+DTMF=?

<value>

OK

value represents a list of valid DTMF

Set Command:

AT+DTMF= <DTMF>,<duration>

OK

on error:

+ CME ERROR: [ERR_ID]

DTMF

- A single ASCII character in the set 0-9, #, *, A-D. This is interpreted as a single ASCII character whose duration is set by the duration command.

duration

- [0,...,10] duration in 1/10 seconds

Network Service Commands

The AT Commands described in this chapter are related to various network services. More commands related to this area can be found in Chapter 10, Supplementary Service Commands.

AT+COPN Read operator names

List the operators name form MT

Test Command:

AT+COPN=?

OK

Exec Command:

AT+COPN

+COPN: <numeric1>,<alpha1>
[<CR><LF>+COPN: <numeric2>,<alpha2>
[...]]
OK

on error:

+ CME ERROR: [ERR_ID]

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

numeric[n]

- string, operator in numeric format (see +COPS)

alpha[n]

- string, operator in long alphanumeric format (see +COPS)

Notes:

Execute command returns the list of operator names from the MT. Each operator code <numeric[n]> that has an alphanumeric equivalent <alpha[n]> in the MT memory shall be returned.

AT+COPS Operator selects

This command be used to select the vender.

Test Command:

AT+COPS=?

OK

represents a list of supported parameter

Read Command:

AT+COPS?

+COPS: <mode>[,<format>,<oper>]

OK

represents a list of actual vender parameter

Set Command:

AT+COPN= <mode>[,<format>,<oper>]

OK

on error:

+ CME ERROR: [ERR_ID]

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

mode:

- [0] automatic (<oper> field is ignored)
- [1] manual (<oper> field shall be present)
- [2] deregister from network
- [3] set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> field is ignored); this value is not applicable in read command response
- [4] manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered

format:

- [0] long format alphanumeric <oper>
- [1] numeric <oper>

oper:

- string, <format> indicates if the format is alphanumeric or numeric. Long alphanumeric format can be up to 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]).
Numeric format is the GSM Location Area Identification number (refer GSM 04.08 [8] subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific; returned <oper> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 2)(network code digit 1)

stat:

- [0] unknown
- [1] available
- [2] current
- [3] forbidden

Notes:

Set command forces an attempt to select and register the GSM/UMTS network <oper>. Mode is used to decide the register should be automatic or manual. If the selected mode is manual or manual first, the network should return with a list from which user can select one to register on.

Read command returns the current mode and the currently selected operator. If no operator is selected, <format> and <oper> are omitted.

Test command returns a list of quadruplets, each representing an operator present in the network. Quadruplet consists of an integer indicating the availability of the operator <stat>, long and short alphanumeric format of the name of the operator, and numeric format representation of the operator. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM/UICC, and other networks.

AT+CREG Network registration

This command be used to query the register status.

Test Command:

AT+CREG=?

<n>

OK

<n> represents a list of network registration parameter

Read Command:

AT+CREG?

+CREG: <n>,<stat>[,<lac>,<ci>]

OK

represents a list of actual network registration parameter

Set Command:

AT+COPN= <n>

OK

on error:

+ CME ERROR: [ERR_ID]

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

n:

- [0] disable network registration unsolicited result code
- [1] enable network registration unsolicited result code +CREG: <stat>
- [2] enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>]

stat:

- [0] not registered, MT is not currently searching a new operator to register to ...
- [1] registered, home network
- [2] not registered, but MT is currently searching a new operator to register to ...
- [3] registration denied
- [4] unknown
- [5] registered, roaming

lac:

- string, two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

ac:

- string, two byte cell ID in hexadecimal format



AT+CSQ Signal quality

This command be used to query the quality of the signal.

Test Command:

AT+CSQ=?

+CSQ: (list of supported <rss>s), (list of supported <ber>s)
OK

Exec Command:

Execution command returns received signal strength indication <rss> and channel bit error rate <ber> from the MT.

AT+COPN= <n>

+CSQ: <rss>, <ber>
OK

on error:

+ CME ERROR: [ERR_ID]

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

rss:

- [0] -113 dBm or less
- [1] -111 dBm
- [2,...] -109,..., -53 dBm
- [31] -51dBm
- [99] not known or not detectable

ber:

- [0,...,7] as RXQUAL values in the table in GSM 05.08 [20] sub clause 8.2.4
- [99] not known or not detectable

AT+CPOL Preferred operator list

This command is used to edit the user preferred list of networks in the active application on the UICC (GSM or USIM) or preferred list of networks in the SIM card. Execute command writes an entry in the SIM list of preferred operators (EFPLMNsel), when the SIM card is present or when the UICC is present with an active GSM application. When UICC is present with an active USIM application, execute commands writes an entry in the User controlled PLMN selector with Access Technology list (EFPLMNwAcT), only the PLMN field could be entered, the Access Technologies for each PLMN in this list is not accesible with this command (Note: new command for accessing the Access Technologies for each PLMN in this list is FFS). If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed. Refer subclause 9.2 for possible <err> values.

Test Command:

Test command returns the whole index range supported by the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card.

AT+CPOL=?

```
+CPOL: (list of supported <index>s), (list of supported  
<format>s  
OK
```

Read Command:

Read command returns all used entries from the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card list of preferred operators.

AT+CPOL?

```
+CPOL: <index1>,<format>,<oper1>  
[<CR><LF>+CPOL: <index2>,<format>,<oper2>  
[...]]  
OK
```

Set Command:

Execution command returns received signal strength indication <rssi> and channel bit error rate <ber> from the MT.

AT+CPOL= AT+CPOL=[<index>][, <format>[,<oper>]]

```
OK
```

on error:

+ CME ERROR: [ERR_ID]

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

index:

- integer, the order number of operator in the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card preferred operator list

format:

- [0] long format alphanumeric <oper>
- [1] short format alphanumeric <oper>
- [2] numeric <oper>

oper[n]:

- string type; <format> indicates if the format is alphanumeric or numeric (see +COPS)

Notes:

When adding preferred operator, <format> can only be 2.

If <format> is 0, but there is no relevant long format alphanumeric <oper>, the numeric <oper> will be returned.

STK/SS Commands

The AT Commands described in this chapter are related to various network services.

AT+CACM Accumulated call meter (ACM) reset or query

Test Command:

AT+CACM=?

OK

Read Command:

The read command returns the current ACM value.

AT+CACM?

^ CACM~ <acm>

OK

Set Command:

The set command resets the Advice of Charge related to the accumulated call meter (ACM) value in SIM file EF(ACM). ACM contains the total number of home units for both the current and preceding calls

AT+CACM= < password >

OK

on error:

+ CME ERROR: [ERR_ID]

password:

- SIM PIN2, the string length supported in our environment is limited to 4

acm:

- string type; accumulated call meter value similarly coded as <ccm> under +CAOC

Notes:

Set CMD reset ACM with parameter SIM PIN2, read CMD get current ACM, Test CMD not defined yet.

Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units

Command AT+CCWE control the unsolicited result code: +CCWV to be sent shortly before the ACM maximum value reached.



AT+CAMM Accumulated call meter maximum (ACMmax) set or query

Test Command:

AT+CAMM=?

OK

Read Command:

The read command returns the current ACMmax value .

AT+CAMM?

^ CAMM~ <acmmx>

OK

Set Command:

The set command sets the Advice of Charge related to the accumulated call meter maximum value in SIM file EF (ACMmax). ACMmax contains the maximum number of home units allowed to be consumed by the subscriber.

AT+CAMM= <acmmx>[,<passwd>]

OK

on error:

+ CME ERROR: [ERR_ID]

password:

- SIM PIN2, the string length supported in our environment is limited to 4

acmmx:

- string type; accumulated call meter maximum value similarly coded as <ccm> under +CAOC; value zero disables ACMmax feature

Notes:

Set CMD set the maximum of ACM with SIM PIN2, read command get the AMM, test CMD not defined yet.

Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30) - value is in home units -

Shortly before ACM reaches AMM, the unsolicited result code +CCWV will be sent if AT+CCWE enables this operation.

For some SIM card, if the PIN1 is verified, the SIM PIN2 is not used as password and ignored.



AT+CAOC Advice of charge information

Test Command:

The test command returns list of supported modes

AT+CAOC=?

```
[+CAOC: (list of supported <mode>s)  
OK
```

Read Command:

The read command returns the current ACMmax value .

AT+CAOC?

```
+CAOC: <mode>  
OK
```

Set Command:

The set command sets the Advice of Charge supplementary service function mode.

AT+CAOC= <mode>

```
OK
```

on error:

```
+ CME ERROR: [ERR_ID]
```

mode:

- [0] query CCM value
- [1] deactivate the unsolicited reporting of CCM value
- [2] activate the unsolicited reporting of CCM value

ccm:

- string, three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the SIM card or in the active application in the UICC (GSM or USIM)

Notes:

Set CMD set the maximum of ACM with SIM PIN2, read command get the AMM, test CMD not defined yet. Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30) - value is in home units -

Shortly before ACM reaches AMM, the unsolicited result code +CCWV will be sent if AT+CCWE enables this operation.



AT+CPUC Price per unit and currency table**Test Command:****AT+CPUC=?**

OK

Read Command:

The read command returns the current parameters of PUC.

AT+CPUC?

` CPUC~ <currency>,<ppu>

OK

Set Command:

The set command sets the parameters of Advice of Charge related price per unit and currency table. SIM PIN2 is usually required to set the parameters.

PUCT information can be used to convert the home units (as used in +CAOC, +CACM and +CMM) into currency units

AT+CPUC= <currency>,<ppu>,<password>

OK

on error:

ERROR

currency:

- string, three-character currency code (e.g. "GBP", "DEM"). If the string length of <currency> is less than 3, null character(0x20) will be a complement on default. Null string is also be allowed.

ppu:

- string type; price per unit; dot is used as a decimal separator (e.g. "2.66"). The supported string length is limited to 5, maximum value is 4096.

password:

- string type; SIM PIN2 the string length is limited to 4. If PIN1 is verified, SIM PIN2 is not used as password and ignored.

AT+CCFC call forwarding number and condition

This command Controls the call forwarding supplementary services. Registration, erasure, activation, deactivation and status query are supported.

Test Command:

Returns parameters of forwarded numbers

AT+CCFC=?

^ CCFC~ (list of supported<reason>s)

OK

Set Command:

Set call forwarding control.

AT+CCFC=<reason>,<mode>,[<number>,[<type>,[<class>,[<subaddr> , [<satype>,[<time>]]]]]]

OK

on error:

+ CME ERROR: [ERR_ID]

Unsolicited Result Codes:

CSSU: <code2>

CSSI: <code1>

reason:

- [0] unconditional
- [1] mobile busy
- [2] no reply
- [3] not reachable
- [4] all call forwarding. Note: After setting, if quering the result, requires set "reason" to 0.
- [5] all conditional call forwarding. This operation can finish the call forwarding for the reason that from 1 to 3 by one time, not need by three times. That means all the call forwarding can be done by one time except unconditional.

mode:

- When set mode=2, the range of "reason" is 0-3
- For mode=2 reason=0, only the query of "class=1" is support. The other will get error due to not support of the network.
- [0] disable
- [1] enable
- [2] query status
- [3] registration
- [4] erasure

number:

- string, phone number of forwarding address in format specified by <type>. The string length of <number> is 0-20.

type:

- type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7); default 145 when dialling string includes international access code character "+", otherwise 129

satype:

- type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8); default 128, others should be defined by factory

classx:

- is a sum of integers each representing a class of information (default 1):
- [1] voice (telephony)
- [2] data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
- [4] fax (facsimile services)
- [8] short message service
- [16] data circuit sync
- [32] data circuit async
- [64] dedicated packet access
- [128] dedicated PAD access

time:

- 5...30 when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value 20

status:

- [0] not active
- [1] active

subaddr:

- string type subaddress of format specified by <satype>

satype:

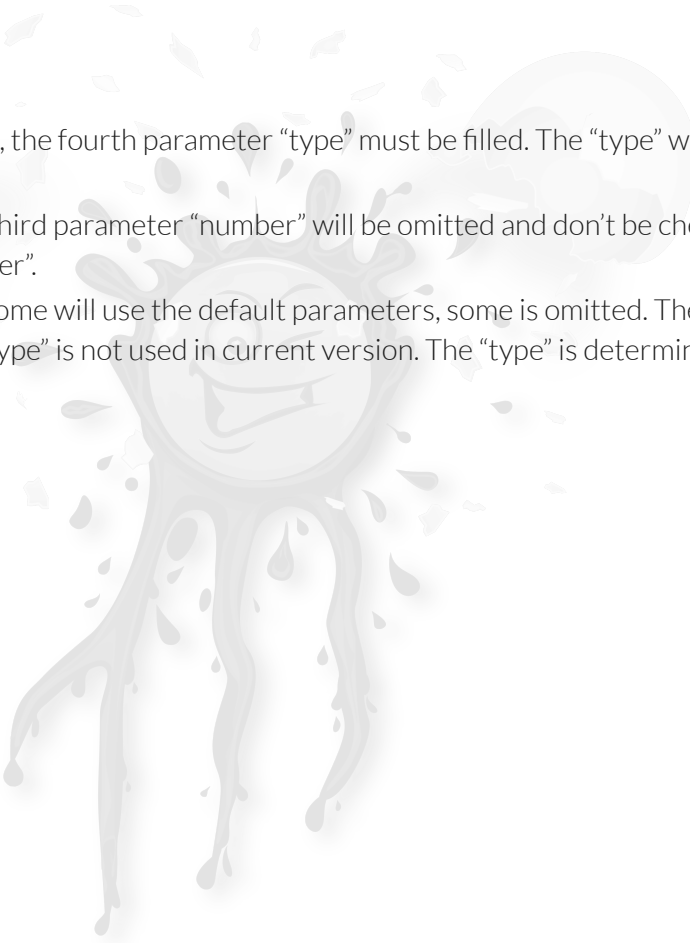
- type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8); default 128

Notes:

When setting the international call, the fourth parameter "type" must be filled. The "type" will be checked if presented.

When the "mode" is set to "1", the third parameter "number" will be omitted and don't be checked. Except that non-number is input as "number".

When the parameters are NULL, some will use the default parameters, some is omitted. The parameter "classx" is 1. the "subaddr" and "satype" is not used in current version. The "type" is determined by the "number".



AT+CCWA Set call waiting control

This command allows control of the Call Waiting supplementary service according to 3GPP TS 22.083 [5]. Activation, deactivation and status query are supported. The interaction of this command with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standards..

Test Command:

Returns parameters of call waiting control

AT+CCWA=?

` CCWA~ (list of supported<n>s)
OK

Read Command:

Returns current control value n

AT+CCWA?

` CCWA~ <n>
OK

Set Command:

Set call waiting control.

AT+CCWA=<n>[,<mode>[,<class>]]

OK

on error:

+ CME ERROR: [ERR_ID]

Unsolicited Result Codes:

CCWA; < number >,<type>,<class>,[<alpha>][,<CLI validity>]

n:

- sets/shows the result code presentation status in the MT/TA
- [0] disable
- [1] enable

mode:

- when <mode> parameter is not given, network is not interrogated
- [0] disable
- [1] enable
- [2] query status

classx:

- is a sum of integers each representing a class of information (default 1)
- [1] voice (telephony)

status:

- [0] not active
- [1] active

number:

- string, phone number of calling address in format specified by <type>

type:

- type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

alpha:

- optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS

CLI validity:

- [0] CLI valid
- [1] CLI has been withheld by the originator
- [2] CLI is not available due to interworking problems or limitations of originating network.

AT+ CLIP calling line identification presentation

This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call

Test Command:

Returns parameters of calling line identity presentation

AT+CLIP=?

```
` CLIP~ (list of supported<n>s))
```

OK

Read Command:

Returns current control value n

AT+CLIP?

```
` CLIP~ <n><m>
```

OK

Set Command:

Set calling line identification presentation.

AT+CLIP=<n>

OK

on error:

ERROR

Unsolicited Result Codes:

```
+CLIP: <number>,<type>[,<subaddr>,<satype>[,[<alpha>]],[<CLI validity>]]]
```

n:

- sets/shows the result code presentation status in the MT/TA
- [0] disable
- [1] enable

m:

- parameter shows the subscriber CLIP service status in the network
- [0] CLIP not provisioned
- [1] CLIP provisioned
- [2] unknown (e.g. no network, etc.)

number:

- string, phone number of calling address in format specified by <type>

type:

- type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

alpha:

- optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS

CLI validity:

- [0] CLI valid
- [1] CLI has been withheld by the originator
- [2] CLI is not available due to interworking problems or limitations of originating network.

subaddr:

- string type subaddress of format specified by <satype>

satype:

- type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8)

Notes:

Parameter n may control the unsolicited result code +CLIP should be presented to TE or not

AT+ CLIR Calling line identification restriction

The AT+CLIR command refers to the GSM supplementary service CLIR (Calling Line Identification Restriction).

Test Command:

Returns parameters of calling line identification restriction

AT+CLIR=?

^ CLIR~ (list of supported<n>s))

OK

Read Command:

Returns current control value of calling line identification restriction

AT+CLIR?

^ CLIR~ <n>, <m>

OK

Set Command:

Set calling line identification restriction.

AT+CLIR=<n>

OK

on error:

ERROR

n:

- [0] parameter sets the adjustment for outgoing calls
- [1] CLIR invocation
- [2] CLIR suppression

m:

- parameter shows the subscriber CLIR service status in the network
- [0] CLIR not provisioned
- [1] CLIR provisioned in permanent mode
- [2] unknown (e.g. no network, etc.)
- [3] CLIR temporary mode presentation restricted
- [4] CLIR temporary mode presentation allowed

number:

- string, phone number of calling address in format specified by <type>

type:

- type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

alpha:

- optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS

CLI validity:

- [0] CLI valid
- [1] CLI has been withheld by the originator
- [2] CLI is not available due to interworking problems or limitations of originating network.

AT+ COLP Connected line identification presentation

This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network .

Test Command:

Returns parameters of Connected Line Identification Presentation

AT+COLP=?

```
` COLP~ (list of supported<n>s))  
OK
```

Read Command:

Returns current control value of Connected Line Identification Presentation

AT+COLP?

```
` COLP~ <n>, <m>  
OK
```

Set Command:

Set the Connected Line Identification Presentation .

AT+COLP=<n>

```
OK
```

on error:

```
ERROR
```

n:

- parameter sets/shows the result code presentation status in the MT/TA
- [0] presentation indicator is used according to the subscription of the CLIR service
- [1] CLIR invocation

m:

- parameter shows the subscriber COLP service status in the network
- [0] COLP not provisioned
- [1] COLP provisioned
- [2] unknown (e.g. no network, etc.)



AT+ CSSN Supplementary service notifications

Test Command:

Returns parameters of URCs for supplementary services

AT+CSSN=?

+CSSN: (list of supported <n>s), (list of supported <m>s)
OK

Read Command:

Returns current control value of URCs for supplementary services

AT+COLP?

+CSSN:<n>,<m>
OK

Set Command:

Enables or disables the presentation of URCs for supplementary services .

AT+CSSN=<n>[,<m>]

OK

on error:

ERROR

Unsolicited Result Codes:

CSSI: <code1>

CSSU: <code2>

n:

- parameter sets/shows the +CSSI result code presentation status to the TE
- [0] disable
- [1] enable

m:

- parameter sets/shows the +CSSU result code presentation status to the TE
- [0] disable
- [1] enable

code1:

- it is manufacturer specific, which of these codes are supported
- [0] unconditional call forwarding is active
- [1] some of the conditional call forwardings are active
- [2] call has been forwarded
- [3] call is waiting

code2:

- it is manufacturer specific, which of these codes are supported
- [0] this is a forwarded call (MT call setup)
- [1] this is a CUG call (also <index> present) (MT call setup)
- [2] call has been put on hold (during a voice call)
- [3] call has been retrieved (during a voice call)
- [4] multiparty call entered (during a voice call)
- [5] call on hold has been released (this is not a SS notification) (during a voice call)

Notes:

When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: <code1>[,<index>] is sent to TE before any other MO call setup result codes presented in the present document or in V.25ter [14]. When several different <code1>s are received from the network, each of them shall have its own +CSSI result code.

When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received, unsolicited result code +CSSU: <code2>[,<index>[,<number>,<type>[,<subaddr>,<satype>]]] is sent to TE. In case of MT call setup, result code is sent after every +CLIP result code (refer command "Calling line identification presentation +CLIP") and when several different <code2>s are received from the network, each of them shall have its own +CSSU result code.

Refer 27007 release99.

The gray item of <code1> doesn't been supported by CMCC and UMCC.S

AT+ CUSD Unstructured supplementary service data

This command allows control of the Unstructured Supplementary Service Data (USSD) according to GSM 02.90. Both network and mobile initiated operations are supported.

Test Command:

Returns parameters of Unstructured Supplementary Service Data (USSD)

AT+CUSD=?

+CUSD: (list of supported <n>s)

OK

Read Command:

Returns current control value of Unstructured Supplementary Service Data (USSD)

AT+CUSD?

^ CUSD:<n>

OK

Set Command:

Enables or disables the presentation of Unstructured Supplementary Service Data (USSD)

AT+ CUSD=<n>[,<str>[,<dc>]]

OK

on error:

ERROR

Unsolicited Result Codes:

+CUSD: <m>[,<str>,<dc>]

n:

- [0] disable the result code presentation to the TE
- [1] enable the result code presentation to the TE
- [2] cancel session (not applicable to read command response)

m:

- [0] no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation)
- [1] further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)
- [2] USSD terminated by network
- [3] other local client has responded
- [4] operation not supported
- [5] network time out

str:

string type USSD-string (when <str> parameter is not given, network is not interrogated)

- if <dc> indicates that 3GPP TS 23.038 [25] 7 bit default alphabet is used:
 - ➔ if TE character set other than "HEX" (refer command Select TE Character Set +CSCS): MT/TA converts GSM alphabet into current TE character set according to rules of 3GPP TS 27.005 [24] Annex A
 - ➔ if TE character set is "HEX": MT/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character II (GSM 23) is presented as 17 (IRA 49 and 55))
 - ➔ if <dc> indicates that 8-bit data coding scheme is used: MT/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))

DCS:

- 3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default 0)

Notes:

This command allows control of the Unstructured Supplementary Service Data (USSD) according to 3GPP TS 22.090 [23]. Both network and mobile initiated operations are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code (USSD response from the network, or network initiated operation) +CUSD: <m>[,<str>,<dc>] to the TE. In addition, value <n>=2 is used to cancel an ongoing USSD session.

When <str> is given, a mobile initiated USSD-string or a response USSD-string to a network initiated operation is sent to the network. The response USSD-string from the network is returned in a subsequent unsolicited +CUSD result code.

If the <dc> parameter is input, the data will be transmitted as USSD version2, otherwise, it will be transmitted as USSD version 1.

AT^STA SAT Interface Activation

This command is used to ask the current running status of the RSAT and the character set used by the RSAT, and it can be used to set SAT and the AT interface to activation.

Test Command:

Returns list of supported Alphabets

AT^STA=?

^STA: (list of supported <Alphabet>s)

OK

Read Command:

Returns current Alphabet

AT^STA?

^STA: <Alphabet>, <allowedInstance>, <SatProfile>

OK

Exec Command:

Set designated Alphabet

AT^STA=<Alphabet>

OK

on error:

ERROR

Alphabet:

- [0] GSM character set
- [1] UCS2 character set

allowedInstance:

- [0] SAT This module has been started
- [1] SAT This module can be started

SatProfile:

- [0] SAT configuration data

AT^STN STK Notification

Proactive Command notification .

Unsolicited Result Codes:

^STN: <cmdType>..

Notes:

Every time the SIM Application issues a Proactive Command, via the ME, the TA will receive a notification. This indicates the type of Proactive Command issued.

AT^STGI must then be used by the TA to request the parameters of the Proactive Command from the ME. Upon receiving the ^STGI response from the ME, the TA must send AT^STR to confirm the execution of the Proactive Command and provide any required user response, e.g. a selected menu item.



AT^STGI Remote-SAT Get Information

AT^STGI: This command is used after receiving URC ^STN notification. That can get the parameters of the proactive command, current command type or some information of the current proactive command.

Test Command:

Returns list of supported cmd types

AT^STGI=?

^STGI: (list of supported <cmdType>s)
OK

Read Command:

Returns current cmd type

AT^STGI?

^STGI: <cmdType>
OK

Set Command:

Set designated cmd type

AT^STGI=<cmdType>

OK

on error:

ERROR

Alphabet:

- [0] GSM character set
- [1] UCS2 character set

allowedInstance:

- [0] SAT This module has been started
- [1] SAT This module can be started

SatProfile:

- [0] SAT configuration data

Response definition:

event format:

Command type =37 or 36

The first line: ^STGI: command type, 0, The number of the item," Alpha identifier", "nComQualifier"

Other lines ^STGI: command type, Item type,"contents of menu,"nComQualifier"

Command type 16

^STGI: command type, "text string", type of address, address, subadress, text in calling", scheme of the text, time unit when autodial, interval of "nComQualifier"

Command type 33

^STGI: command type, "text", scheme of text, "nComQualifier"

Command type 19

^STGI: command type, "text for display", Type of address, "address of SMS, "contents of SMS"

Command type 35:

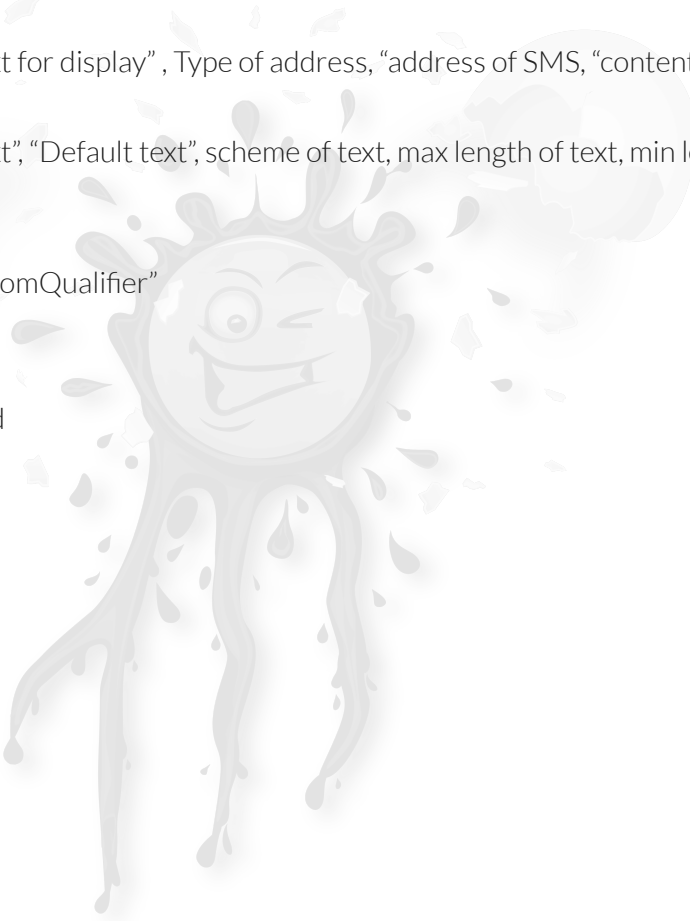
^STGI: command type, "text", "Default text", scheme of text, max length of text, min length of text, "nComQualifier"

Command type 38:

^STGI: command type, "nComQualifier"

Notes:

< cmdType > Proactive command



AT^STR Remote-SAT Response

AT^STR: TA can use this command AT^STR to answer the AT^STGI command to tell the SIM that the result executed of the proactive command.

Test Command:

Returns list of supported cmd types

AT^STR=?

^STR: (list of supported <cmdType>s)

OK

Read Command:

Returns current cmd type

AT^STR?

^STR: <cmdType>

OK

Exec Command:

Set designated cmd type

AT^STR=<cmdType>, <status>[, <inputNumber>][, <inputString>]

OK

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

cmdType: Proactive command

status:

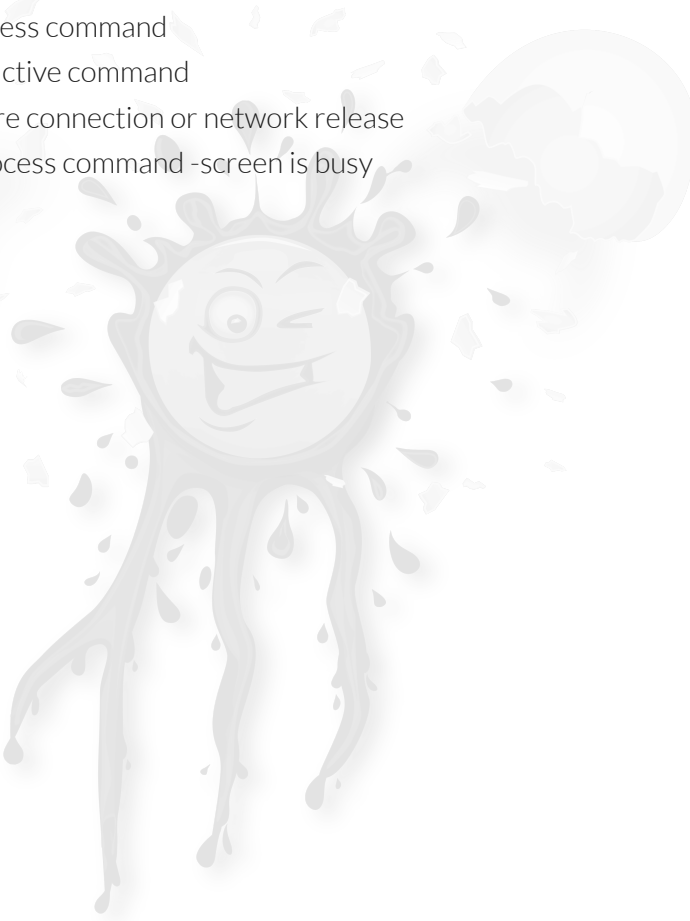
- The status response to the proactive command
- [00] Command performed successfully
- [16] Proactive SIM session terminated by user
- [17] Backward move in the proactive SIM session requested by the user
- [18] No response from user
- [19] Help information required by the user
- [20] USSD/SS Transact terminated by user
- [32] ME currently unable to process command
- [34] User did not accept the proactive command
- [35] User cleared down call before connection or network release
- [132] ME currently unable to process command -screen is busy

inputNumber:

- Response number

inputString:

- Response string



AT^STF Set format of responses

This command is used to set format of a response of SAT command.

Test Command:

Returns list of supported formats

AT^STF=?

^STF: (0,1)

OK

Read Command:

Returns current format / mode

AT^STF?

^STF: [Current mode]

OK

Set Command:

Set format of SAT command

AT^STF=<mode>

OK

on error:

ERROR

mode:

- [0] PDU mode
- [1] Text mode

STK/SS Commands

This chapter describes AT Commands that a TE (Terminal Equipment, e.g. an application running on a controlling PC) may use to control the MC55 acting as GPRS Mobile Termination (MT).

AT+CSDH Show Text Mode Parameters (For SMS)

Command controls whether detailed header information is shown in text mode result codes

Test Command:

AT+CSDH=?

+CSDH: (list of supported < show >s)
OK

Read Command:

AT+CSDH?

+CSDH: <show>
OK

Set Command:

AT+CSDH=<show>

OK

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

show:

- [0] disables values in result codes
- [1] enables values in result codes

AT+CSMP Set Text Mode Parameters

command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected.

Test Command:

AT+CSMP=?

OK

Read Command:

AT+CSMP?

+CSMP:<fo>,<vp>,<pid>,<dc>

OK

Set Command:

AT+CSMP=<fo>[,<vp>[,<pid>[,<dc>]]]

OK

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

fo:

- depending on the command or result code: first octet of 3G TS 23.040 [3] SMS-DELIVER[mt], SMS-SUBMIT[mo] (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format

vp:

- depending on SMS-SUBMIT <fo> setting: 3G TS 23.040 [3] TP-Validity-Period either in integer format (default 167), in time-string format (refer <dt>), or if EVPF is supported, in enhanced format (hexadecimal coded string with double quotes)

pid:

- 3G TS 23.040 [3] TP-Protocol-Identifier in integer format (default 0)—protocol identity [Different data storage protocol according to which services protocol used]

dcs:

- depending on the command or result code: 3G TS 23.038 [2] SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format [supported there types of csw allowed? 0? 4? 8]

Notes:

Parameter <fo> <vp> <pid> and <dcs>, we recommend to set default value of them, but can use other values if need according to spec definite.

if setting “fo” value for MO message, we must make sure the “mti” segment of “fo” (as 03.40 description) is “01”, meanings that bit1 is “0” and bit0 is “1”, otherwise exception would happened.

3. if setting “dcs” value for MO message, we must make sure that the dcs is equal to 0, or 4, or 8, other values is not allowed now

AT+CMSS Send Message from Storage(For SMS)

Command sends message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).

Test Command:

AT+CMSS=?

OK

Exec Command:

AT+CMSS=<index>[,<da>[,<toda>]]

+CMSS:<mr>

OK

on error:

ERROR

Notes:

available <toda> values: 161 145 129

In PDU mode sending MT message not allowed.

AT+CMGD Delete SMS message

Command deletes message from preferred message storage <mem1> location <index>. If <delflag> is present and not set to 0 then the ME shall ignore <index> and follow the rules for <delflag> shown below. If deleting fails, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for <err> values.

Test Command:

AT+CMGD=?

+CMGD: (list of supported <index>s), (list of supported
<delflag>s)
OK

Set Command:

AT+CMGD=<index>[,<delflag>]

OK

on error:

+ CMS ERROR: [ERR_ID]

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

index:

- indicates index of message

delflag:

- an integer indicating multiple message deletion request as follows
- [0] delete the message specified in <index>
- [1] deletes all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched
- [2] deletes all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched
- [3] deletes all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched
- [4] deletes all messages from preferred message storage including unread messages



AT+CMGF Select SMS message format

Command specifies the input and output format of the short messages. The input and output format of the short messages can be either PDU mode or Text mode.

Test Command:

AT+CMGF=?

+CMGF~ (list of supported <mode>s)
OK

Read Command:

AT+CMGF?

OK

Set Command:

AT+CMGF=< mode >

OK

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

mode:

- [0] PDU mode (default when implemented)
- [1] text mode

AT+CMGL List SMS messages from preferred store

Ccommand returns messages with status value <stat> from message storage <mem1> to the TE.

Test Command:

AT+CMGL=?

```
+CMGL:(list of supported <stat>s)
OK
```

Set Command:

AT+CMGL[=<stat>]

```
TEXT mode` +CMGF=1`
SMS-SUBMIT~
+CMGL:<index>,<stat>,<da>,<alpha>,<toda>,<length>]<CR><LF><data>[<CR><LF>][...]
OK
SMS-DELIVER~
+CMGL:<index>,<stat>,<oa>,<alpha>,<scts>[,<tooa>,<length>]<CR><LF><data>[...]]
OK
PDU mode` +CMGF=0`
SMS-SUBMIT or SMS-DELIVER~
+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>[<CR><LF>][...]
OK
```

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

stat:

- integer type in PDU mode (default 0), or string type in text mode (default "REC UNREAD"); indicates the status of message in memory; defined values:
- [0] "REC UNREAD" received unread message (i.e. new message)
- [1] "REC READ" received read message
- [2] "STO UNSENT" stored unsent message (only applicable to SMS)
- [3] "STO SENT" stored sent message (only applicable to SMS)
- [4] "ALL" all messages (only applicable to +CMGL command)

Notes:

<alpha> is not supported now. If PDU mode, each bit meaning of DCS byte are reference in chapter 11.10.5, CMGW remark.

AT+CMGR Read SMS Message

command returns message with location value <index> from preferred message storage <mem1> to the TE.

Test Command:

AT+CMGR=?

OK

Set Command:

AT+CMGR=<index>

TEXTmode (+CMGF=1) ~

SMS-DELIVER:

+CMGR:<stat>,<oa>,
[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcsc>,<sca>,<tosca>,<length>]<CR>
><LF><data>

OK

SMS-SUBMIT:

+CMGR:<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcsc>,
[<vp>],<sca>,<tosca>,<length>]<CR><LF><data>

OK

PDU mode (+CMGF=0) ~

+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>

OK

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

index:

- index of message

AT+CMGS Send SMS message

Command transmits a short message from TE to network (SMS-SUBMIT). After invoking the set command wait for the prompt ">" and then start to write the message. To send the message simply enter <CTRL-Z> .

Test Command:

```
AT+CMGS=?
```

```
OK
```

TEXT mode Set Command:

```
AT+CMGS=<da>[,<tda>]<CR>
```

```
text is entered <ctrl-Z/ESC>
```

```
+CMGS:<mr>
```

```
OK
```

PDU mode Set Command:

```
AT+CMGS=<length><CR>
```

```
pdu is given <ctrl-Z/ESC>
```

```
+CMGS:<mr>
```

```
OK
```

on error:

```
ERROR
```

Unsolicited Result Codes:

```
+CALA: <text>
```

```
+SYSSTART ALARM MODE+CALA: <text>
```

da:

- 3G TS 23.040 [3] TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in 3G TS 27.007 [9]); type of address given by <tda>ring type; memory to which writing and sending operations are made

toda:

- 3G TS 24.011 [6] TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)

length:

- integer, value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)

mr:

- integer, 3GPP TS 23.040 [3] TP-Message-Reference in integer format

PDU is given:

- pdu message can send depending to the dcs value of oct in the pdu header. The PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; ME/TA converts this coding into the actual octets of PDU.

text is entered :

- Setting of the dcs of at+csmp should set 7bit encode of dcs. It is also possible sending message with 8bit or 16bit encode of dos in text mode
- the entered text should be formatted as follows:
 - if <dc> (set with +CSMP) indicates that 3GPP TS 23.038 [2] GSM 7 bit default alphabet is used and <fo> indicates that 3GPP TS 23.040 [3] TP-User-Data-Header-Indication is not set:
 - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS in 3GPP TS 27.007 [9]): ME/TA converts the entered text into the GSM 7 bit default alphabet according to rules of Annex A; backspace can be used to delete last character and carriage returns can be used (previously mentioned four character sequence shall be sent to the TE after every carriage return entered by the user);
 - if TE character set is "HEX": the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into the GSM 7 bit default alphabet characters. (e.g. 17 (IRA 49 and 55) will be converted to character II (GSM 7 bit default alphabet 23)).

Notes:

1. Not support long short message.
2. <tda> have there values: 161 145 129
3. At PDU mode , wen can't send MT message.

AT+CMGW Write SMS message to memory

Command stores message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>. Memory location <index> of the stored message is returned.

Test Command:

```
AT+CMGW=?
```

OK

TEXT mode Set Command:

```
TEXT mode` +CMGF=1` ~
```

```
AT+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR>
```

text is entered

<ctrl-Z/ESC>

```
+CMGW:<index>
```

OK

PDU mode Set Command:

```
PDU mode` +CMGF=0` ~
```

```
AT+CMGW=<length>[,<stat>]<CR>
```

pdu is given <ctrl-Z/ESC>

```
+CMGW:<index>
```

OK

on error:

```
+ CMS ERROR: [ERR_ID]
```

Unsolicited Result Codes:

```
+CALA: <text>
```

```
+SYSSTART ALARM MODE+CALA: <text>
```


index:

- integer, value in the range of location numbers supported by the associated memory

da:

- 3G TS 23.040 [3] TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in 3G TS 27.007 [9]); type of address given by <tda> string type; memory to which writing and sending operations are made

toda:

- 3G TS 24.011 [6] TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)

length:

- integer, value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)

•

stat:

- Integer type in PDU mode (default 2 for +CMGW), or string type in text mode (default .STO UNSENT. for +CMGW). Indicates the status of message in memory.

Notes:

if PDU mode (+CMGF=0):

+CMGW: <index>

if text mode (+CMGF=1):

+CMGW: <index>

1. long messages are not supported
2. <toda> is based on three values: 161, 145 and 129.
3. if pdu mode, each bit meaning of the dcs byte are following:

 dcs byte: bit7.....bit0

 bit7..bit4 - encode group

 bit7 - reserved

 bit6 - reserved

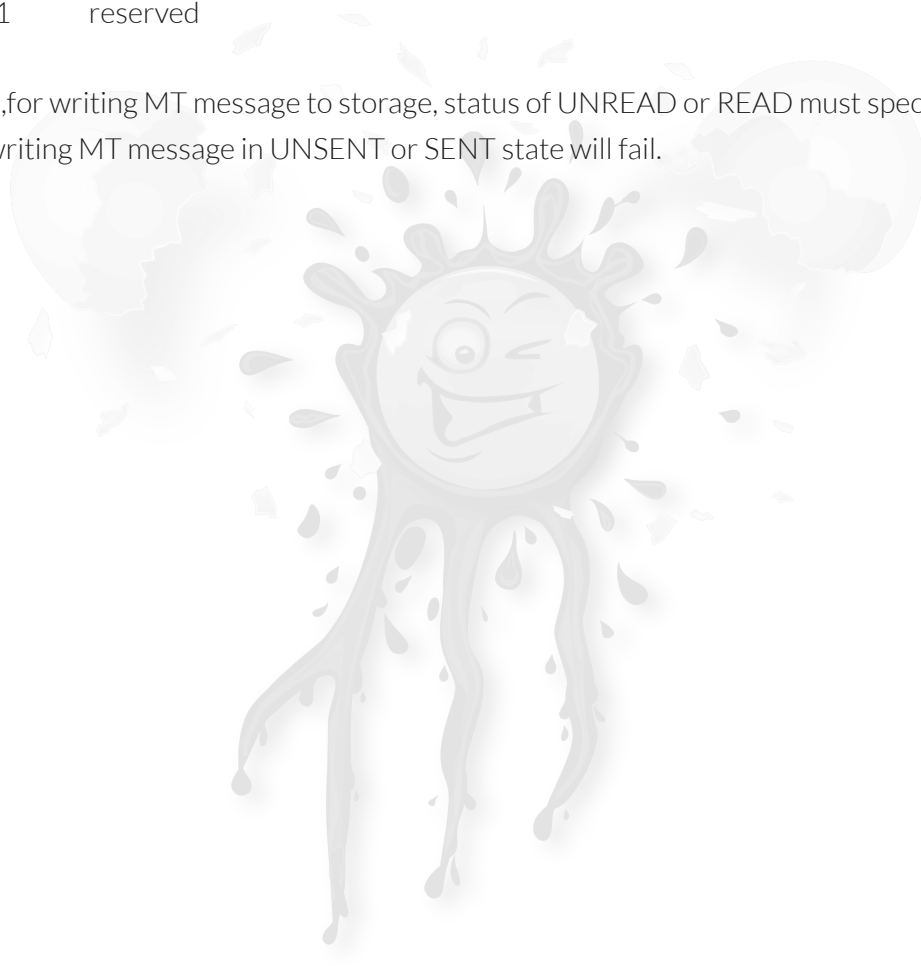
 bit5 - 0:text uncompress 1: GSM default compress

 bit4 - 0: bit0 and bit1 no use 1: bit0 and bit1 useful

bit0:	bit1:	
0	0	class1
0	1	class2
1	0	class3
1	1	class4
bit2:	bit3:	
0	0	GSM default 7 bit encode
0	1	8 bit encode
1	0	16bit(UCS2) encode
1	1	reserved

4. In PDU mode ,for writing MT message to storage, status of UNREAD or READ must specified.

In PDU mode , writing MT message in UNSENT or SENT state will fail.



AT+CNMA New SMS message acknowledge to ME/TE, only phase 2+ (Currently not supported)

command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE (refer command +CNMI tables 2 and 4). This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1. TA shall not send another +CMT or +CDS result code to TE before previous one is acknowledged.



AT+CNMI New SMS message indications

Command selects the procedure, how receiving of new messages from the network is indicated to the TE when TE is active.

Test Command:

AT+CNMI=?

+CNMI:(list of supported <mode>s),(list of supported <mt>s),
(list of supported <bm>s),(list of supported <ds>s),
(list of supported <bfr>s)

OK

Read Command:

AT+CNMI?

+CNMI:<mode>,<mt>,<bm>,<ds>,<bfr>

OK

Set Command:

AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]

OK

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

mode:

- [0] Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.
- [1] - not supported - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE
- [2] - not supported - Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE
- [3] - not supported - Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode

mt:

- [0] No SMS-DELIVER indications are routed to the TE. (default value)
- [1] If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem>,<index>
- [2] SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code: +CMT: <alpha>,<length><CR><LF><pdu> (PDU mode enabled) or +CMT: <oa>,<alpha>,<scts>,<tooa>,<fo>,<pid>,<dc>,<sca>,<tosca>,<length><CR><LF><data>
- [3] - not supported - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1

bm:

- Broadcast—csw not supported

ds:

- [0] No SMS-STATUS-REPORTs are routed to the TE. (default value)
- [1] SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS: <length><CR><LF><pdu> (PDU mode enabled) or +CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> (text mode enabled)
- [2] - not supported - If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem>,<index>

bfr:

- not supported

Notes:

In PDU mode, each bit meaning of DCS byte are reference in chapter 11.10.5, CMGW remark.

AT+CPMS Preferred SMS message storage

Command selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

Test Command:

AT+CPMS=?

```
+CPMS: (list of supported <mem1>s), (list of supported <mem2>s),  
(list of supported <mem3>s)  
OK
```

Read Command:

AT+CPMS?

```
+CPMS: <mem1>, <used1>, <total1>, <mem2>, <used2>, <total2>, <mem3>,  
<used3>, <total3>  
OK
```

Set Command:

AT+ CPMS =<mem1>[, <mem2>[,<mem3>]]

```
+CPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3>  
OK
```

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

mem1:

- string, memory from which messages are read and deleted

mem2:

- string, memory to which writing and sending operations are made

mem3:

- string, memory to which received SMs are preferred to be stored

used1:

- integer, amount of messages currently in <mem1>

used2:

- integer, amount of messages currently in <mem2>

used3:

- integer, amount of messages currently in <mem3>

total1:

- integer, amount of messages currently storable in <mem1>

total2:

- integer, amount of messages currently storable in <mem2>

total3:

- integer, amount of messages currently storable in <mem3>

Notes:

Parameters <mem1>? <mem2> and <mem3> are based on values? "SM","ME"

AT+CSCA SMS service center address

Command updates the SMSC address .

Test Command:

AT+CSCA=?

OK

Read Command:

AT+CSCA?

+CSCA:<sca>,<tosca>

OK

Set Command:

AT+ CSCA =<sca>[,<tosca>]

OK

on error:

ERROR

Unsolicited Result Codes:

+CALA: <text>

+SYSSTART ALARM MODE+CALA: <text>

sca:

- GSM 04.11 RP SC address Address-Value field in string format

tosca:

- GSM 04.11 RP SC address Type-of-Address octet in integer format

~~**AT+CSCB>Select cell broadcast messages**~~

Currently not supported



~~AT+CSAS Save Settings~~

Currently not supported



~~**AT+CRES Restore Settings**~~

Currently not supported



+CDS Indicates SMS status report has been received

Indicates that SMS status report has been received

Syntax PDU mode:

+CDS: <length><CR><LF><pdu> (PDU mode enabled)

Syntax Text mode:

+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)

pdu:

- In the case of SMS: 3G TS 24.011 [6] SC address followed by 3G TS 23.040 [3] TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))

length:

- integer, value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)

fo:

- depending on the command or result code: first octet of 3G TS 23.040 [3] SMS-DELIVER, SMS-SUBMIT SMS-STATUS-REPORT, or SMS-COMMAND in integer format is supported, in enhanced format (hexadecimal coded string with double quotes)

scts:

- 3G TS 23.040 [3] TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)

st:

- 3G TS 23.040 [3] TP-Status in integer format

mr:

- 3G TS 23.040 [3] TP-Message-Reference in integer format

ra:

- 3G TS 23.040 [3] TP-Recipient-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in 3G TS 27.007 [9]); type of address given by <tora>

st:

- 3G TS 23.040 [3] TP-Discharge-Time in time-string format: “yy/MM/dd,hh:mm:ss:zz”, where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to “94/05/06,22:10:00+08”

tora:

- 3G TS 24.011 [6] TP-Recipient-Address Type-of-Address octet in integer format (default refer <toda>)

Notes:

Please refer to +CNMI



Audio Commands

The AT Commands described in this chapter are related to the A6 AT Module's audio interface.

AT+CAUDIO Open or Close Audio

Open or Close audio, used during a call.

Test Command:

AT+CAUDIO=?

+CAUDIO: (0-1)

OK

Set Command:

AT+CAUDIO=<n>

OK

on error:

+ CME ERROR: [ERR_ID]

n:

- [0] close audio (transmitter and receiver)
- [1] open audio (transmitter and receiver)

AT+CRSL Ringer Sound Level

Command is used to set/get the sound level of the ringer on incoming calls. The set command changes the default <volume> value of the +CRMP command.

Test Command:

AT+CRSL=?

+CRSL: (0-15)

OK

Read Command:

AT+CRSL?

+CRSL: <number>

OK

Set Command:

AT+CRSL=<value>

OK

on error:

+ CME ERROR: [ERR_ID]

value:

- [0,...,15] set volume to value.

AT+CDTMF Play DTMF tones

Play DTMF tones but don't send DTMF tones to a remote subscriber .

Test Command:

AT+CDTMF=?

+CDTMF: (list of supported <DTMF>s) (list of supported
<duration>s)
OK

Set Command:

AT+CDTMF=<DTMF>[,<duration>]

OK

on error:

+ CME ERROR: [ERR_ID]

DTMF:

- a single ASCII character in the set 0-9,#,*,A-D

duration:

- a integer time in 1/10 second (default value 1)

AT+AUST Test Audio Cycle

Command is used to test audio cycle. At the same time, the command modifies the audio mode.

Test Command:

AT+AUST=?

+AUST: (list of supported <number>s)

OK

Set Command:

The default audio cycle test mode is Mic mode, during audio cycle the execution is disabled.

AT+AUST=<value>

OK

Exec Command:

The execution will automatically modify the value of <nSPKGain>, <nMICGain> <nSideGain> (see in AT +SAIC) as 6, 15, 11. Surely, the gains can be changed by AT+SAIC, during audio cycle the execution is disabled.

AT+AUST

OK

on error:

+ CME ERROR: [ERR_ID]

value:

- [0] Aux mode
- [1] Mic mode

AT+AUEND Stop Audio Cycle Test

Command is used to stop audio cycle test. The default audio mode (Mic mode) is recovered.

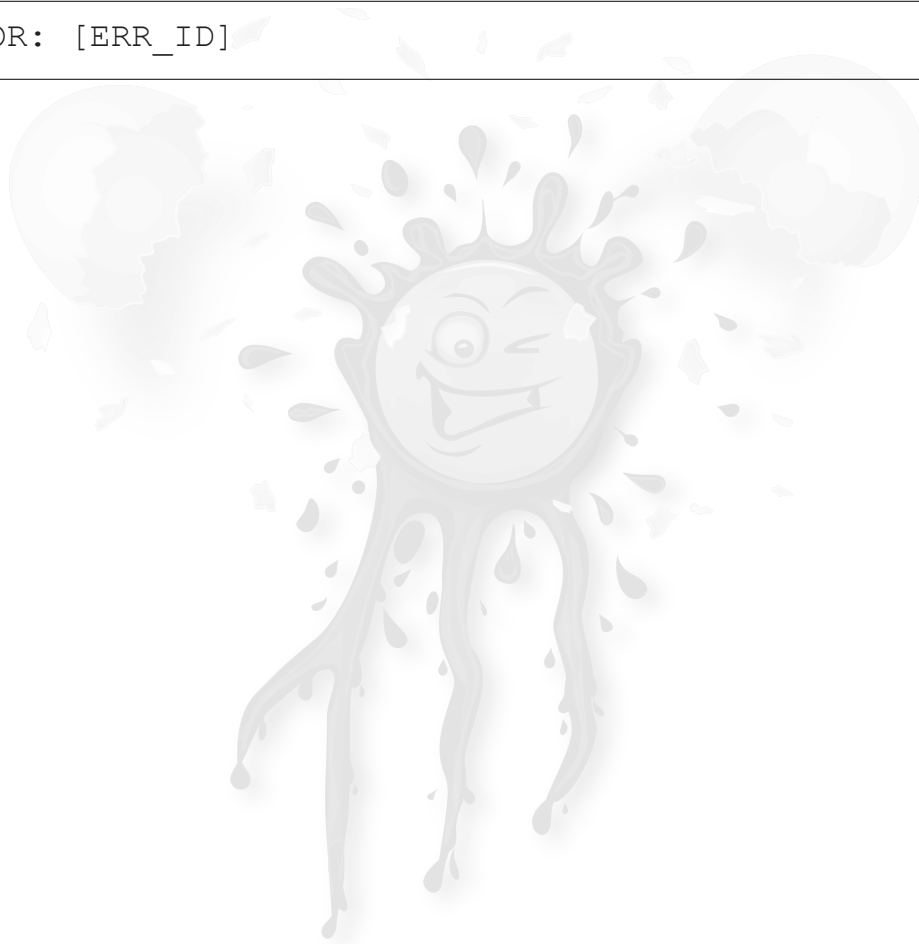
Exec Command:

AT+AUEND

OK

on error:

+ CME ERROR: [ERR_ID]



GPRS Commands

This chapter describes AT Commands that a TE (Terminal Equipment, e.g. an application running on a controlling PC) may use to control the MC55 acting as GPRS Mobile Termination (MT).

AT+CGATT PS attach or detach

Command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned.

Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

Test Command:

AT+CGATT=?

+CGATT: (list of supported <state>s)
OK

Read Command:

AT+CGATT?

+CGATT: <state>
OK

Set Command:

AT+CGATT= <state>

OK

on error:

ERROR

state:

- indicates the state of PS attachment
- [0] detached
- [1] attached

AT+CGDCONT Define PDP Context

Command be used to defined PDP context .

Test Command:

AT+CGDCONT=?

```
+CGDCONT: (range of supported <cid>s), <PDP_type>, (list of
supported<d_comp>s), (list of supported <h_comp>s) [<CR><LF>
[+CGDCONT: (range of supported <cid>s), <PDP_type>, (list of
supported <d_comp>s), (list of supported <h_comp>s) [...]]
OK
```

Read Command:

AT+CGDCONT?

```
+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>,
<d_comp>,<h_comp> [<CR><LF>
+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>
OK
```

Set Command:

```
AT+CGDCONT=<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp>
[,<h_comp>]]]]]
```

OK

on error:

ERROR

cid:

- (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1, maximum value = 7) is returned by the test form of the command.

PDP_type:

- (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol
- [IP] Internet Protocol (IETF STD 5)
- [IPv6] Internet Protocol, version 6 (IETF RFC 2460)
- [PPP] Point to Point Protocol (IETF STD 51)

APN :

- (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.

If the value is null or omitted, then the subscription value will be requested.

PDP_address:

- a string parameter that identifies the MT in the address space applicable to the PDP.
If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.
The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.

d_comp :

- a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 04.65 [59])
- [0] off (default if value is omitted)
- [1] on (manufacturer preferred compression)
- [2] V.42bis
- [3] V.44bis
- other values are reserved

h_comp :

- a numeric parameter that controls PDP header compression (refer 3GPP TS 04.65 [59])
- [0] off (default if value is omitted)
- [1] on (manufacturer preferred compression)
- [2] RFC1144
- [3] RFC2507
- [4] RFC3095
- other values are reserved

AT+CGACT PDP context activate or deactivate

Command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged. If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and then attempts to activate the specified contexts. If no <cid>s are specified the activation form of the command activates all defined contexts or deactivates all active contexts.

Test Command:

The test command is used for requesting information on the supported PDP context activation states.

AT+CGACT=?

+CGACT: (list of supported <state>s)
OK

Read Command:

The read command returns the current activation states for all the defined PDP contexts.

AT+CGACT?

+CGACT: (<cid>, <state>)
OK

Set Command:

AT+CGACT=<state> [,<cid>[,<cid>[,...]]]

OK

on error:

ERROR

sate:

- State indicates the state of PS attachment
- [0] deactivated
- [1] activated

cid:

- numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). Range from 1 to 7.

Notes:

Before activating, use command AT+CGATT=1 first to attach to the network. Currently only 3 active PDP contexts are allowed to exist simultaneity. So the number of cid in this command is limited to 3.



AT+CRC Cellular result codes

This command is to control whether or not the extended format of incoming call indication or GPRS network request for PDP context activation or notification for VBS/VGCS calls is used. When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING.

Test Command:

AT+CRC=?

+CRC: (list of supported <mode>s)
OK

Read Command:

AT+CRC?

+CRC: <mode>
OK

Set Command:

AT+CRC=<mode>

OK

Reference: 3GPP TS 27.007 V3.13.0 (2003-03) and SIEMENS GPRS ATModem

on error:

ERROR

Unsolicited Result Codes:

+CRING <type>

<type>: VOICE normal voice (TS 11)

mode:

- [0] disables extended format (default)
- [1] enables extended format

AT+CGQMIN Quality of Service Profile (Minimum acceptable)

Command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message. A special form of the set command, +CGQMIN= <cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

Test Command:

Returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

AT+CGQMIN=?

```
+CGQMIN: <PDP_type>, (list of supported <precedence>s),
(list of supported <delay>s),
(list of supported <reliability>s) ,
(list of supported <peak>s),
(list of supported <mean>s)
[<CR><LF>
+CGQMIN: <PDP_type>,
(list of supported <precedence>s),
(list of supported <delay>s),
(list of supported <reliability>s) ,
(list of supported <peak>s),
(list of supported <mean>s)
[...]]
OK
```

Read Command:

Returns the current settings for each defined context.

AT+CGQMIN?

```
+CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>,
<mean>[<CR><LF>
+CGQMIN: <cid>, <precedence>, <delay>, <reliability.>, <peak>,
<mean>[...]]
OK
```

Set Command:

Specifies a profile for the context identified by the (local) context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGQMIN command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

```
AT+CGQMIN=<cid> [,<precedence> [,<delay> [,<reliability.>  
[,<peak> [,<mean>]]]]]
```

OK

Reference: 3GPP TS 27.007 V3.13.0 (2003-03)

on error:

ERROR

cid:

- a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands)

precedence:

- Specifies the precedence class
- [0] network subscribed value
- [1] High Priority. Service commitments shall be maintained ahead of precedence classes 2 and 3
- [2] Normal priority. Service commitments shall be maintained ahead of precedence class 3
- [3] Low priority. Service commitments shall be maintained ahead of precedence classes 1 and 2

delay:

- Specifies the precedence class
- [0] network subscribed value
- [1] < 0.5
- [2] < 5
- [3] < 50
- [4] Unspecified (Best Effort)

reliability:

- Specifies the reliability class
- [0] network subscribed value
- [1] Non real-time traffic, error-sensitive application that cannot cope with data loss
- [2] Non real-time traffic, error-sensitive application that can cope with infrequent data loss
- [3] Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS
- [4] Real-time traffic, error-sensitive application that can cope with data loss
- [5] Real-time traffic, error non-sensitive application that can cope with data loss

peak:

- Specify the peak throughput class.
- [0] network subscribed value
- [1] Up to 1 000 (8 kbit/s)
- [2] Up to 2 000 (16 kbit/s)
- [3] Up to 4 000 (32 kbit/s)
- [4] Up to 8 000 (64 kbit/s)
- [5] Up to 16 000 (128 kbit/s)
- [6] Up to 32 000 (256 kbit/s)
- [7] Up to 64 000 (512 kbit/s)
- [8] Up to 128 000 (1 024 kbit/s)
- [9] Up to 256 000 (2 048 kbit/s)



mean:

- Class Peak Throughput(in octets per second)
- [0] network subscribed value
- [1] (in octets per hour) 100 (~0.22 bit/s)
- [2] 200 (~0.44 bit/s)
- [3] 500 (~1.11 bit/s)
- [4] 1 000 (~2.2 bit/s)
- [5] 2 000 (~4.4 bit/s)
- [6] 5 000 (~11.1 bit/s)
- [7] 10 000 (~22 bit/s)
- [8] 20 000 (~44 bit/s)
- [9] 50 000 (~111 bit/s)
- [10] 100 000 (~0.22 kbit/s)
- [11] 200 000 (~0.44 kbit/s)
- [12] 500 000 (~1.11 kbit/s)
- [13] 1 000 000 (~2.2 kbit/s)
- [14] 2 000 000 (~4.4 kbit/s)
- [15] 5 000 000 (~11.1 kbit/s)
- [16] 10 000 000 (~22 kbit/s)
- [17] 20 000 000 (~44 kbit/s)
- [18] 50 000 000 (~111 kbit/s)
- [31] best effort

PDP_type:

- (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol:
- [IP] Internet Protocol (IETF STD 5)
- [IPv6] Internet Protocol, version 6 (IETF RFC 2460)
- [PPP] Point to Point Protocol (IETF STD 51)

AT+CGPADDR Show PDP address

Command returns a list of PDP addresses for the specified context identifiers.

Test Command:

AT+CGPADDR=?

```
+CGPADDR: (list of defined <cid>s)
OK
```

Set Command:

AT+CGPADDR=<cid>[,<cid>[,...]]

```
+CGPADDR: <cid>,<PDP_addr>[<CR><LF>
+CGPADDR: <cid>,<PDP_addr>[...]]
OK
```

Reference: 3GPP TS 27.007 V3.13.0 (2003-03)

on error:

ERROR

cid:

- a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). If no <cid> is specified, the addresses for all defined contexts are returned

PDP_address:

- a string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT and +CGDSCONT commands when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_address> is omitted if none is available

AT+CGAUTO Automatic response to a network request for PDP context activation

Command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP Context Activation message from the network. It also provides control over the use of the V.25ter basic commands 'S0', 'A' and 'H' for handling network requests for PDP context activation. The setting does not affect the issuing of the unsolicited result code RING or +CRING.

Test Command:

AT+CGAUTO=?

+CGAUTO: (list of supported <n>s)
OK

Read Command:

AT+CGAUTO?

+CGAUTO: <n>
OK

Set Command:

AT+CGAUTO=<n>

OK

Reference: 3GPP TS 27.007 V3.13.0 (2003-03)

on error:

ERROR

n:

- [0] turn off automatic response for Packet Domain only
Packet Domain network requests are manually accepted or rejected by the +CGANS command
- [1] turn on automatic response for Packet Domain only
Packet Domain network requests are automatically accepted according to the description above
- [2] modem compatibility mode, Packet Domain only
automatic acceptance of Packet Domain network requests is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject Packet Domain requests. (+CGANS may also be used.) Incoming circuit switched calls can be neither manually nor automatically answered
- [3] modem compatibility mode, Packet Domain and circuit switched calls (default)
automatic acceptance of both Packet Domain network requests and incoming circuit switched calls is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject Packet Domain requests. (+CGANS may also be used.) Circuit switched calls are handled as described elsewhere in this specification

Notes:

When the +CGAUTO=0 command is received, the MT shall not perform a PS detach if it is attached. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING, the TE may manually accept or reject the request by issuing the +CGANS command or may simply ignore the network request.

When the +CGAUTO=1 command is received, the MT shall attempt to perform a PS attach if it is not already attached. Failure will result in ERROR or, if enabled, +CME ERROR being returned to the TE. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING to the TE, this is followed by the intermediate result code CONNECT. The MT then enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

AT+CGQREQ Quality of Service Profile (Requested)

This AT command be used to set the parameters of the QoS when MT send the PDP context message for activation.

Test Command:

AT+CGQREQ=?

```
+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list  
of supported <delay>s), (list of supported <reliability>s) ,  
(list of supported <peak>s), (list of supported <mean>s)  
[<CR><LF>  
[+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list  
of supported <delay>s), (list of supported <reliability>s) ,  
(list of supported <peak>s), (list of supported <mean>s) [...]]  
OK
```

Read Command:

AT+CGQREQ?

```
+CGQREQ: <cid>, <precedence >, <delay>, <reliability>, <peak>,  
<mean>[<CR><LF>  
+CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>,  
<mean>[...]]  
OK
```

Set Command:

```
AT+CGQREQ=<cid> [,<precedence > [,<delay> [,<reliability.>  
[,<peak> [,<mean>]]]]]
```

OK

Reference: 3GPP TS 27.007 V3.13.0 (2003-03)

on error:

ERROR

cid:

- a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands)

precedence:

- Specifies the precedence class
- [0] network subscribed value
- [1] High Priority. Service commitments shall be maintained ahead of precedence classes 2 and 3
- [2] Normal priority. Service commitments shall be maintained ahead of precedence class 3
- [3] Low priority. Service commitments shall be maintained ahead of precedence classes 1 and 2

delay:

- Specifies the precedence class
- [0] network subscribed value
- [1] < 0.5
- [2] < 5
- [3] < 50
- [4] Unspecified (Best Effort)

reliability:

- Specifies the reliability class
- [0] network subscribed value
- [1] Non real-time traffic, error-sensitive application that cannot cope with data loss
- [2] Non real-time traffic, error-sensitive application that can cope with infrequent data loss
- [3] Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS
- [4] Real-time traffic, error-sensitive application that can cope with data loss
- [5] Real-time traffic, error non-sensitive application that can cope with data loss

peak:

- Specify the peak throughput class.
- [0] network subscribed value
- [1] Up to 1 000 (8 kbit/s)
- [2] Up to 2 000 (16 kbit/s)
- [3] Up to 4 000 (32 kbit/s)
- [4] Up to 8 000 (64 kbit/s)
- [5] Up to 16 000 (128 kbit/s)
- [6] Up to 32 000 (256 kbit/s)
- [7] Up to 64 000 (512 kbit/s)
- [8] Up to 128 000 (1 024 kbit/s)
- [9] Up to 256 000 (2 048 kbit/s)

mean:

- Class Peak Throughput(in octets per second)
- [0] network subscribed value
- [1] (in octets per hour) 100 (~0.22 bit/s)
- [2] 200 (~0.44 bit/s)
- [3] 500 (~1.11 bit/s)
- [4] 1 000 (~2.2 bit/s)
- [5] 2 000 (~4.4 bit/s)
- [6] 5 000 (~11.1 bit/s)
- [7] 10 000 (~22 bit/s)
- [8] 20 000 (~44 bit/s)
- [9] 50 000 (~111 bit/s)
- [10] 100 000 (~0.22 kbit/s)
- [11] 200 000 (~0.44 kbit/s)
- [12] 500 000 (~1.11 kbit/s)
- [13] 1 000 000 (~2.2 kbit/s)
- [14] 2 000 000 (~4.4 kbit/s)
- [15] 5 000 000 (~11.1 kbit/s)
- [16] 10 000 000 (~22 kbit/s)
- [17] 20 000 000 (~44 kbit/s)
- [18] 50 000 000 (~111 kbit/s)
- [31] best effort

PDP_type:

- (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol:
- [IP] Internet Protocol (IETF STD 5)
- [IPv6] Internet Protocol, version 6 (IETF RFC 2460)
- [PPP] Point to Point Protocol (IETF STD 51)

Notes:

All parameters omitted will be set to 0.

AT+CGREG GPRS network registration status

Command be used to set and show the register information of MT and the position information of the MT.

Test Command:

AT+CGREG=?

+CGREG: (list of supported <n>s)
OK

Read Command:

AT+CGREG?

+CGREG: <n>,<stat>[,<lac>,<ci>]
OK

Set Command:

AT+CGREG =<n>

OK

Reference: 3GPP TS 27.007 V3.13.0 (2003-03) and SIEMENS GPRS AT Module

on error:

ERROR

n:

- [0] disable network registration unsolicited result code
- [1] enable network registration unsolicited result code +CGREG: <stat>
- [2] enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]

stat:

- [0] not registered, MT is not currently searching an operator to register to
The UE is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED. The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user.
- [1] registered, home network
The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED INITIATED on the home PLMN.
- [2] not registered, but MT is currently trying to attach or searching an operator to register to
The UE is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available.
- [3] registration denied
The UE is in GMM state GMM-NULL. The GPRS service is disabled, the UE is not allowed to attach for GPRS if requested by the user.
- [4] unknown
- [5] registered, roaming
- The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED on a visited PLMN

lac:

- string, two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

ci:

- string, two byte cell ID in hexadecimal format

ATD*99*1# Request GPRS service**

Login the server, the IP of it be provided by DHCP of GGSN.

This command causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.

The V.25ter 'D' (Dial) command causes the MT to enter the V.25ter online data state and, with the TE, to start the specified layer 2 protocols. The MT shall return CONNECT to confirm acceptance of the command prior to entering the V.25ter online data state. No further commands may follow on the AT command line.

Exec Command:

```
AT+D*<GPRS_SC_IP>[*<cid>[,<cid>[,...]]]#
```

OK

on error:

ERROR

called_address:

- It's a string that identifies the called party in the address space applicable to the PDP. For communications software that does not support arbitrary characters in the dial string, a numeric equivalent may be used. Also, the character comma ',' may be used as a substitute for the character period '.'.

L2P:

- It's a string which indicates the layer 2 protocol to be used (see +CGDATA command). For communications software that does not support arbitrary characters in the dial string, the following numeric equivalents shall be used: "PPP"

cid:

- It's a digit string which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands)

~~AT+CGSMS~~ Select service for MO SMS messages

The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.

Test Command:

AT+CGSMS=?

+ CGSMS: (list of supported <service>s)
OK

Read Command:

AT+CGSMS?

+ CGSMS: <service>
OK

Set Command:

AT+CGSMS=<service>

OK

Reference: 3GPP TS 27.007 V3.13.0 (2003-03) and SIEMENS GPRS AT Module

on error:

ERROR

service:

- a numeric parameter which indicates the service or service preference to be used
- [0] Packet Domain
- [1] circuit switched
- [2] Packet Domain preferred (use circuit switched if GPRS not available)
- [3] circuit switched preferred (use Packet Domain if circuit switched not available)

Notes:

Command is NOT available now

~~AT+CGANS PDP Manual response to a NW REQ for PDP context activation~~

Command requests the MT to respond to a network request for Packet Domain PDP context activation which has been signaled to the TE by the RING or +CRING: unsolicited result code. The <response> parameter allows the TE to accept or reject the request.

Commands following the +CGANS command in the AT command line shall not be processed by the MT.

Test Command:**AT+CGANS=?**

```
+CGANS: (list of supported <response>s), (list of supported  
<L2P>s)  
OK
```

Set Command:**AT+CGANS=[<response>, [<L2P> , [<cid>]]]**

```
CONNECT  
.....(data transfer)  
OK
```

on error:

ERROR

response:

- Response is a numeric parameter which specifies how the request should be responded to
- [0] reject the request (default value)
- [1] accept and request that the PDP context be activated

L2P:

- a string parameter which indicates the layer 2 protocol to be used (see +CGDATA command)

cid:

- It's a digit string which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands)

Notes:

Command is not available.

~~AT+CGEREP Packet Domain event reporting~~

Command is currently not available



~~AT+CGDATA Enter data state~~

Command is currently not available



~~AT+CGCLASS GPRS mobile station class~~

Command is currently not available



TCP/IP Commands

The AT Commands described in this chapter are related to the A6 AT Module's TCP/IP application toolkit interface.

AT+CIPSTART Start up TCP or UDP connection

Command is to start up TCP or UDP connection .

Test Command:

AT+CIPSTART=?

+CIPSTART: (list of supported <mode>), (IP address range), (port range)
OK

Set Command:

Configure TCP connection over IP address.

AT+ CIPSTART =<mode>,<IP address>,<port>

OK

Set Command:

Configure TCP connection over domain.

AT+ CIPSTART =<mode>,<domain name>,<port>

OK

on error:

ERROR

Unsolicited Result Codes:

If connect successfully response CONNECT OK, otherwise

STATE:<state>

CONNECT FAIL

mode:

- a string parameter which indicates the connection type
- ["TCP"] Establish a TCP connection
- ["UDP"] Establish a UDP connection

IP address:

- a string parameter which indicates the remote server IP address

port:

- a string parameter which indicates remote server local port address

domain name:

- a string parameter which indicates the remote server domain name

state:

- a string parameter which indicates the the progress of connecting
- [0] IP INITIAL
- [1] IP START
- [2] IP CONFIG
- [3] IP IND
- [4] IP GPRSACT
- [5] IP STATUS
- [6] TCP/UDP CONNECTING
- [7] IP CLOSE
- [8] CONNECT OK

Notes:

UDP is currently not available



AT+CIPSEND Send data through TCP ~~or~~ UDP connection

This command is to send data through TCP ~~or~~ UDP connection.

Test Command:

AT+CIPSEND=?

OK

Exec Command:

Configure TCP connection over IP address.

AT+CIPSEND

Response ">",
then type data for send,
tap CTRL+Z to send
OK

on error:

ERROR

Unsolicited Result Codes:

If sending successfully

SEND OK

If sending fail

SEND FAIL

data_length:

- a numeric parameter which indicates the length of sending data, max. length 1024

Notes:

Command is used to send data on the TCP ~~or~~ UDP connection that has been established already. Ctrl+Z is used as a termination symbol. Maximum byte length is 1024 bytes. Set the time that send data automatically with the command of AT+CIPATS.

AT+CIPCLOSE Close TCP or UDP Connection

Command to close established TCP connection at state of TCP/UDP CONNECTING or CONNECT OK,
After closing connection, the status is IP CLOSE

Test Command:

AT+CIPCLOSE=?

+ CIPCLOSE:
OK

Exec Command:

AT+CIPCLOSE

CLOSE OK

on error:

ERROR

AT+CIPSHUT Disconnect wireless connection

The command disconnects existing wireless connection, except connection at IP INITIAL state. After closing connection, the state is IP INITIAL.

Test Command:

AT+CIPSHUT=?

+ CIPSHUT:
OK

Exec Command:

AT+CIPCLOSE

CLOSE OK

on error:

ERROR

AT+CSTT Start task and Set APN, USER ID, PASSWORD

Command starts task and Set APN, USER ID, PASSWORD .

Test Command:

AT+CSTT=?

+ CSTT: "APN", "USER", "PWD"
OK

Read Command:

AT+CSTT?

+ CSTT: <apn>, <user id>, <password>
OK

Set Command:

AT+CSTT=<apn>, <user id>, <password>

OK

on error:

ERROR

apn:

- string parameter which indicates the GPRS access point name

user id:

- string parameter which indicates the GPRS user name

password:

- string parameter which indicates the GPRS user password

AT+CIICR Bring up wireless connection with GPRS

Command only activate moving scene at the status of IP START, after operate this command, the state changed to IP CONFIG. If module accept the activate operation, the state changed to IP IND; after module accept the operation, if activate successfully, the state changed to IP GPRSACT, response OK, otherwise response ERROR.

Test Command:**AT+CIICR=?**

OK

Exec Command:**AT+CIICR**

OK

on error:

ERROR

state:

- referred to AT+CIPSTART state

AT+CIFSR Get local IP address

Command only at the status of activated the moving scene: IP GPRSACT, TCP/UDP CONNECTING, CONNECT OK, IP CLOSE can get local IP Address by AT+CIFSR, otherwise response ERROR.

Test Command:

AT+CIFSR =?

+ CIFSR:
OK

Read Command:

AT+CIFSR?

+ CIFSR:
OK

Exec Command:

AT+CIFSR

<IP address>
OK

on error:

ERROR

ip address:

- string parameter which indicates the IP address assigned from GPRS or CSD

AT+CIPSTATUS Query current connection status

Command query current connection status .

Test Command:

AT+CIPSTATUS=?

+ CIPSTATUS:
OK

Read Command:

AT+CIPSTATUS?

+ CIPSTATUS:
OK

Exec Command:

AT+CIPSTATUS

STATE:<state>
OK

on error:

ERROR

state:

- Referred to AT+CIPSTART actual state

AT+CIPATS Set auto sending timer

Command set auto sending timer .

Test Command:

AT+CIPATS=?

+ CIPATS: (list of supported <mode>s)

OK

Read Command:

AT+CIPATS?

+ CIPATS: <mode>

OK

Set Command:

AT+CIPATS =<mode>,<time>

OK

on error:

ERROR

mode:

- numerical parameter which indicates whether set timer when sending data.
- [0] not set timer when sending data
- [1] set timer when sending data

time:

- numerical parameter which indicates a delay in seconds for sending data

Notes:

time parameter 0 will disable delay, working timer delay range is 1-65536.

AT+CIPSCONT save TCP/IP application context

Command stores TCP/IP application context of AT command parameters. During reboot system will load TCP/IP Parameters.

Read Command:

AT+CIPSCONT?

+ CIPSCONT:
OK

Exec Command:

AT+CIPSCONT

OK

on error:

ERROR

Notes:

Currently Exec command is not available

AT+CDNSGIP Query the IP address of given domain name

Command query the IP address of given domain name.

Test Command:

AT+CDNSGIP=?

+ CDNSGIP: DOMAIN NAME LENGTH(0,100)
OK

Read Command:

AT+CDNSGIP?

+ CDNSGIP: ("DOMAIN NAME")
OK

Set Command:

AT+CDNSGIP=<domain name>

<IP address>
OK

on error:

ERROR

domain name:

- string parameter which indicates the domain name

IP address:

- string parameter which indicates the IP address corresponding to the domain name

Notes:

During command fail numeric parameter indicates error

DNS not Authorization
invalid parameter
network error
no server
time out
no configuration
no memory

GPIO Commands

This chapter describes using of GPIO features. **Please refer to Module Pinout.**

AT+IORD read GPIO state

Command reads actual GPIO state

Test Command:

Represents a list of all available GPIO's

AT+IORD=?

+IORD:<gpio> (list of available gpio's)
OK

Read Command:

Reads actual state of designated GPIO

AT+IORD=<gpio>

+IORD:<state>
OK

on error:

+CME ERROR: <err_id>

- numerical parameter which indicates gpio
- [3] refers to GPIO3
- [5] refers to GPIO5 (UART CTS)
- [6] refers to GPIO6 (network status indicator)
- [7] refers to GPIO7 (UART RTS)
- [14] refers to GPIO14
- [15] refers to GPIO15
- [16] refers to GPIO16

state:

- numerical parameter which indicates actual state of GPIO
- [0] GPIO is in LOW state
- [1] GPIO is in HIGH state

AT+IODIR set GPIO direction

Command configures state of direction, in or out for designated GPIO.

If direction is set to out direction, GPIO will change state to HIGH. Please keep GPIO Pin insulated before switch direction to out state.

Test Command:

Represents a list of all available GPIO direction

AT+IODIR=?

+IODIR: (0-pin,1-direction(0-in 1-out))
OK

Read Command:

Reads actual direction of designated GPIO

AT+IODIR=<pin>

+IODIR:<direction>
OK

Set Command:

configures direction of designated GPIO

AT+IODIR=<pin>,<direction>

OK

on error:

+CME ERROR: <err_id>

pin

- numerical parameter which indicates gpio
- [3] refers to GPIO3
- [5] refers to GPIO5 (UART CTS)
- [6] refers to GPIO6 (network status indicator)
- [7] refers to GPIO7 (UART RTS)
- [14] refers to GPIO14
- [15] refers to GPIO15
- [16] refers to GPIO16state:
- numerical parameter which indicates direction of GPIO
- [0] state of direction is in
- [1] state of direction is out

Notes:

Default GPIO direction setting is in. Before switch state direction to out state keep designated GPIO insulated.

For GPIO writing function GPIO direction must be configured as out direction.

Module GPIO voltage level is 2.8V, higher incoming voltage will damage Module.

AT+IOWR to GPIO

Command configures HIGH or LOW state of designated GPIO

Test Command:

Represents a list of all available GPIO also GPIO level

AT+IOWR=?

+IOWR: (3,5,6,7,14,15,16) , (0,1)

OK

Set Command:

configures level (HIGH / LOW) for designated GPIO

AT+IOWR=<pin>,<level>

OK

on error:

+CME ERROR: <err_id>

pin:

- numerical parameter which indicates GPIO
- [3] refers to GPIO3
- [5] refers to GPIO5 (UART CTS)
- [6] refers to GPIO6 (network status indicator)
- [7] refers to GPIO7 (UART RTS)
- [14] refers to GPIO14
- [15] refers to GPIO15
- [16] refers to GPIO16

level:

- numerical parameter which configure level / state of designated GPIO
- [0] configures LOW level to designated GPIO
- [1] configures HIGH level to designated GPIO

Appendix A

Summary of CME ERRORS

CME Error Code	Error description
0	PHONE_FAILURE
1	NO_CONNECT_PHONE
2	PHONE_ADAPTER_LINK_RESERVED
3	OPERATION_NOT_ALLOWED
4	OPERATION_NOT_SUPPORTED
5	PHSIM_PIN_REQUIRED
6	PHFSIM_PIN_REQUIRED
7	PHFSIM_PUK_REQUIRED
10	SIM_NOT_INSERTED
11	SIM_PIN_REQUIRED
12	SIM_PUK_REQUIRED
13	SIM_FAILURE
14	SIM_BUSY
15	SIM_WRONG
16	INCORRECT_PASSWORD
17	SIM_PIN2_REQUIRED
18	SIM_PUK2_REQUIRED
20	MEMORY_FULL
21	INVALID_INDEX
22	NOT_FOUND
23	MEMORY_FAILURE
24	TEXT_LONG
25	INVALID_CHAR_INTEXT
26	DAIL_STR_LONG
27	INVALID_CHAR_INDIAL
30	NO_NET_SERVICE
31	NETWORK_TIMEOUT
32	NOT_ALLOW_EMERGENCY
40	NET_PER_PIN_REQUIRED
41	NET_PER_PUK_REQUIRED
42	NET_SUB_PER_PIN_REQ
43	NET_SUB_PER_PUK_REQ
44	SERVICE_PROV_PER_PIN_REQ
45	SERVICE_PROV_PER_PUK_REQ
46	CORPORATE_PER_PIN_REQ
47	CORPORATE_PER_PUK_REQ
48	PHSIM_PBK_REQUIRED
49	EXE_NOT_SURPORT
50	EXE_FAIL

CME Error Code	Error description
49	EXE_NOT_SURPORT
50	EXE_FAIL
51	NO_MEMORY
52	OPTION_NOT_SURPORT
53	PARAM_INVALID
54	EXT_REG_NOT_EXIT
55	EXT_SMS_NOT_EXIT
56	EXT_PBK_NOT_EXIT
57	EXT_FFS_NOT_EXIT
103	GPRS_ILLEGAL_MS_3
106	GPRS_ILLEGAL_MS_6
107	GPRS_SVR_NOT_ALLOWED
111	GPRS_PLMN_NOT_ALLOWED
112	GPRS_LOCATION_AREA_NOT_ALLOWED
113	GPRS_ROAMING_NOT_ALLOWED
132	GPRS_OPTION_NOT_SUPPORTED
133	GPRS_OPTION_NOT_SUBSCRIBED
134	GPRS_OPTION_TEMP_ORDER_OUT
149	GPRS_PDP_AUTHENTICATION_FAILURE
150	GPRS_INVALID_MOBILE_CLASS
148	GPRS_UNSPECIFIED_GPRS_ERROR
264	SIM_VERIFY_FAIL
265	SIM_UNBLOCK_FAIL
266	SIM_CONDITION_NO_FULLFILLED
267	SIM_UNBLOCK_FAIL_NO_LEFT
268	SIM_VERIFY_FAIL_NO_LEFT
269	SIM_INVALID_PARAMETER
270	SIM_UNKNOW_COMMAND
271	SIM_WRONG_CLASS
272	SIM_TECHNICAL_PROBLEM
273	SIM_CHV_NEED_UNBLOCK
274	SIM_NOEF_SELECTED
275	SIM_FILE_UNMATCH_COMMAND
276	SIM_CONTRADICTION_CHV
277	SIM_CONTRADICTION_INVALIDATION
278	SIM_MAXVALUE_REACHED
279	SIM_PATTERN_NOT_FOUND
280	SIM_FILEID_NOT_FOUND
281	SIM_STK_BUSY
282	SIM_UNKNOW

283 SIM_PROFILE_ERROR

Summary of CMS ERRORS**CMS Error Error description****Code**

1	UNASSIGNED_NUM
8	OPER_DETERM_BARR
10	CALL_BARRED
21	SM_TRANS_REJE
27	DEST_OOS
28	UNINDENT_SUB
29	FACILIT_REJE
30	UNKONWN_SUB
38	NW_OOO
41	TMEP_FAIL
42	CONGESTION
47	RES_UNAVAILABLE
50	REQ_FAC_NOT_SUB
69	RFQ_FAC_NOT_IMP
81	INVALID_SM_TRV
95	INVALID_MSG
96	INVALID_MAND_INFO
97	MSG_TYPE_ERROR
98	MSG_NOT_COMP
99	INFO_ELEMENT_ERROR
111	PROT_ERROR
127	IW_UNSPEC
128	TEL_IW_NOT_SUPP
129	SMS_TYPE0_NOT_SUPP
130	CANNOT_REP_SMS
143	UNSPEC_TP_ERROR
144	DCS_NOT_SUPP
145	MSG_CLASS_NOT_SUPP
159	UNSPEC_TD_ERROR
160	CMD_CANNOT_ACT
161	CMD_UNSUPP
175	UNSPEC_TC_ERROR
176	TPDU_NOT_SUPP
192	SC_BUSY
193	NO_SC_SUB
194	SC_SYS_FAIL
195	INVALID_SME_ADDR
196	DEST_SME_BARR
197	SM_RD_SM
198	TP_VPF_NOT_SUPP

199 TP_VP_NOT_SUPP

**CMS Error
Code** **Error description**

198 TP_VPF_NOT_SUPP
 199 TP_VP_NOT_SUPP
 208 DO_SIM_SMS_STO_FULL
 209 NO_SMS_STO_IN_SIM
 210 ERR_IN_MS
 211 MEM_CAP_EXCCEEDED
 212 SIM_APP_TK_BUSY
 213 SIM_DATA_DL_ERROR
 255 UNSPEC_ERRO_CAUSE
 300 ME_FAIL
 301 SMS_SERVICE_RESERVED
 302 OPER_NOT_ALLOWED
 303 OPER_NOT_SUPP
 304 INVALID_PDU_PARAM
 305 INVALID_TXT_PARAM
 310 SIM_NOT_INSERT
 311 SIM_PIN_REQUIRED
 312 PH_SIM_PIN_REQUIRED
 313 SIM_FAIL
 314 SIM_BUSY
 315 SIM_WRONG
 316 SIM_PUK_REQUIRED
 317 SIM_PIN2_REQUIRED
 318 SIM_PUK2_REQUIRED
 320 MEM_FAIL
 321 INVALID_MEM_INDEX
 322 MEM_FULL
 330 SCA_ADDR_UNKNOWN
 331 NO_NW_SERVICE
 332 NW_TIMEOUT
 340 NO_CNMA_ACK_EXPECTED
 500 UNKNOWN_ERROR
 512 USER_ABORT
 513 UNABLE_TO_STORE
 514 INVALID_STATUS
 515 INVALID_ADDR_CHAR
 516 INVALID_LEN
 517 INVALID_PDU_CHAR
 518 INVALID_PARA
 519 INVALID_LEN_OR_CHAR
 520 INVALID_TXT_CHAR

512 TIMER_EXPIRED



Summary of DCE Codes

DCE Code	Error description
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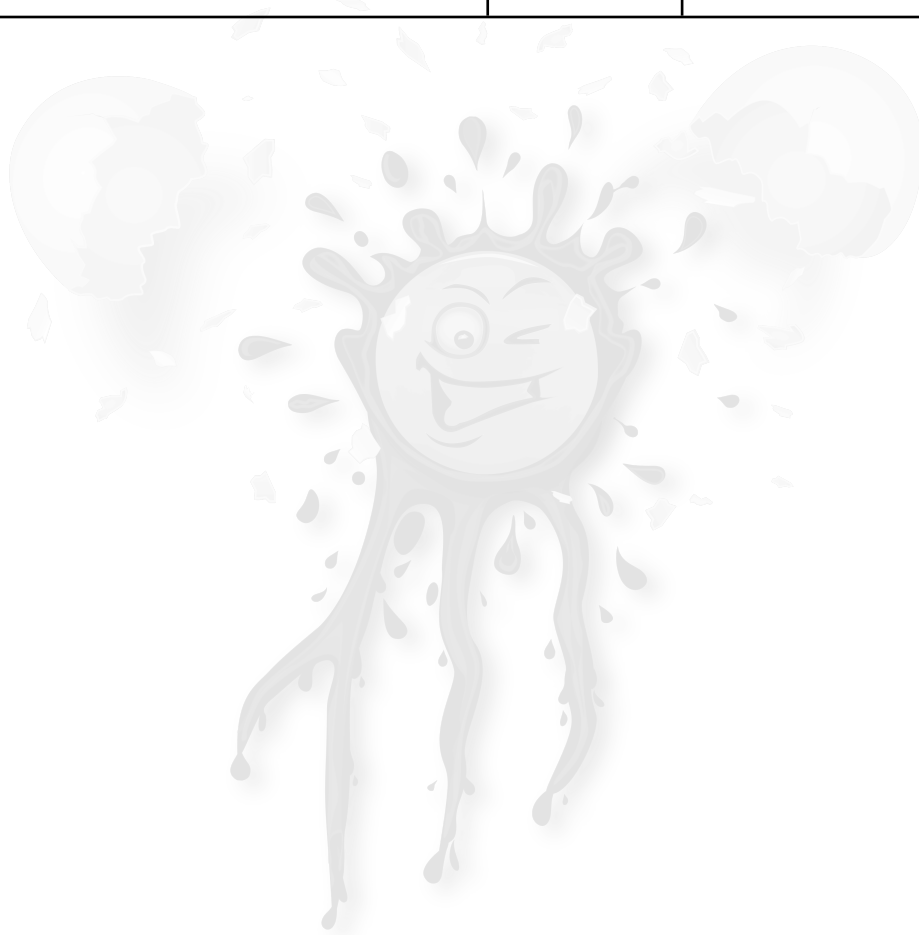
0	"OK"
1	"CONNECT"
2	"RING/CRING"
3	"NO CARRIER"
4	"ERROR"
5	"NO DIALTONE"
6	"BUSY"
7	"NO ANSWER"
8	"NOT SUPPORT"
9	"INVALID COMMAND LINE"



Summary of Unsolicited Result Codes (URC)

AT Command	Description	activating URC	Example
RING(CC)	Incoming calls		RING +CLIP: "02085563192",129,,,0
+CALA(HW)	Reminder message set with AT+CALA command. Executed while ME is in normal operation. Do not confuse with Alarm mode.		<AT+CALA>
+CIEV(CC/ SMS/Battery/)	Reports changes from indicators listed in the AT +CIND command specification.		<AT+CMER>
+CREG(NW)	Registration to ME network changed		<AT+CREG>
+CLIP (SS)	Telephone number of caller		<AT+CLIP> RING>
+CMTI(SMS)	Indication of a new short message (PDU mode)		AT+CNMI=1,1,2 OK +CMTI: "SM", 6 AT+CMGR=6 +CMGR: 0,, 35 0891683108200005F0240D9168316520 3406F20008400172909552000676848B DD8BF4 OK <AT+CNMI>
+CMT(SMS)	Short message is output directly to the TE (in PDU mode)		AT+CNMI=1,2,2 OK +CMT: 35 0891683108200005F0240D9168316520 3406F20008400172013033000676848B DD8BF4 <AT+CNMI>
+CSSI (SS) +CSSU	Supplementary service intermediate/unsolicited result code		AT+CSSN=1,1 OK ATD1861; OK <...> +CSSI: 3 +CCWA: "02085563410",129,1,,0 AT+CHLD=2 OK <...> NO CARRIER +CSSU: 5 <AT+CSSN>
+CUSD (SS)	USSD response from the network after a mobile originated or network initiated action.	ATD#222#; OK +CUSD: 2,"UNKNOWN APPLICATION", 15 <AT+CUSD>	ATD#222#; OK +CUSD: 2,"UNKNOWN APPLICATION",15 <AT+CUSD>
^SBC: (HW) Undervoltage	Under voltage of battery detected. ME will be switched off within a minute.	AT^CBCM=1	^ SBC:UNDERVOLTAGE

AT Command	Description	activating URC	Example
<code>^STN(SS)</code>	Remote-SAT Notification		
<code>^CBCI(BATTERY)</code>	Battery charge level indication	<code>AT^CBCM=1</code>	<code>AT^CBCM=1</code> OK <code>^CBCI: 0,100,0,4487</code>
<code>+CIEV(CC/SMS/Battery/.....)</code>	Reports changes from indicators listed in the AT <code>+CIND</code> command specification.		<code><AT+CMER></code>
<code>+CCWA</code>	Call waiting indication	<code>AT+CCWA=1</code>	



Summary of config Exec Commands

Exec Command	Description
ATQ	result code present control
ATV	Format of response and result code
ATE	UART echo control
ATSO	Auto answer
ATS3	Specify Carriage return character
ATS4	Specify Linefeed character
ATS5	Command line editing character
AT+CMEE	Format of errcode
AT+CMER	Indicator reporting way
AT+VTD	Duration of the DTMF tone
AT+COPS	Operator format Network register mode
AT+CPOL	Preferred operator format
AT+CPBS	Phonebook storage
AT^STA	Alphabet
AT+CCWA	Parameter <n>
AT+CUSD	Parameter <n>
AT+CLIP	Parameter <n>
AT+CLIR	Parameter <n>
AT+COLP	Parameter <n>
AT+CSSN	Parameter <n> Parameter <m>
AT^MONI	Parameter <n>
AT^NONPP	Parameter <n>
AT^CBCM	Indicator controller
AT+VGR	Receiver gain
AT+VGT	Transmit gain
AT+CMUT	Mute control in a voice call
AT+CGAUTO	Parameter <n>
AT+IPR	Parameter <rate>

