# AT Commands Reference Guide

GM862-QUAD, GM862-QUAD-PY, GM862-GPS, GE863-QUAD, GE863-PY, GE863-GPS, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY

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Making machines talk.

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# 1 INTRODUCTION

## 1.1 Scope Of Document

To describe all AT commands implemented on the following Telit wireless modules:

| Model | P/N |
|---|---|
| GM862-QUAD-PY | 3990250656 |
| GM862-QUAD | 3990250655 |
| GE863-QUAD | 3990250653 |
| GE863-PY | 3990250654 |
| GM862-QUAD-PY | 3990250658 |
| GM862-QUAD | 3990250659 |
| GM862-GPS | 3990250657 |
| GE863-QUAD | 3990250662 |
| GE863-PY | 3990250661 |
| GE863-GPS | 3990250660 |
| GE864-QUAD | 3990250648 |
| GE864-PY | 3990250650 |
| GC864-QUAD | 3990250675 |
| GC864-PY | 3990250676 |

**NOTE: This document is strictly referred to the above products. It's highly recommended to double check the P/N of your GM862 or GM863 product, before any association to this document, since there are differences between P/N (es. additional functions like CMUX and SAP).**

# 2 APPLICABLE DOCUMENTS

a) ETSI GSM 07.07 specification and rules
b) ETSI GSM 07.05 specification and rules
c) Hayes standard AT command set

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# 3 AT COMMAND

The Telit wireless module family can be driven via the serial interface using the standard AT commands[1]. The Telit wireless module family is compliant with:

1. Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.
2. ETSI GSM 07.07 specific AT command and GPRS specific commands.
3. ETSI GSM 07.05 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)
4. FAX Class 1 compatible commands

Moreover Telit wireless module family supports also Telit proprietary AT commands for special purposes.
In the following is described how to use the AT commands with the Telit wireless module family.

## 3.1 Definitions

The following syntactical definitions apply:

**<CR>** **Carriage return character**, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255, is specified within parameter **S3**. The default value is 13.

**<LF>** **Linefeed character**, is the character recognised as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter **S4**. The default value is 10. The line feed character is output after carriage return character if verbose result codes are used (**V1** option used ) otherwise, if numeric format result codes are used (**V0** option used) it will not appear in the result codes.

**<...>** Name enclosed in angle brackets is a syntactical element. They do not appear in the command line.

**[...]** Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a Read command, which are called *action type* commands, action should be done on the basis of the recommended default setting of the subparameter.

[1] The **AT** is an **ATTENTION** command and is used as a prefix to other parameters in a string. The AT command combined with other parameters can be set up in the communications package or typed in manually as a command line instruction.

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## 3.2 AT Command Syntax

The syntax rules followed by Telit implementation of Hayes AT commands, GSM commands and FAX commands are very similar to those of standard basic and extended AT commands. A special command (**#SELINT**, see §3.3.1) has been introduced in order to have an AT interface very close to the standard one.

There are two types of extended command:

- **Parameter type commands**. This type of commands may be "set" (to store a value or values for later use), "read" (to determine the current value or values stored), or "tested" (to determine ranges of values supported). Each of them has a test command (trailing **=?**) to give information about the type of its subparameters; they also have a Read command (trailing **?**) to check the current values of subparameters.

- **Action type commands**. This type of command may be "executed" or "tested".
  - "executed" to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use
  - "tested" to determine:

    *(if the command **#SELINT=0** or **#SELINT=1** has been issued, see §3.3.1)*
    if subparameters are associated with the action, the ranges of subparameters values that are supported; if the command has no subparameters, issuing the correspondent Test command (trailing **=?**) raises the result code "**ERROR**".
    Note: issuing the Read command (trailing **?**) causes the command to be executed.

    *(if the command **#SELINT=2** has been issued, see §3.3.1)*
    whether or not the equipment implements the Action Command (in this case issuing the correspondent Test command - trailing **=?** - returns the **OK** result code), and, if subparameters are associated with the action, the ranges of subparameters values that are supported.

  Action commands don't store the values of any of their possible subparameters.

Moreover:

- *(for **#SELINT=0** or **#SELINT=1** only)*
  An enhanced test command (trailing **=??**) has been introduced to maintain backward compatibility for those commands whose subparameters changed the range of possible values from version to version.
- *(for **#SELINT=2** only)*
  The response to the Test Command (trailing **=?**) may be changed in the future by Telit to allow the description of new values/functionalities
- *(for **#SELINT=2** only)*

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If all the subparameters of a parameter type command **+CMD** (or **#CMD** or **$CMD**) are optional, issuing **AT+CMD=<CR>** (or **AT#CMD=<CR>** or **AT$CMD=<CR>**) causes the **OK** result code to be returned and the previous values of the omitted subparameters to be retained.

### 3.2.1 String Type Parameters

A string, either enclosed between quotes or not, is considered to be a valid string type parameter input. According to V25.ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants; therefore a string containing a space character has to be enclosed between quotes to be considered a valid string type parameter (e.g. typing **AT+COPS=1,0,"A1"** is the same as typing **AT+COPS=1,0,A1**; typing **AT+COPS=1,0,"A BB"** is different from typing **AT+COPS=1,0,A BB**).

When **#SELINT=0 (or 1)** mode is selected, a string not enclosed between quotes is changed in upper case (e.g. **mickey** become **MICKEY**), while a string enclosed between quotes is case sensitive.
When **#SELINT=2** mode is selected, a string enclosed between quotes is case sensitive.

A small set of commands requires always to write the input string parameters within quotes: this is explicitly reported in the specific descriptions.

### 3.2.2 Command Lines

A command line is made up of three elements: the **prefix**, the **body** and the **termination character**.

The **command line prefix** consists of the characters "**AT**" or "**at**", or, to repeat the execution of the previous command line, the characters "**A/**" or "**a/**".
The **termination character** may be selected by a user option (parameter S3), the default being **<CR>**.
The basic structures of the command line are:

- **ATCMD1<CR>** where **AT** is the command line prefix, **CMD1** is the body of a **basic command** (nb: the name of the command never begins with the character "**+**") and **<CR>** is the command line terminator character
- **ATCMD2=10<CR>** where 10 is a subparameter
- **AT+CMD1;+CMD2=, ,10<CR>** These are two examples of **extended commands** (nb: the name of the command always begins with the character "**+**"[2]). They are delimited with semicolon. In the second command the subparameter is omitted.
- **+CMD1?<CR>** This is a Read command for checking current subparameter values
- **+CMD1=?<CR>** This is a test command for checking possible subparameter values

These commands might be performed in a single command line as shown below:

[2] The set of **proprietary AT commands** differentiates from the standard one because the name of each of them begins with either "@", "#", "**$**" or "*". **Proprietary AT commands** follow the same syntax rules as **extended commands**

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**ATCMD1 CMD2=10+CMD1;+CMD2=, ,10;+CMD1?;+CMD1=?<CR>**

anyway it is always preferable to separate into different command lines the basic commands and the extended commands; furthermore it is suggested to avoid placing several action commands in the same command line, because if one of them fails, then an error message is received but it is not possible to argue which one of them has failed the execution.

If command **V1** is enabled (verbose responses codes) and all commands in a command line has been performed successfully, result code **<CR><LF>OK<CR><LF>** is sent from the TA to the TE, if subparameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code **<CR><LF>ERROR<CR><LF>** is sent and no subsequent commands in the command line are processed.

If command **V0** is enabled (numeric responses codes), and all commands in a command line has been performed successfully, result code **0<CR>** is sent from the TA to the TE, if sub-parameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code **4<CR>** and no subsequent commands in the command line are processed.

In case of errors depending on ME operation, **ERROR** (or **4**) response may be replaced by **+CME ERROR: <err> or +CMS ERROR: <err>**.

**Note:** The command line buffer accepts a maximum of 80 characters. If this number is exceeded none of the commands will be executed and TA returns **ERROR**.

### 3.2.2.1 +CME ERROR: - ME Error Result Code

This is NOT a command, it is the error response to +**Cxxx GSM 07.07** commands.
Syntax: **+CME ERROR:<err>**
Parameter: **<err>** - error code can be either numeric or verbose (see **+CMEE**).The possible values of **<err>** are reported in the table:

| Numeric Format | Verbose Format |
|---|---|
| **General errors:** | |
| 0 | phone failure |
| 1 | No connection to phone |
| 2 | phone-adaptor link reserved |
| 3 | operation not allowed |
| 4 | operation not supported |
| 5 | PH-SIM PIN required |
| 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 |

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| | |
|---|---|
| 18 | SIM PUK2 required |
| 20 | memory full |
| 21 | invalid index |
| 22 | not found |
| 23 | memory failure |
| 24 | text string too long |
| 25 | invalid characters in text string |
| 26 | dial string too long |
| 27 | invalid characters in dial string |
| 30 | no network service |
| 31 | network timeout |
| 32 | network not allowed - emergency calls only |
| 40 | network personalization PIN required |
| 41 | network personalization PUK required |
| 42 | network subset personalization PIN required |
| 43 | network subset personalization PUK required |
| 44 | service provider personalization PIN required |
| 45 | service provider personalization PUK required |
| 46 | corporate personalization PIN required |
| 47 | corporate personalization PUK required |
| **Easy CAMERA® related errors** (only if the command ***#SELINT=0*** or ***#SELINT=1*** has been issued - see **§3.3.1**): | |
| 50 | Camera not found |
| 51 | Camera Initialization Error |
| 52 | Camera not Supported |
| 53 | No Photo Taken |
| 54 | NET BUSY...Camera TimeOut |
| 55 | Camera Error |
| **General purpose error:** | |
| 100 | unknown |
| **GPRS related errors to a failure to perform an Attach:** | |
| 103 | Illegal MS (#3)* |
| 106 | Illegal ME (#6)* |
| 107 | GPRS service not allowed (#7)* |
| 111 | PLMN not allowed (#11)* |
| 112 | Location area not allowed (#12)* |
| 113 | Roaming not allowed in this location area (#13)* |
| **GPRS related errors to a failure to Activate a Context and others:** | |
| 132 | service option not supported (#32)* |
| 133 | requested service option not subscribed (#33)* |
| 134 | service option temporarily out of order (#34)* |
| 148 | unspecified GPRS error |
| 149 | PDP authentication failure |
| 150 | invalid mobile class |
| **Network survey errors:** (only if the command ***#SELINT=0*** or ***#SELINT=1*** has been issued - see **§3.3.1**): | |
| 257 | Network survey error (No Carrier)* |
| 258 | Network survey error (Busy)* |
| 259 | Network survey error (Wrong request)* |
| 260 | Network survey error (Aborted)* |
| **Easy GPRS® related errors** (only if the command ***#SELINT=0*** or ***#SELINT=1*** has been issued - see **§3.3.1**): | |
| 400 | generic undocumented error |
| 401 | wrong state |
| 402 | wrong mode |

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| | |
|---|---|
| 403 | context already activated |
| 404 | stack already active |
| 405 | activation failed |
| 406 | context not opened |
| 407 | cannot setup socket |
| 408 | cannot resolve DN |
| 409 | timeout in opening socket |
| 410 | cannot open socket |
| 411 | remote disconnected or timeout |
| 412 | connection failed |
| 413 | tx error |
| 414 | already listening |
| **FTP related errors**<br>(only if the command ***#SELINT=0*** or ***#SELINT=1*** has been issued - see **§3.3.1**): | |
| 420 | ok |
| 421 | connect |
| 422 | disconnect |
| 423 | error |
| 424 | wrong state |
| 425 | can not activate |
| 426 | can not resolve name |
| 427 | can not allocate control socket |
| 428 | can not connect control socket |
| 429 | bad or no response from server |
| 430 | not connected |
| 431 | already connected |
| 432 | context down |
| 433 | no photo available |
| 434 | can not send photo |
| **Easy GPRS® related errors**<br>(only if the command ***#SELINT=2*** has been issued - see **§3.3.1**): | |
| 550 | generic undocumented error |
| 551 | wrong state |
| 552 | wrong mode |
| 553 | context already activated |
| 554 | stack already active |
| 555 | activation failed |
| 556 | context not opened |
| 557 | cannot setup socket |
| 558 | cannot resolve DN |
| 559 | timeout in opening socket |
| 560 | cannot open socket |
| 561 | remote disconnected or timeout |
| 562 | connection failed |
| 563 | tx error |
| 564 | already listening |
| **Easy CAMERA® related errors**<br>(only if the command ***#SELINT=2*** has been issued - see **§3.3.1**): | |
| 580 | Camera not found |
| 581 | Camera Initialization Error |
| 582 | Camera not Supported |
| 583 | No Photo Taken |
| 584 | NET BUSY...Camera TimeOut |
| 585 | Camera Error |

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| | |
|---|---|
| **FTP related errors**<br>(only if the command ***#SELINT=2*** has been issued - see **§3.3.1**): | |
| 600 | generic undocumented error |
| 601 | wrong state |
| 602 | can not activate |
| 603 | can not resolve name |
| 604 | can not allocate control socket |
| 605 | can not connect control socket |
| 606 | bad or no response from server |
| 607 | not connected |
| 608 | already connected |
| 609 | context down |
| 610 | no photo available |
| 611 | can not send photo |
| 612 | resource used by other instance |
| **Network survey errors:**<br>(only if the command ***#SELINT=2*** has been issued - see **§3.3.1**): | |
| 657 | Network survey error (No Carrier)* |
| 658 | Network survey error (Busy)* |
| 659 | Network survey error (Wrong request)* |
| 660 | Network survey error (Aborted)* |
| **SAP related errors:**<br>(only if the command ***#SELINT=2*** has been issued - see **§3.3.1**): | |
| 731 | Unspecified |
| 732 | Activation command is busy |
| 733 | Activation started with CMUX off |
| 734 | Activation started on invalid CMUX |
| 736 | Remote SIM already active |
| 737 | Invalid parameter |

*(values in parentheses are GSM 04.08 cause codes)

### 3.2.2.2 +CMS ERROR - Message Service Failure Result Code

This is NOT a command, it is the error response to +Cxxx GSM 07.05 commands
Syntax: **+CMS ERROR:<err>**
Parameter: **<err>** - numeric error code. The **<err>** values are reported in the table:

| Numeric Format | Meaning |
|---|---|
| 0...127 | GSM 04.11 Annex E-2 values |
| 128...255 | GSM 03.40 sub clause 9.2.3.22 values |
| 300 | ME failure |
| 301 | SMS service of ME reserved |
| 302 | operation not allowed |
| 303 | operation not supported |
| 304 | invalid PDU mode parameter |
| 305 | invalid text mode parameter |
| 310 | SIM not inserted |
| 311 | SIM PIN required |
| 312 | PH-SIM PIN required |
| 313 | SIM failure |
| 314 | SIM busy |

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| | |
|---|---|
| 315 | SIM wrong |
| 316 | SIM PUK required |
| 317 | SIM PIN2 required |
| 318 | SIM PUK2 required |
| 320 | memory failure |
| 321 | invalid memory index |
| 322 | memory full |
| 330 | SMSC address unknown |
| 331 | no network service |
| 332 | network timeout |
| 500 | unknown error |

## 3.2.3 Information Responses And Result Codes

The TA response, in case of verbose response format enabled, for the previous examples command line could be as shown below:

- information response to **+CMD1?** **<CR><LF>+CMD1:2,1,10<CR><LF>**
- information response to **+CMD1=?** **<CR><LF>+CMD1(0-2),(0,1),(0-15)<CR><LF>**
- final result code **<CR><LF>OK<CR><LF>**

Moreover there are other two types of result codes:

- *result codes* that inform about progress of TA operation (e.g. connection establishment **CONNECT**)
- *result codes* that indicate occurrence of an event not directly associated with issuance of a command from TE (e.g. ring indication **RING**).

Here the basic result codes according to ITU-T V25Ter recommendation

| ***Result Codes*** | |
|---|---|
| Numeric form | Verbose form |
| 0 | OK |
| 1 | CONNECT |
| 2 | RING |
| 3 | NO CARRIER |
| 4 | ERROR |
| 6 | NO DIALTONE |
| 7 | BUSY |
| 8 | NO ANSWER |

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### 3.2.4 Command Response Time-Out

Every command issued to the Telit modules returns a result response if response codes are enabled (default). The time needed to process the given command and return the response varies from command to command and may depend also from the network on which the command may interact. As a result every command is provided with a proper timeout time, if this time elapses without any result from the operation, then an **ERROR** response can be reported as if the operation was not successful and the operation is anyway terminated.

The timeout time is quite short for commands that imply only internal set up commands, but may be very long for command that interact with the network (or even a set of Networks).
The default timeout is **100 ms** for all the commands that have no interaction with the network or upper software layers.
In the table below are listed all the commands whose timeout differs from the default **100 ms** and their effective timeout is reported:

| Command | Time-Out (Seconds) |
|---|---|
| +CBST | 0.2 |
| +CR | 0.2 |
| +CRC | 0.2 |
| +CRLP | 0.2 |
| +CSCS | 0.2 |
| +CEER | 5 |
| +CGMI | 5 |
| +CGMM | 5 |
| +CGMR | 5 |
| +CGSN | 20 |
| +CIMI | 20 |
| +CNUM | 20 |
| +CREG | 5 |
| +COPS | 180 |
| +CLCK | 180 |
| @CLCK | 180 |
| +CPWD | 180 |
| +CLIP | 180 |
| +CLIR | 180 |
| +CCFC | 180 |
| +CCWA | 20 |
| +CHLD | 20 |
| +CUSD | 180 |
| +CAOC | 20 |
| +CSSN | 20 |
| +CLCC | 20 |
| +CPAS | 5 |
| +CPIN | 20 |
| +CSQ | 5 |
| +CPBS | 5 |

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| Command | Time-Out (Seconds) |
|---|---|
| +CPBR | 20 |
| +CPBF | 20 |
| +CPBW | 20 |
| +CALM | 5 |
| +CRSL | 5 |
| +CLVL | 5 |
| +CMUT | 5 |
| +CACM | 20 |
| +CAMM | 20 |
| +CPUC | 20 |
| +CMEE | 5 |
| +VTS | 20 |
| +GMI | 5 |
| +GMM | 5 |
| +GMR | 5 |
| +GSN | 20 |
| I3 | 5 |
| I4 | 5 |
| I5 | 5 |
| +CSMS | 5 |
| +CPMS | 5 |
| +CMGF | 5 |
| +CSCA | 20 |
| +CSMP | 5 |
| +CSDH | 5 |
| +CSAS | 5 |
| +CRES | 5 |
| +CNMI | 5 |
| +CMGS | 180 / 5 for prompt”>” |
| +CMSS | 180 |
| +CMGW | 5 / 5 for prompt”>” |
| +CMGD | 5 |
| +CMGR | 5 |
| +CMGL | 5 |
| #CAP | 10 |
| #SRS | 10 |
| #SRP | 10 |
| #STM | 10 |
| #PCT | 10 |
| #SHDN | 10 |
| #QTEMP | 10 |
| #SGPO | 10 |
| #GGPI | 10 |
| #MONI | 10 |
| #CGMI | 5 |

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| Command | Time-Out (Seconds) |
|---|---|
| #CGMM | 5 |
| #CGMR | 5 |
| #CGSN | 20 |
| #CIMI | 5 |
| +CGACT | 180 |
| +CGATT | 180 |
| +CGDATA | 20 |
| +CGDCONT | 20 |
| +CGPADDR | 20 |
| +CGQMIN | 20 |
| +CGQREQ | 20 |

## 3.2.5 Command Issuing Timing

The chain Command -> Response shall always be respected and a new command must not be issued before the module has terminated all the sending of its response result code (whatever it may be).
This applies especially to applications that “sense” the **OK** text and therefore may send the next command before the complete code **<CR><LF>OK<CR><LF>** is sent by the module.
It is advisable anyway to wait for at least 20ms between the end of the reception of the response and the issue of the next AT command.
If the response codes are disabled and therefore the module does not report any response to the command, then at least the 20ms pause time shall be respected.
During command mode, due to hardware limitations, under severe CPU load the serial port can loose some characters if placed in autobauding at high speeds. Therefore if you encounter this problem fix the baud rate with **+IPR** command.

## 3.2.6 Factory Profile And User Profiles

The Telit wireless modules stores the values set by several commands as **profiles** in the internal non volatile memory (NVM), allowing to remember this setting even after power off.

There are **two user customizable profiles** and **one factory profile** in the NVM of the device: by default the device will start with user profile 0 equal to factory profile.
For backward compatibility each profile is divided into two sections, one **base section** which was historically the one that was saved and restored in early releases of code, and the **extended section** which includes all the remaining values.

The **&W** command is used to save the actual values of **both sections** of profiles into the NVM user profile.
Commands **&Y** and **&P** are both used to set the profile to be loaded at start-up. **&Y** instructs the device to load at start-up only the **base section**. **&P** instructs the device to load at start-up the full profile: **base + extended sections**.
The **&F** command resets to factory profile values only the command of the base section of profile, while the **&F1** resets to factory profile values the full set of base + extended section commands.

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The values set by some other particular commands are stored in NVM outside the profile, either without any **&W**/**&Y**/**&P**/**&F** issues, or through custom commands **#SKTSAV** and **#ESAV**; they have only one saved value, always restored at start-up.

The values set by following commands are stored in the profile base section; if #SELINT=2 they depends on the specific CMUX instance:

| | |
|---|---|
| GSM DATA MODE: | +CBST |
| AUTOBAUD: | +IPR |
| COMMAND ECHO: | E |
| RESULT MESSAGES: | Q |
| VERBOSE MESSAGES: | V |
| EXTENDED MESSAGES: | X |
| FLOW CONTROL OPTIONS: | &K, +IFC |
| CTS (C106) OPTIONS: | &B |
| DSR (C107) OPTIONS: | &S |
| DTR (C108) OPTIONS: | &D |
| DCD (C109) OPTIONS: | &C |
| RI (C125) OPTIONS: | \R |
| POWER SAVING: | +CFUN |
| DEFAULT PROFILE: | &Y0 |
| S REGISTERS: | S0;S1;S2;S3;S4;S5;S7;S12;S25;S30;S38 |
| CHARACTER FORMAT: | +ICF |

The values set by following commands are stored in the profile extended section; if #SELINT=2 they depends on the specific CMUX instance:

| | | |
|---|---|---|
| +FCLASS, | +ILRR, | +DR, |
| +CSCS, | +CR, | +CRLP, |
| +CRC, | +CSNS, | +CREG, |
| +CLIP, | +CLIR, | +CCWA, |
| +CUSD, | +CAOC, | +CSSN, |
| +CALM, | +CRSL, | +CMUT[3], |
| +CLVL[3], | +CMEE, | +CMGF, |
| +CSMP, | +CSDH, | +CSCB, |
| +CNMI, | #CAP[3], | #SRS[3], |
| #SRP[3], | #STM[3], | #I2S1[3], |
| #QSS, | #ACAL,[3] | #SMOV, |
| #CODEC, | #SHFEC[3], | #HFMICG[3], |
| #HSMICG[3] | #SHFSD[3], | #NITZ, |
| #SKIPESC | $GPSNMUN | |

The values set by following commands are always stored in NVM, independently from the profile (unique values):

| | | |
|---|---|---|
| #SELINT, | +COPS[4], | +CGCLASS, |
| +CGDCONT, | +CGQMIN, | +CGQREQ, |
| #COPSMODE, | #DIALMODE, | #BND |

The values set by following commands are stored in NVM on demand, independently from the profile:

| | | |
|---|---|---|
| #USERID, | #PASSW, | #PKTSZ, |
| #DSTO, | #SKTTO, | #SKTSET |
| #SKTCT | | |

saved with #SKTSAV command and reset with #SKTRST command.

| | | |
|---|---|---|
| #ESMTP, | #EADDR, | #EUSER, |
| #EPASSW | | |

saved with #ESAV command and reset with #ERST command.

[3] If #SELINT=2 they depend on the CMUX 0 instance only
[4] It is partially stored in NVM; see command description.

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## 3.2.7 AT Commands Availability Table

The following table shows the AT commands set[5] and the applicability/backward compatibility matrix on the Telit wireless module family.

| COMMAND | GM862-QUAD | GM862-QUAD-PY | GM862-GPS | GE863-QUAD | GE863-QUAD-PY | GE863-GPS | GE864-QUAD & GC864-QUAD | GC864-PY & GE864-PY | Function | SEL 0 Page | SEL 1 Page | SEL 2 Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Backward Compatibility** | | | | | | | | | | | | |
| #SELINT | • | • | • | • | • | • | • | • | Select Interface Style | 26 | 26 | 26 |
| **Repeating A Command Line** | | | | | | | | | | | | |
| A/ | • | • | • | • | • | • | • | • | Last Command Automatic Repetition | 27 | 27 | 27 |
| **Hayes AT Commands - Generic Modem Control** | | | | | | | | | | | | |
| &F | • | • | • | • | • | • | • | • | Set To Factory-Defined Configuration | 28 | 231 | 433 |
| Z | • | • | • | • | • | • | • | • | Soft Reset | 28 | 231 | 433 |
| +FCLASS | • | • | • | • | • | • | • | • | Select Active Service Class | 29 | 232 | 434 |
| &Y | • | • | • | • | • | • | • | • | Designate A Default Reset Basic Profile | 29 | 232 | 434 |
| &P | • | • | • | • | • | • | • | • | Designate A Default Reset Full Profile | 29 | 232 | 434 |
| &W | • | • | • | • | • | • | • | • | Store Current Configuration | 30 | 233 | 435 |
| &Z | • | • | • | • | • | • | • | • | Store Telephone Number In The Module Internal Phonebook | 30 | 233 | 435 |
| &N | • | • | • | • | • | • | • | • | Display Internal Phonebook Stored Numbers | 31 | 234 | 436 |
| +GMI | • | • | • | • | • | • | • | • | Manufacturer Identification | 31 | 234 | 436 |
| +GMM | • | • | • | • | • | • | • | • | Model Identification | 31 | 234 | 436 |
| +GMR | • | • | • | • | • | • | • | • | Revision Identification | 31 | 234 | 436 |
| +GCAP | • | • | • | • | • | • | • | • | Capabilities List | 31 | 234 | 436 |
| +GSN | • | • | • | • | • | • | • | • | Serial Number | 32 | 235 | 437 |
| &V | • | • | • | • | • | • | • | • | Display Current Configuration & Profile | 32 | 235 | 437 |
| &V0 | • | • | • | • | • | • | • | • | Display Current Configuration & Profile | 32 | 235 | 437 |
| &V1 | • | • | • | • | • | • | • | • | Display S Registers Values | 32 | 235 | 437 |
| &V3 | • | • | • | • | • | • | • | • | Display S Registers Values | 33 | 236 | 438 |
| &V2 | • | • | • | • | • | • | • | • | Display Last Connection Statistics | 33 | 236 | 438 |
| \V | • | • | • | • | • | • | • | • | Single Line Connect Message | 33 | 236 | 438 |
| +GCI | • | • | • | • | • | • | • | • | Country Of Installation | 34 | 237 | 439 |
| %L | • | • | • | • | • | • | • | • | Line Signal Level | 34 | 237 | 439 |
| %Q | • | • | • | • | • | • | • | • | Line Quality | 34 | 237 | 439 |
| L | • | • | • | • | • | • | • | • | Speaker Loudness | 34 | 237 | 439 |
| M | • | • | • | • | • | • | • | • | Speaker Mode | 34 | 237 | 439 |
| **Hayes AT Commands - DTE-Modem Interface Control** | | | | | | | | | | | | |
| E | • | • | • | • | • | • | • | • | Command Echo | 35 | 238 | 440 |
| Q | • | • | • | • | • | • | • | • | Quiet Result Codes | 35 | 238 | 440 |
| V | • | • | • | • | • | • | • | • | Response Format | 36 | 239 | 440 |
| X | • | • | • | • | • | • | • | • | Extended Result Codes | 36 | 239 | 441 |
| I | • | • | • | • | • | • | • | • | Identification Information | 37 | 240 | 442 |
| &C | • | • | • | • | • | • | • | • | Data Carrier Detect (DCD) Control | 37 | 240 | 442 |
| &D | • | • | • | • | • | • | • | • | Data Terminal Ready (DTR) Control | 38 | 241 | 443 |
| \Q | • | • | • | • | • | • | • | • | Standard Flow Control | 38 | 241 | 443 |
| &K | • | • | • | • | • | • | • | • | Flow Control | 38 | 242 | 444 |
| &S | • | • | • | • | • | • | • | • | Data Set Ready (DSR) Control | 39 | 242 | 444 |
| \R | • | • | • | • | • | • | • | • | Ring (RI) Control | 39 | 242 | 444 |
| +IPR | • | • | • | • | • | • | • | • | Fixed DTE Interface Rate | 40 | 243 | 445 |

[5] AT command set described in this document is refered to the following software versions: 7.02.x02 and 6.04.x04

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| COMMAND | GM862-QUAD | GM862-QUAD-PY | GM862-GPS | GE863-QUAD | GE863-QUAD-PY | GE863-GPS | GE864-QUAD & GC864-QUAD | GC864-PY & GE864-PY | Function | SEL 0 Page | SEL 1 Page | SEL 2 Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +IFC | • | • | • | • | • | • | • | • | DTE-Modem Local Flow Control | 40 | 243 | 446 |
| +ILRR | • | • | • | • | • | • | • | • | DTE-Modem Local Rate Reporting | 41 | 244 | 448 |
| +ICF | • | • | • | • | • | • | • | • | DTE-Modem Character Framing | 41 | 244 | 450 |
| **Hayes AT Commands - Call Control** | | | | | | | | | | | | |
| D | • | • | • | • | • | • | • | • | Dial | 43 | 246 | 450 |
| T | • | • | • | • | • | • | • | • | Tone Dial | 45 | 248 | 450 |
| P | • | • | • | • | • | • | • | • | Pulse Dial | 45 | 248 | 450 |
| A | • | • | • | • | • | • | • | • | Answer | 45 | 248 | 451 |
| H | • | • | • | • | • | • | • | • | Disconnect | 45 | 249 | 451 |
| O | • | • | • | • | • | • | • | • | Return To On Line Mode | 46 | 249 | 451 |
| &G | • | • | • | • | • | • | • | • | Guard Tone | 46 | 249 | 448 |
| &Q | • | • | • | • | • | • | • | • | Sync/Async Mode | 46 | 249 | 450 |
| **Hayes AT Commands - Modulation Control** | | | | | | | | | | | | |
| +MS | • | • | • | • | • | • | • | • | Modulation Selection | 47 | 250 | 452 |
| %E | • | • | • | • | • | • | • | • | Line Quality Monitor And Auto Retrain Or Fallback/Fallforward | 47 | 250 | 452 |
| **Hayes AT Commands - Compression Control** | | | | | | | | | | | | |
| +DS | • | • | • | • | • | • | • | • | Data Compression | 48 | 251 | 453 |
| +DR | • | • | • | • | • | • | • | • | Data Compression Reporting | 48 | 251 | 453 |
| **Hayes AT Commands - Break Control** | | | | | | | | | | | | |
| \B | • | • | • | • | • | • | • | • | Transmit Break To Remote | 49 | 252 | 454 |
| \K | • | • | • | • | • | • | • | • | Break Handling | 49 | 252 | 454 |
| \N | • | • | • | • | • | • | • | • | Operating Mode | 49 | 252 | 454 |
| **Hayes AT Commands - S Parameters** | | | | | | | | | | | | |
| S0 | • | • | • | • | • | • | • | • | Number Of Rings To Auto Answer | 50 | 253 | 455 |
| S1 | • | • | • | • | • | • | • | • | Ring Counter | 51 | 254 | 455 |
| S2 | • | • | • | • | • | • | • | • | Escape Character | 51 | 254 | 456 |
| S3 | • | • | • | • | • | • | • | • | Command Line Termination Character | 51 | 254 | 456 |
| S4 | • | • | • | • | • | • | • | • | Response Formatting Character | 52 | 255 | 457 |
| S5 | • | • | • | • | • | • | • | • | Command Line Editing Character | 52 | 255 | 457 |
| S7 | • | • | • | • | • | • | • | • | Connection Completion Time-Out | 53 | 256 | 457 |
| S12 | • | • | • | • | • | • | • | • | Escape Prompt Delay | 53 | 256 | 458 |
| S25 | • | • | • | • | • | • | • | • | Delay To DTR Off | 54 | 257 | 458 |
| S30 | • | • | • | • | • | • | • | • | Disconnect Inactivity Timer | 54 | 257 | 459 |
| S38 | • | • | • | • | • | • | • | • | Delay Before Forced Hang Up | 54 | 258 | 459 |
| **ETSI GSM 07.07 - General** | | | | | | | | | | | | |
| +CGMI | • | • | • | • | • | • | • | • | Request Manufacturer Identification | 56 | 259 | 460 |
| +CGMM | • | • | • | • | • | • | • | • | Request Model Identification | 56 | 259 | 460 |
| +CGMR | • | • | • | • | • | • | • | • | Request Revision Identification | 56 | 259 | 460 |
| +CGSN | • | • | • | • | • | • | • | • | Request Product Serial Number Identification | 56 | 259 | 460 |
| +CSCS | • | • | • | • | • | • | • | • | Select TE Character Set | 57 | 259 | 461 |
| +CIMI | • | • | • | • | • | • | • | • | Request International Mobile Subscriber Identity (IMSI) | 57 | 260 | 461 |
| +CMUX | • | • | • | • | • | • | • | • | Multiplexing Mode | NA[6] | NA | 461 |
| **ETSI GSM 07.07 - Call Control** | | | | | | | | | | | | |
| +CHUP | • | • | • | • | • | • | • | • | Hang Up Call | 58 | 261 | 463 |
| +CBST | • | • | • | • | • | • | • | • | Select Bearer Service Type | 58 | 261 | 463 |
| +CRLP | • | • | • | • | • | • | • | • | Radio Link Protocol | 59 | 262 | 464 |
| +CR | • | • | • | • | • | • | • | • | Service Reporting Control | 60 | 262 | 464 |
| +CEER | • | • | • | • | • | • | • | • | Extended Error Report | 60 | 263 | 465 |
| +CRC | • | • | • | • | • | • | • | • | Cellular Result Codes | 61 | 264 | 466 |
| +CSNS | • | • | • | • | • | • | • | • | Single Numbering Scheme | 61 | 264 | 466 |
| +CVHU | • | • | • | • | • | • | • | • | Voice Hang Up Control | 62 | 265 | 467 |

[6] NA: Not Available

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| COMMAND | GM862-QUAD | GM862-QUAD-PY | GM862-GPS | GE863-QUAD | GE863-QUAD-PY | GE863-GPS | GE864-QUAD & GC864-QUAD | GC864-PY & GE864-PY | Function | SEL 0 Page | SEL 1 Page | SEL 2 Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ETSI GSM 07.07 - Network Service Handling** | | | | | | | | | | | | |
| +CNUM | • | • | • | • | • | • | • | • | Subscriber Number | 63 | 266 | 468 |
| +COPN | • | • | • | • | • | • | • | • | Read Operator Names | 63 | 266 | 468 |
| +CREG | • | • | • | • | • | • | • | • | Network Registration Report | 63 | 266 | 468 |
| +COPS | • | • | • | • | • | • | • | • | Operator Selection | 65 | 268 | 470 |
| +CLCK | • | • | • | • | • | • | • | • | Facility Lock/ Unlock | 67 | 271 | 471 |
| @CLCK | • | • | • | • | • | • | • | • | Facility Lock/ Unlock | 69 | 272 | NA |
| +CPWD | • | • | • | • | • | • | • | • | Change Facility Password | 70 | 273 | 473 |
| +CLIP | • | • | • | • | • | • | • | • | Calling Line Identification Presentation | 71 | 274 | 473 |
| +CLIR | • | • | • | • | • | • | • | • | Calling Line Identification Restriction | 72 | 275 | 474 |
| +CCFC | • | • | • | • | • | • | • | • | Call Forwarding Number And Conditions | 73 | 276 | 475 |
| +CCWA | • | • | • | • | • | • | • | • | Call Waiting | 74 | 277 | 476 |
| +CHLD | • | • | • | • | • | • | • | • | Call Holding Services | 76 | 279 | 478 |
| +CUSD | • | • | • | • | • | • | • | • | Unstructured Supplementary Service Data | 77 | 280 | 479 |
| +CAOC | • | • | • | • | • | • | • | • | Advice Of Charge | 78 | 281 | 480 |
| +CLCC | • | • | • | • | • | • | • | • | List Current Calls | 79 | 282 | 481 |
| +CSSN | • | • | • | • | • | • | • | • | SS Notification | 80 | 283 | 482 |
| +CCUG | • | • | • | • | • | • | • | • | Closed User Group Supplementary Service Control | 81 | 284 | 482 |
| **ETSI GSM 07.07 - Mobile Equipment Control** | | | | | | | | | | | | |
| +CPAS | • | • | • | • | • | • | • | • | Phone Activity Status | 83 | 286 | 484 |
| +CFUN | • | • | • | • | • | • | • | • | Set Phone Functionality | 83 | 286 | 484 |
| +CPIN | • | • | • | • | • | • | • | • | Enter PIN | 84 | 287 | 485 |
| +CSQ | • | • | • | • | • | • | • | • | Signal Quality | 87 | 290 | 488 |
| +CIND[7] | • | • | • | • | • | • | • | • | Indicator Control | 88 | 291 | 489 |
| +CMER | • | • | • | • | • | • | • | • | Mobile Equipment Event Reporting | 90 | 293 | 491 |
| +CPBS | • | • | • | • | • | • | • | • | Select Phonebook Memory Storage | 91 | 294 | 492 |
| +CPBR | • | • | • | • | • | • | • | • | Read Phonebook Entries | 92 | 295 | 492 |
| +CPBF | • | • | • | • | • | • | • | • | Find Phonebook Entries | 93 | 296 | 493 |
| +CPBW | • | • | • | • | • | • | • | • | Write Phonebook Entry | 93 | 296 | 494 |
| +CCLK | • | • | • | • | • | • | • | • | Clock Management | 94 | 297 | 495 |
| +CALA | • | • | • | • | • | • | • | • | Alarm Management | 95 | 298 | 496 |
| +CRSM | • | • | • | • | • | • | • | • | Restricted SIM Access | 97 | 300 | 497 |
| +CALM | • | • | • | • | • | • | • | • | Alert Sound Mode | 98 | 301 | 498 |
| +CRSL | • | • | • | • | • | • | • | • | Ringer Sound Level | 99 | 302 | 499 |
| +CLVL | • | • | • | • | • | • | • | • | Loudspeaker Volume Level | 99 | 302 | 499 |
| +CMUT | • | • | • | • | • | • | • | • | Microphone Mute Control | 100 | 303 | 499 |
| +CACM | • | • | • | • | • | • | • | • | Accumulated Call Meter | 100 | 303 | 500 |
| +CAMM | • | • | • | • | • | • | • | • | Accumulated Call Meter Maximum | 101 | 304 | 500 |
| +CPUC | • | • | • | • | • | • | • | • | Price Per Unit And Currency Table | 102 | 305 | 501 |
| +CLAC | • | • | • | • | • | • | • | • | Available AT commands | NA | NA | 501 |
| +CCID | • | • | • | • | • | • | • | • | Read ICCID (Integrated Circuit Card Identification) | 102 | 305 | NA |
| **ETSI GSM 07.07 - Mobile Equipment Errors** | | | | | | | | | | | | |
| +CMEE | • | • | • | • | • | • | • | • | Report Mobile Equipment Error | 103 | 306 | 503 |
| **ETSI GSM 07.07 - Voice Control** | | | | | | | | | | | | |
| +VTS | • | • | • | • | • | • | • | • | DTMF Tones Transmission | 104 | 307 | 504 |
| +VTD | • | • | • | • | • | • | • | • | Tone Duration | 104 | 307 | 504 |
| **ETSI GSM 07.07 - Commands For GPRS** | | | | | | | | | | | | |
| +CGCLASS | • | • | • | • | • | • | • | • | GPRS Mobile Station Class | 106 | 308 | 510 |
| +CGATT | • | • | • | • | • | • | • | • | GPRS Attach Or Detach | 106 | 308 | 505 |
| +CGREG | • | • | • | • | • | • | • | • | GPRS Network Registration Status | 107 | 309 | 511 |

[7] AT commands highlighted in yellow will be available for SELINT 0 and SELINT 1 starting from software version 6.04.x08

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| COMMAND | GM862-QUAD | GM862-QUAD-PY | GM862-GPS | GE863-QUAD | GE863-QUAD-PY | GE863-GPS | GE864-QUAD & GC864-QUAD | GC864-PY & GE864-PY | Function | SEL 0 Page | SEL 1 Page | SEL 2 Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +CGDCONT | • | • | • | • | • | • | • | • | Define PDP Context | 108 | 310 | 507 |
| +CGQMIN | • | • | • | • | • | • | • | • | Quality Of Service Profile (Minimum Acceptable) | 108 | 311 | 511 |
| +CGQREQ | • | • | • | • | • | • | • | • | Quality Of Service Profile (Requested) | 110 | 312 | 505 |
| +CGACT | • | • | • | • | • | • | • | • | PDP Context Activate Or Deactivate | 111 | 313 | 505 |
| +CGPADDR | • | • | • | • | • | • | • | • | Show PDP Address | 112 | 314 | 508 |
| +CGDATA | • | • | • | • | • | • | • | • | Enter Data State | 112 | 315 | 509 |
| **ETSI GSM 07.07 - Commands For Battery Charger** | | | | | | | | | | | | |
| +CBC | • | • | • | • | • | • | • | • | Battery Charge | 114 | 316 | 513 |
| **ETSI GSM 07.05 - General Configuration** | | | | | | | | | | | | |
| +CSMS | • | • | • | • | • | • | • | • | Select Message Service | 116 | 318 | 514 |
| +CPMS | • | • | • | • | • | • | • | • | Preferred Message Storage | 117 | 319 | 515 |
| +CMGF | • | • | • | • | • | • | • | • | Message Format | 118 | 320 | 516 |
| **ETSI GSM 07.05 - Message Configuration** | | | | | | | | | | | | |
| +CSCA | • | • | • | • | • | • | • | • | Service Center Address | 119 | 321 | 517 |
| +CSMP | • | • | • | • | • | • | • | • | Set Text Mode Parameters | 119 | 321 | 517 |
| +CSDH | • | • | • | • | • | • | • | • | Show Text Mode Parameters | 120 | 322 | 518 |
| +CSCB | • | • | • | • | • | • | • | • | Select Cell Broadcast Message Types | 121 | 323 | 518 |
| +CSAS | • | • | • | • | • | • | • | • | Save Settings | 122 | 324 | 519 |
| +CRES | • | • | • | • | • | • | • | • | Restore Settings | 122 | 324 | 520 |
| **ETSI GSM 07.05 - Message Receiving And Reading** | | | | | | | | | | | | |
| +CNMI | • | • | • | • | • | • | • | • | New Message Indications To Terminal Equipment | 123 | 325 | 521 |
| +CMGL | • | • | • | • | • | • | • | • | List Messages | 126 | 328 | 524 |
| @CMGL | • | • | • | • | • | • | • | • | List Messages | 128 | 330 | NA |
| +CMGR | • | • | • | • | • | • | • | • | Read Message | 130 | 331 | 526 |
| @CMGR | • | • | • | • | • | • | • | • | Read Message | 131 | 333 | NA |
| **ETSI GSM 07.05 - Message Sending And Writing** | | | | | | | | | | | | |
| +CMGS | • | • | • | • | • | • | • | • | Send Message | 134 | 336 | 529 |
| +CMSS | • | • | • | • | • | • | • | • | Send Message From Storage | 136 | 338 | 531 |
| +CMGW | • | • | • | • | • | • | • | • | Write Message To Memory | 137 | 339 | 532 |
| +CMGD | • | • | • | • | • | • | • | • | Delete Message | 139 | 341 | 534 |
| **FAX AT Commands - General Configuration** | | | | | | | | | | | | |
| +FMI | • | • | • | • | • | • | • | • | Manufacturer ID | 140 | 342 | 536 |
| +FMM | • | • | • | • | • | • | • | • | Model ID | 140 | 342 | 536 |
| +FMR | • | • | • | • | • | • | • | • | Revision ID | 140 | 342 | 536 |
| **FAX AT Commands - Transmission/Reception Control** | | | | | | | | | | | | |
| +FTS | • | • | • | • | • | • | • | • | Stop Transmission And Pause | 141 | 343 | 537 |
| +FRS | • | • | • | • | • | • | • | • | Wait For Receive Silence | 141 | 343 | 537 |
| +FTM | • | • | • | • | • | • | • | • | Transmit Data Modulation | 141 | 343 | 537 |
| +FRM | • | • | • | • | • | • | • | • | Receive Data Modulation | 142 | 344 | 538 |
| +FTH | • | • | • | • | • | • | • | • | Transmit Data With HDLC Framing | 142 | 344 | 538 |
| +FRH | • | • | • | • | • | • | • | • | Receive Data With HDLC Framing | 142 | 344 | 538 |
| **FAX AT Commands - Serial Port Control** | | | | | | | | | | | | |
| +FLO | • | • | • | • | • | • | • | • | Select Flow Control Specified By Type | 143 | 345 | 539 |
| +FPR | • | • | • | • | • | • | • | • | Select Serial Port Rate | 143 | 345 | 539 |
| +FDD | • | • | • | • | • | • | • | • | Double Escape Character Replacement Control | 143 | 345 | 539 |
| **Custom AT Commands - General Configuration** | | | | | | | | | | | | |
| #CGMI | • | • | • | • | • | • | • | • | Manufacturer Identification | 144 | 346 | 541 |
| #CGMM | • | • | • | • | • | • | • | • | Model Identification | 144 | 346 | 541 |
| #CGMR | • | • | • | • | • | • | • | • | Revision Identification | 144 | 346 | 541 |
| #CGSN | • | • | • | • | • | • | • | • | Product Serial Number Identification | 144 | 346 | 541 |
| #CIMI | • | • | • | • | • | • | • | • | International Mobile Subscriber Identity (IMSI) | 144 | 346 | 541 |
| #CCID | • | • | • | • | • | • | • | • | Read ICCID (Integrated Circuit Card | NA | NA | 542 |

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| COMMAND | GM862-QUAD | GM862-QUAD-PY | GM862-GPS | GE863-QUAD | GE863-QUAD-PY | GE863-GPS | GE864-QUAD & GC864-QUAD | GC864-PY & GE864-PY | Function | SEL 0 Page | SEL 1 Page | SEL 2 Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Identification) | | | |
| #CAP | • | • | • | • | • | • | • | • | Change Audio Path | 145 | 347 | 542 |
| #SRS | • | • | • | • | • | • | • | • | Select Ringer Sound | 145 | 347 | 542 |
| #SRP | • | • | • | • | • | • | • | • | Select Ringer Path | 146 | 348 | 543 |
| #STM | • | • | • | • | • | • | • | • | Signaling Tones Mode | 147 | 349 | 544 |
| #PCT | • | • | • | • | • | • | • | • | Display PIN Counter | 147 | 349 | 544 |
| #SHDN | • | • | • | • | • | • | • | • | Software Shut Down | 148 | 350 | 545 |
| #WAKE | • | • | • | • | • | • | • | • | Wake From Alarm Mode | 148 | 350 | 545 |
| #QTEMP | • | • | • | • | • | • | • | • | Query Temperature Overflow | 149 | 351 | 546 |
| #SGPO | • | • | • | • | • | • | • | • | Set General Purpose Output | 149 | 351 | NA |
| #GGPI | • | • | • | • | • | • | • | • | General Purpose Input | 150 | 352 | NA |
| #GPIO | • | • | • | • | • | • | • | • | General Purpose Input/Output Pin Control | 151 | 353 | 546 |
| #I2S1 | | | | | | | • | • | Set PCM Output For Channel 1 | 152 | 354 | 548 |
| #E2SMSRI | • | • | • | • | • | • | • | • | SMS Ring Indicator | 153 | 355 | 548 |
| #ADC | • | • | • | • | • | • | • | • | Analog/Digital Converter Input | 154 | 356 | 549 |
| #DAC | | | | • | • | • | • | • | Digital/Analog Converter Control | 155 | 357 | 550 |
| #VAUX | | | | • | • | • | • | • | Auxiliary Voltage Pin Output | 156 | 358 | 551 |
| #CBC | • | • | • | • | • | • | • | • | Battery and Charger Status | NA | NA | 551 |
| #AUTOATT | • | • | • | • | • | • | • | • | GPRS Auto-Attach Property | 156 | 358 | 552 |
| #MSCLASS | • | • | • | • | • | • | • | • | Multislot Class Control | 157 | 359 | 552 |
| #MONI | • | • | • | • | • | • | • | • | Cell Monitor | 157 | 359 | 553 |
| #SERVINFO | • | • | • | • | • | • | • | • | Serving Call Information | 159 | 361 | 554 |
| #COPSMODE | • | • | • | • | • | • | • | • | +COPS Mode | 160 | 362 | NA |
| #QSS | • | • | • | • | • | • | • | • | Query SIM Status | 161 | 363 | 555 |
| #DIALMODE | • | • | • | • | • | • | • | • | ATD Dialling Mode | 162 | 364 | 556 |
| #ACAL | • | • | • | • | • | • | • | • | Automatic Call | 162 | 364 | 556 |
| #ECAM | • | • | • | • | • | • | • | • | Extended Call Monitoring | 163 | 365 | 557 |
| #SMOV | • | • | • | • | • | • | • | • | SMS Overflow | 164 | 366 | 558 |
| #CODEC | • | • | • | • | • | • | • | • | Audio Codec | 164 | 366 | 558 |
| #SHFEC | • | • | • | • | • | • | • | • | Handsfree Echo Canceller | 165 | 367 | 559 |
| #HFMICG | • | • | • | • | • | • | • | • | Handsfree Microphone Gain | 166 | 368 | 559 |
| #HSMICG | • | • | • | • | • | • | • | • | Handset Microphone Gain | 166 | 368 | 559 |
| #SHFSD | • | • | • | • | • | • | • | • | Set Headset Sidetone | 167 | 369 | 560 |
| #/ | • | • | • | • | • | • | • | • | Repeat Last Command | 167 | 369 | 560 |
| #NITZ | • | • | • | • | • | • | • | • | Network Timezone | 167 | 369 | 560 |
| #BND | • | • | • | • | • | • | • | • | Select Band | 168 | 370 | 561 |
| #AUTOBND | • | • | • | • | • | • | • | • | Automatic Band Selection | 169 | 371 | 562 |
| #SKIPESC | • | • | • | • | • | • | • | • | Skip Escape Sequence | 169 | 371 | 562 |
| #E2ESC | • | • | • | • | • | • | • | • | Escape Sequence Guard Time | 170 | 372 | 563 |
| #GAUTH | • | • | • | • | • | • | • | • | PPP-GPRS Connection Authentication Type | 171 | 373 | 563 |
| #RTCSTAT | • | • | • | • | • | • | • | • | RTC Status | 171 | 373 | 564 |
| **Custom AT Commands - FTP** | | | | | | | | | | | | |
| #FTPTO | • | • | • | • | • | • | • | • | FTP Time-Out | 172 | 374 | 565 |
| #FTPOPEN | • | • | • | • | • | • | • | • | FTP Open | 172 | 374 | 565 |
| #FTPCLOSE | • | • | • | • | • | • | • | • | FTP Close | 172 | 374 | 565 |
| #FTPPUT | • | • | • | • | • | • | • | • | FTP Put | 173 | 375 | 566 |
| #FTPPUTPH | • | • | • | • | • | • | • | • | FTP Put Photo | 173 | 375 | 566 |
| #FTPGET | • | • | • | • | • | • | • | • | FTP Get | 174 | 376 | 567 |
| #FTPTYPE | • | • | • | • | • | • | • | • | FTP Type | 174 | 376 | 567 |
| #FTPMSG | • | • | • | • | • | • | • | • | FTP Read Message | 175 | 377 | 568 |
| #FTPDELE | • | • | • | • | • | • | • | • | FTP Delete | 175 | 377 | 568 |
| #FTPPWD | • | • | • | • | • | • | • | • | FTP Print Working Directory | 175 | 377 | 568 |
| #FTPCWD | • | • | • | • | • | • | • | • | FTP Change Working Directory | 175 | 377 | 568 |
| #FTPLIST | • | • | • | • | • | • | • | • | FTP List | 176 | 378 | 569 |
| **Custom AT Commands - Enhanced Easy GPRS® Extension** | | | | | | | | | | | | |

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| COMMAND | GM862-QUAD | GM862-QUAD-PY | GM862-GPS | GE863-QUAD | GE863-QUAD-PY | GE863-GPS | GE864-QUAD & GC864-QUAD | GC864-PY & GE864-PY | Function | SEL 0 Page | SEL 1 Page | SEL 2 Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #USERID | • | • | • | • | • | • | • | • | Authentication User ID | 177 | 379 | 570 |
| #PASSW | • | • | • | • | • | • | • | • | Authentication Password | 177 | 379 | 570 |
| #PKTSZ | • | • | • | • | • | • | • | • | Packet Size | 178 | 380 | 571 |
| #DSTO | • | • | • | • | • | • | • | • | Data Sending Time-Out | 178 | 380 | 571 |
| #SKTTO | • | • | • | • | • | • | • | • | Socket Inactivity Time-Out | 179 | 381 | 572 |
| #SKTSET | • | • | • | • | • | • | • | • | Socket Definition | 180 | 382 | 572 |
| #SKTOP | • | • | • | • | • | • | • | • | Socket Open | 181 | 383 | 573 |
| #QDNS | • | • | • | • | • | • | • | • | Query DNS | 181 | 383 | 574 |
| #SKTCT | • | • | • | • | • | • | • | • | Socket TCP Connection Time-Out | 182 | 384 | 574 |
| #SKTSAV | • | • | • | • | • | • | • | • | Socket Parameters Save | 182 | 384 | 575 |
| #SKTRST | • | • | • | • | • | • | • | • | Socket Parameters Reset | 183 | 385 | 575 |
| #GPRS | • | • | • | • | • | • | • | • | GPRS Context Activation | 183 | 385 | 576 |
| #SKTD | • | • | • | • | • | • | • | • | Socket Dial | 184 | 386 | 577 |
| #SKTL | • | • | • | • | • | • | • | • | Socket Listen | 186 | 388 | 578 |
| @SKTL | • | • | • | • | • | • | • | • | Socket Listen | 188 | 390 | NA |
| #E2SLRI | • | • | • | • | • | • | • | • | Socket Listen Ring Indicator | 190 | 392 | 580 |
| #FRWL | • | • | • | • | • | • | • | • | Firewall Setup | 190 | 392 | 580 |
| **Custom AT Commands - Easy Camera® Management** | | | | | | | | | | | | |
| #CAMON | • | • | • | • | • | • | • | • | Camera ON | 192 | 394 | NA |
| #CAMOFF | • | • | • | • | • | • | • | • | Camera OFF | 192 | 394 | NA |
| #CAMEN | • | • | • | • | • | • | • | • | Camera ON/OFF | 192 | 394 | 582 |
| #SELCAM | • | • | • | • | • | • | • | • | Camera Model | 193 | 395 | 582 |
| #CAMRES | • | • | • | • | • | • | • | • | Camera Resolution | 193 | 395 | 583 |
| #CAMCOL | • | • | • | • | • | • | • | • | Camera Colour Mode | 194 | 396 | 583 |
| #CAMQUA | • | • | • | • | • | • | • | • | Camera Photo Quality | 194 | 396 | 583 |
| #CMODE | • | • | • | • | • | • | • | • | Camera Exposure | 195 | 397 | 584 |
| #CAMZOOM | • | • | • | • | • | • | • | • | Camera Zoom | 195 | 397 | 584 |
| #CAMTXT | • | • | • | • | • | • | • | • | Camera Time/Date Overprint | 196 | 398 | 584 |
| #TPHOTO | • | • | • | • | • | • | • | • | Camera Take Photo | 196 | 398 | 585 |
| #RPHOTO | • | • | • | • | • | • | • | • | Camera Read Photo | 197 | 399 | 585 |
| #OBJL | • | • | • | • | • | • | • | • | Object List | 197 | 399 | 586 |
| #OBJR | • | • | • | • | • | • | • | • | Object Read | 198 | 400 | 586 |
| **Custom AT Commands - E-Mail Management** | | | | | | | | | | | | |
| #ESMTP | • | • | • | • | • | • | • | • | E-mail SMTP Server | 199 | 401 | 587 |
| #EADDR | • | • | • | • | • | • | • | • | E-mail Sender Address | 199 | 401 | 587 |
| #EUSER | • | • | • | • | • | • | • | • | E-mail Authentication User Name | 200 | 402 | 588 |
| #EPASSW | • | • | • | • | • | • | • | • | E-mail Authentication Password | 200 | 402 | 588 |
| #SEMAIL | • | • | • | • | • | • | • | • | E-mail Sending With GPRS Context Activation | 201 | 403 | 589 |
| #EMAILACT | • | • | • | • | • | • | • | • | E-mail GPRS Context Activation | 202 | 404 | 590 |
| #EMAILD | • | • | • | • | • | • | • | • | E-mail Sending | 203 | 405 | 590 |
| #ESAV | • | • | • | • | • | • | • | • | Email Parameters Save | 204 | 406 | 591 |
| #ERST | • | • | • | • | • | • | • | • | E-mail Parameters Reset | 204 | 406 | 592 |
| #EMAILMSG | • | • | • | • | • | • | • | • | SMTP Read Message | NA | NA | 592 |
| **Custom AT Commands - Easy Scan® Extension** | | | | | | | | | | | | |
| #CSURV | • | • | • | • | • | • | • | • | Network Survey | 205 | 407 | 593 |
| #CSURVC | • | • | • | • | • | • | • | • | Network Survey (Numeric Format) | 208 | 410 | 596 |
| #CSURVU | • | • | • | • | • | • | • | • | Network Survey Of User Defined Channels | 211 | 413 | 599 |
| #CSURVUC | • | • | • | • | • | • | • | • | Network Survey Of User Defined Channels (Numeric Format) | 211 | 413 | 599 |
| #CSURVB | • | • | • | • | • | • | • | • | BCCH Network Survey | 212 | 414 | 600 |
| #CSURVBC | • | • | • | • | • | • | • | • | BCCH Network Survey (Numeric Format) | 213 | 415 | 601 |
| #CSURVF | • | • | • | • | • | • | • | • | Network Survey Format | 213 | 415 | 601 |
| #CSURVNLF | • | • | • | • | • | • | • | • | <CR><LF> Removing On Easy Scan® Commands Family | 214 | 416 | 601 |
| #CSURVEXT | • | • | • | • | • | • | • | • | Extended Network Survey | 214 | 416 | 602 |

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| COMMAND | GM862-QUAD | GM862-QUAD-PY | GM862-GPS | GE863-QUAD | GE863-QUAD-PY | GE863-GPS | GE864-QUAD & GC864-QUAD | GC864-PY & GE864-PY | Function | SEL 0 Page | SEL 1 Page | SEL 2 Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jammed Detect & Report AT commands** | | | | | | | | | | | | |
| #JDR | • | • | • | • | • | • | • | • | Jammed Detect & Report | 215 | 417 | 603 |
| **Custom AT Commands - Easy Script® Extension - Python Interpreter[8]** | | | | | | | | | | | | |
| #WSCRIPT | | • | • | | • | • | | • | Write Script | 217 | 419 | 605 |
| #ESCRIPT | | • | • | | • | • | | • | Select Active Script | 218 | 420 | 606 |
| #STARTMODESCR | | • | • | | • | • | | • | Script Execution Start Mode | NA | NA | 606 |
| #EXECSCR | | • | • | | • | • | | • | Execute Active Script | NA | NA | 606 |
| #RSCRIPT | | • | • | | • | • | | • | Read Script | 218 | 420 | 607 |
| #LSCRIPT | | • | • | | • | • | | • | List Script Names | 219 | 421 | 608 |
| #DSCRIPT | | • | • | | • | • | | • | Delete Script | 220 | 422 | 609 |
| #REBOOT | | • | • | | • | • | | • | Reboot | 220 | 422 | 609 |
| #CMUXSCR | | • | • | | • | • | | • | CMUX Script Enable | NA | NA | 609 |
| **Custom AT Commands - GPS Application** | | | | | | | | | | | | |
| $GPSP | | | • | | | • | | | GPS Controller power management | 221 | 423 | 611 |
| $GPSR | | | • | | | • | | | GPS Reset | 221 | 423 | 611 |
| $GPSD | | | • | | | • | | | GPS Device Type Set | 222 | 424 | 612 |
| $GPSSW | | | • | | | • | | | GPS Software Version | 222 | 424 | 612 |
| $GPSAT | | | • | | | • | | | GPS Antenna Type Definition | 223 | 425 | 613 |
| $GPSAV | | | • | | | • | | | GPS Antenna Supply Voltage Readout | 223 | 425 | 613 |
| $GPSAI | | | • | | | • | | | GPS Antenna Current Readout | 223 | 425 | 613 |
| $GPSAP | | | • | | | • | | | GPS Antenna Protection | 224 | 426 | 614 |
| $GPSS | | | • | | | • | | | GPS NMEA Serial Port Speed | 225 | 427 | 615 |
| $GPSNMUN | | | • | | | • | | | Unsolicited GPS NMEA Data Configuration | 225 | 427 | 615 |
| $GPSACP | | | • | | | • | | | GPS Actual Position Information | 227 | 429 | 617 |
| $GPSCON | | | • | | | • | | | Direct Access To GPS Module | 228 | 430 | 618 |
| $GPSPRG | | | • | | | • | | | Set The GPS Module In Programming Mode | 229 | 431 | 619 |
| $GPSPS | | | • | | | • | | | Set the GPS Module In Power Saving Mode | 229 | 431 | 619 |
| $GPSWK | | | • | | | • | | | Wake Up GPS From Power Saving Mode | 230 | 432 | 619 |
| $GPSSAV | | | • | | | • | | | Save GPS Parameters Configuration | 230 | 432 | 620 |
| $GPSRST | | | • | | | • | | | Restore Default GPS Parameters | 230 | 432 | 620 |
| **Custom AT Commands - SAP** | | | | | | | | | | | | |
| #RSEN | • | • | • | • | • | • | • | • | Remote SIM Enable | NA | NA | 621 |

[8] Python is a registered trademark of the Python Software Foundation.

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## 3.3 Backward Compatibility

There are some slight modifications amongst the AT interfaces of Telit products. In order to keep backward compatibility and on the same time to give the opportunity to the customer to get competitor compatibility, Telit modules offer the specific command **#SELINT** to switch the behavior of the device and its AT command interface. It is up to the user to select the AT interface he prefers.

The following table shows which AT commands interface can be applied and is default for the specific product:

| Product | #SELINT=0 | #SELINT=1 | #SELINT=2 |
|---|---|---|---|
| GM862-QUAD (3990250655) | •(default) | • | |
| GM862-QUAD-PY (3990250656) | • | •(default) | |
| GE863-QUAD (3990250653&) | • | •(default) | |
| GE863-PY (3990250654) | • | •(default) | |
| GM862-QUAD (3990250659) | •(default) | • | • |
| GM862-QUAD-PY (3990250658) | • | •(default) | • |
| GM862-GPS (3990250657) | • | • | •(default) |
| GE863-QUAD (3990250662) | • | •(default) | • |
| GE863-PY (3990250661) | • | •(default) | • |
| GE863-GPS (3990250660) | • | • | •(default) |
| GE864-QUAD (3990250648) | • | • | •(default) |
| GE864-PY (3990250650) | • | • | •(default) |
| GC864-QUAD (3990250675) | • | • | •(default) |
| GC864-PY (3990250676) | • | • | •(default) |

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### 3.3.1 #SELINT - Select Interface Style

| **#SELINT - Select Interface Style** | |
|---|---|
| **AT#SELINT[=<v>]** | Set command sets the AT command interface style depending on parameter **<v>**.<br><br>Parameter:<br>**<v>** - AT command interface<br>0 - switches the AT command interface of the products, to the GM862-GSM and GM862-GPRS interface style<br>1 - switches the AT command interface of the products, to the GM862-PCS, PYTHON, QUAD-PY, TRIZIUM and GE863-QUAD, PY interface style<br>2 - switches the AT command interface style of the product, to the new products like GE864, GC864 and the GPS products[9]<br><br>Note: If parameter is omitted then the behavior of Set command is the same as read command |
| **AT#SELINT?** | Read command reports the current interface style. |
| **AT#SELINT=?** | Test command reports the available range of values for parameter **<v>**. |
| Note | It's suggested to reboot the module after every **#SELINT** setting. |

[9] Under the #SELINT=2, all the new functionalities like CMUX, SAP are available. Moreover, all the AT commands have been improved according to the ETSI specifications.

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# 3.4 Repeating A Command Line

## 3.4.1 Last Command Automatic Repetition

| A/ - Last Command Automatic Repetition | |
|---|---|
| **A/** | If the prefix “A/” or “a/” is issued, the MODULE immediately execute once again the body of the preceding command line. No editing is possible and no termination character is necessary. A command line may be repeated multiple times through this mechanism, if desired.<br><br>If “A/” is issued before any command line has been executed, the preceding command line is assumed to have been empty (that results in an OK result code).<br><br>This command works only at fixed IPR.<br><br>Note: issuing the custom command AT#/ causes the last command to be executed again too; moreover it doesn’t need a fixed IPR. |
| Reference | V25ter |

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# 3.5 SELINT 0

## 3.5.1 Hayes Compliant AT Commands

### 3.5.1.1 Generic Modem Control

#### *3.5.1.1.1 &F - Set To Factory-Defined Configuration*

| **&F - Set To Factory-Defined Configuration** | |
|---|---|
| **AT&F[<value>]** | Execution command sets the configuration parameters to default values specified by manufacturer; it takes in consideration hardware configuration switches and other manufacturer-defined criteria.<br><br>Parameter:<br>**<value>**:<br>0 - just the factory profile base section parameters are considered.<br>1 - either the factory profile base section and the extended section are considered (full factory profile).<br><br>Note: if parameter **<value>** is omitted, the command has the same behavior as **AT&F0** |
| Reference | V25ter. |

#### *3.5.1.1.2 Z - Soft Reset*

| **Z - Soft Reset** | |
|---|---|
| **ATZ[<n>]** | Execution command loads the base section of the specified user profile and the extended section of the default factory profile.<br><br>Parameter:<br>**<n>**<br>0..1 - user profile number<br><br>Note: any call in progress will be terminated.<br><br>Note: if parameter **<n>** is omitted, the command has the same behaviour as **ATZ0**. |
| Reference | V25ter. |

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### 3.5.1.1.3 +FCLASS - Select Active Service Class

| **+FCLASS - Select Active Service Class** | |
|---|---|
| **AT+FCLASS=<n>** | Set command sets the wireless module in specified connection mode (data, fax, voice), hence all the calls done afterwards will be data or voice.<br><br>Parameter:<br>**<n>**<br>0 - data<br>1 - fax class 1<br>8 - voice |
| **AT+FCLASS?** | Read command returns the current configuration value of the parameter **<n>**. |
| **AT+FCLASS=?** | Test command returns all supported values of the parameters **<n>**. |
| Reference | GSM 07.07 |

### 3.5.1.1.4 &Y - Designate A Default Reset Basic Profile

| **&Y - Designate A Default Reset Basic Profile** | |
|---|---|
| **AT&Y[<n>]** | Execution command defines the basic profiles which will be loaded on startup.<br><br>Parameter:<br>**<n>**<br>0..1 - profile (default is 0): the wireless module is able to store 2 complete configurations (see command **&W**).<br><br>Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&Y** will be loaded on every startup.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&Y0** |

### 3.5.1.1.5 &P - Designate A Default Reset Full Profile

| **&P - Designate A Default Reset Full Profile** | |
|---|---|
| **AT&P[<n>]** | Execution command defines which full profile will be loaded on startup.<br><br>Parameter:<br>**<n>**<br>0..1 – profile number: the wireless module is able to store 2 full configurations (see command **&W**). |

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| | |
|---|---|
| | Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&P** will be loaded on every startup.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&P0** |
| Reference | Telit Specifications |

### *3.5.1.1.6 &W - Store Current Configuration*

| **&W - Store Current Configuration** | |
|---|---|
| **AT&W[<n>]** | Execution command stores on profile **<n>** the complete configuration of the device.<br><br>Parameter:<br>**<n>**<br>0..1 - profile<br><br>Note: if parameter is omitted, the command has the same behaviour of **AT&W0**. |

### *3.5.1.1.7 &Z - Store Telephone Number In The Module Internal Phonebook*

| **&Z - Store Telephone Number In The Wireless Module Internal Phonebook** | |
|---|---|
| **AT&Z<n>=<nr>** | Execution command stores in the record **<n>** the telephone number **<nr>**. The records cannot be overwritten, they must be cleared before rewriting.<br><br>Parameters:<br>**<n>** - phonebook record<br>**<nr>** - telephone number (string type)<br><br>Note: the wireless module has a built in non volatile memory in which 10 telephone numbers of a maximum 24 digits can be stored<br><br>Note: to delete the record **<n>** the command **AT&Z<n>=<CR>** must be issued.<br><br>Note: the records in the module memory can be viewed with the command **AT&N**, while the telephone number stored in the record n can be dialed by giving the command **ATDS=<n>**. |

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#### 3.5.1.1.8 &N - Display Internal Phonebook Stored Numbers

| **&N - Display Internal Phonebook Stored Numbers** | |
|---|---|
| **AT&N[<n>]** | Execution command returns the telephone number stored at the **<n>** position in the internal memory.<br><br>Parameter:<br>**<n>** - phonebook record number<br><br>Note: if parameter **<n>** is omitted then all the internal records are shown. |

#### 3.5.1.1.9 +GMI - Manufacturer Identification

| **+GMI - Manufacturer Identification** | |
|---|---|
| **AT+GMI** | Execution command returns the manufacturer identification.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |
| Reference | V.25ter |

#### 3.5.1.1.10 +GMM - Model Identification

| **+GMM - Model Identification** | |
|---|---|
| **AT+GMM** | Execution command returns the model identification. |
| Reference | V.25ter |

#### 3.5.1.1.11 +GMR - Revision Identification

| **+GMR - Revision Identification** | |
|---|---|
| **AT+GMR** | Execution command returns the software revision identification. |
| Reference | V.25ter |

#### 3.5.1.1.12 +GCAP - Capabilities List

| **+GCAP – Capabilities List** | |
|---|---|
| **AT+GCAP** | Execution command returns the equipment supported command set list.<br>Where:<br>**+CGSM**: GSM ETSI command set<br>**+FCLASS**: Fax command set<br>**+DS**: Data Service common modem command set<br>**+MS**: Mobile Specific command set |
| Reference | V.25ter |

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### 3.5.1.1.13 +GSN - Serial Number

| **+GSN - Serial Number** | |
|---|---|
| **AT+GSN** | Execution command returns the device board serial number.<br><br>Note: The number returned is not the IMSI, it is only the board number |
| Reference | V.25ter |

### 3.5.1.1.14 &V - Display Current Configuration & Profile

| **&V - Display Current Configuration & Profile** | |
|---|---|
| **AT&V** | Execution command returns some of the base configuration parameters settings.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |

### 3.5.1.1.15 &V0 - Display Current Configuration & Profile

| **&V0 - Display Current Configuration & Profile** | |
|---|---|
| **AT&V0** | Execution command returns all the configuration parameters settings.<br><br>Note: this command is the same as **&V**, it is included only for backwards compatibility.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |

### 3.5.1.1.16 &V1 - Display S Registers Values

| **&V1 - Display S Registers Values** | |
|---|---|
| **AT&V1** | Execution command returns the value of the **S** registers in decimal and hexadecimal value in the format:<br><br>**REG DEC HEX**<br>**<reg0><dec> <hex>**<br>**<reg1><dec> <hex>**<br>...<br>where<br>**<reg*n*>** - **S** register number<br>000..005<br>007<br>012<br>025 |

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| | |
|---|---|
| | 038<br>**<dec>** - current value in decimal notation<br>**<hex>** - current value in hexadecimal notation |

### *3.5.1.1.17 &V3 - Display S Registers Values*

| **&V3 - Display S Registers Values** | |
|---|---|
| **AT&V3** | Execution command returns the value of the **S** registers in decimal and hexadecimal value in the format:<br><br>**REG DEC HEX**<br>**<reg0> <dec> <hex>**<br>**<reg1> <dec> <hex>**<br>...<br>where<br>**<reg*n*>** - **S** register number<br>000..005<br>007<br>012<br>025<br>030<br>038<br>**<dec>** - current value in decimal notation<br>**<hex>** - current value in hexadecimal notation |

### *3.5.1.1.18 &V2 - Display Last Connection Statistics*

| **&V2 - Display Last Connection Statistics** | |
|---|---|
| **AT&V2** | Execution command returns the last connection statistics & connection failure reason. |

### *3.5.1.1.19 \V - Single Line Connect Message*

| **\V - Single Line Connect Message** | |
|---|---|
| **AT\V<n>** | Execution command set single line connect message.<br><br>Parameter:<br>**<n>**<br>0 - off<br>1 - on |

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### 3.5.1.1.20 +GCI - Country Of Installation

| +GCI - Country Of Installation | |
|---|---|
| **AT+GCI=<code>** | Set command selects the installation country code according to ITU-T.35 Annex A.<br>Parameter:<br>**<code>**<br>59 - it currently supports only the Italy country code |
| **AT+GCI?** | Read command reports the currently selected country code. |
| **AT+GCI=?** | Test command reports the supported country codes. |
| Reference | V25ter. |

### 3.5.1.1.21 %L - Line Signal Level

| %L - Line Signal Level | |
|---|---|
| **AT%L** | It has no effect and is included only for backward compatibility with landline modems |

### 3.5.1.1.22 %Q - Line Quality

| %Q - Line Quality | |
|---|---|
| **AT%Q** | It has no effect and is included only for backward compatibility with landline modems |

### 3.5.1.1.23 L - Speaker Loudness

| L - Speaker Loudness | |
|---|---|
| **ATL<n>** | It has no effect and is included only for backward compatibility with landline modems |

### 3.5.1.1.24 M - Speaker Mode

| M - Speaker Mode | |
|---|---|
| **ATM<n>** | It has no effect and is included only for backward compatibility with landline modems |

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## 3.5.1.2 DTE - Modem Interface Control

### *3.5.1.2.1 E - Command Echo*

| **E - Command Echo** | |
|---|---|
| **ATE[<n>]** | Set command enables/disables the command echo.<br><br>Parameter:<br>**<n>**<br>0 - disables command echo<br>1 - enables command echo (factory default) , hence command sent to the device are echoed back to the **DTE** before the response is given.<br><br>Note: if parameter is omitted, the command has the same behaviour of **ATE0** |
| Reference | V25ter |

### *3.5.1.2.2 Q - Quiet Result Codes*

| **Q - Quiet Result Codes** | |
|---|---|
| **ATQ[<n>]** | Set command enables or disables the result codes.<br><br>Parameter:<br>**<n>**<br>0 - enables result codes (factory default)<br>1 - every result code is replaced with a **<CR>**<br>2 - disables result codes<br><br>Note: After issuing either **ATQ1** or **ATQ2** every information text transmitted in response to commands is not affected<br><br>Note: if parameter is omitted, the command has the same behaviour as **ATQ0** |
| Example | *After issuing ATQ1*<br><br>AT+CGACT=?<br>**+CGACT: (0-1) *a <cr> ends the response***<br><br>After issuing ATQ2<br><br>AT+CGACT=?<br>**+CGACT: (0-1) nothing is appended to the response** |
| Reference | V25ter |

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### 3.5.1.2.3 V - Response Format

| **V - Response Format** | |
|---|---|
| **ATV[<n>]** | Set command determines the contents of the header and trailer transmitted with result codes and information responses. It also determines if result codes are transmitted in a numeric form or an alphanumeric form (see [§3.2.3 Information Responses And Result Codes] for the table of result codes).<br><br>Parameter:<br><n><br>0 - limited headers and trailers and numeric format of result codes<br><br>information responses: **<text><CR><LF>**<br>result codes: **<numeric code><CR>**<br><br>1 - full headers and trailers and verbose format of result codes (factory default)<br><br>information responses: **<CR><LF>** **<text><CR><LF>**<br>result codes: **<CR><LF>** **<numeric code><CR><LF>**<br><br>Note: the **<text>** portion of information responses is not affected by this setting.<br><br>Note: if parameter is omitted, the command has the same behaviour of ATV0 |
| Reference | V25ter |

### 3.5.1.2.4 X - Extended Result Codes

| **X - Extended Result Codes** | |
|---|---|
| **ATX[<n>]** | Set command selects the result code messages subset used by the modem to inform the **DTE** of the result of the commands.<br><br>Parameter:<br>**<n>**<br>0 - send only **OK**, **CONNECT**, **RING**, **NO CARRIER**, **ERROR**, **NO ANSWER** results. Busy tones reporting is disabled.<br>1..4 - reports all messages (factory default is 1) |

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| | |
|---|---|
| | Note: If parameter is omitted, the command has the same behaviour as **ATX0** |
| Note | For complete control on **CONNECT** response message see also **+DR** command. |
| Reference | V25ter |

### 3.5.1.2.5 I - Identification Information

| **I - Identification Information** | |
|---|---|
| **ATI[<n>]** | Execution command returns one or more lines of information text followed by a result code.<br><br>Parameter:<br>**<n>**<br>0 - numerical identifier.<br>1 - module checksum<br>2 - checksum check result<br>3 - manufacturer<br>4 - product name<br>5 - DOB version<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting.<br><br>Note: if parameter is omitted, the command has the same behaviour as **ATI0** |
| Reference | V25ter |

### 3.5.1.2.6 &C - Data Carrier Detect (DCD) Control

| **&C - Data Carrier Detect (DCD) Control** | |
|---|---|
| **AT&C[<n>]** | Set command controls the RS232 **DCD** output behaviour.<br><br>Parameter:<br>**<n>**<br>0 - **DCD** remains high always.<br>1 - **DCD** follows the Carrier detect status: if carrier is detected **DCD** is high, otherwise **DCD** is low. (factory default)<br>2 - **DCD** off while disconnecting<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&C0** |
| Reference | V25ter |

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### 3.5.1.2.7 &D - Data Terminal Ready (DTR) Control

| **&D - Data Terminal Ready (DTR) Control** | |
|---|---|
| **AT&D[<n>]** | Set command controls the Module behaviour to the RS232 **DTR** transitions.<br><br>Parameter:<br>**<n>**<br>0 - **DTR** transitions are ignored. (factory default)<br>1 - when the MODULE is connected, the **high** to **low** transition of **DTR** pin sets the device in command mode, the current connection is NOT closed.<br>2 - when the MODULE is connected , the **high** to **low** transition of **DTR** pin sets the device in command mode and the current connection is closed.<br>3 - **DTR** transitions are considered only in **power saving mode**.<br>4 - **C108/1** operation is disabled<br>5 - **C108/1** operation is enabled<br><br>Note: if **AT&D2** has been issued and the **DTR** has been tied **low**, autoanswering is inhibited and it is possible to answer only issuing command **ATA.**<br>Note: if parameter is omitted, the command has the same behaviour as **AT&D0** |
| Reference | V25ter |

### 3.5.1.2.8 \Q - Standard Flow Control

| **\Q - Standard Flow Control** | |
|---|---|
| **AT\Q[<n>]** | Set command controls the RS232 flow control behaviour.<br><br>Parameter:<br>**<n>**<br>0 - no flow control<br>1 - software bi-directional with filtering (**XON/XOFF**)<br>2 - hardware mono-directional flow control (only **CTS** active)<br>3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default)<br>4 - software flow control mono-directional **(XON/XOFF)**<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT\Q0**<br><br>Note: **\Q's** settings are functionally a subset of **&K's** ones. |
| Reference | V25ter |

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### 3.5.1.2.9 &K - Flow Control

| **&K - Flow Control** | |
|---|---|
| **AT&K[<n>]** | Set command controls the RS232 flow control behaviour.<br><br>Parameter:<br>**<n>**<br>0 - no flow control<br>1 - hardware mono-directional flow control (only **CTS** active)<br>2 - software mono-directional flow control (**XON/XOFF**)<br>3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default)<br>4 - software bi-directional with filtering (**XON/XOFF**)<br>5 - pass through: software bi-directional without filtering (**XON/XOFF**)<br>6 - both hardware bi-directional flow control (both **RTS/CTS** active) and software bi-directional flow control (**XON/XOFF**) with filtering<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&K0**<br><br>Note: **&K** has no Read Command. To verify the current setting of **&K**, simply check the settings of the active profile with **AT&V**. |

### 3.5.1.2.10 &S - Data Set Ready (DSR) Control

| **&S - Data Set Ready (DSR) Control** | |
|---|---|
| **AT&S[<n>]** | Set command controls the RS232 **DSR** pin behaviour.<br><br>Parameter:<br>**<n>**<br>0 - always **ON**<br>1 - follows the GSM traffic channel indication.<br>2 - **ON** when connected<br>3 - **ON** when device is ready to receive commands (factory default).<br><br>Note: if option 1 is selected then **DSR** is tied up when the device receives from the network the GSM traffic channel indication.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&S0** |

### 3.5.1.2.11 \R - Ring (RI) Control

| **\R - Ring (RI) Control** | |
|---|---|
| **AT\R[<n>]** | Set command controls the **RING** output pin behaviour. |

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| | |
|---|---|
| | Parameter:<br>**<n>**<br>0 - RING on during ringing and further connection<br>1 - RING on during ringing (factory default)<br>2 - RING follows the ring signal<br><br>Note: to check the ring option status use the **&V** command.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT\R0** |

### *3.5.1.2.12 +IPR - Fixed DTE Interface Rate*

| **+IPR - Fixed DTE Interface Rate** | |
|---|---|
| **AT+IPR=<rate>** | Set command specifies the **DTE** speed at which the device accepts commands during command mode operations; it may be used to fix the **DTE-DCE** interface speed.<br><br>Parameter:<br>**<rate>**<br>0<br>..300<br>1200<br>2400<br>4800<br>9600<br>19200<br>38400<br>57600<br>115200<br><br>If **<rate>** is set to 0, then automatic speed detection is enabled and also character format (see **+ICF**) is set to auto-detect. (default)<br>If **<rate>** is specified and not 0, **DTE-DCE** speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled. |
| **AT+IPR?** | Read command returns the current value of **+IPR** parameter. |
| **AT+IPR=?** | Test command returns the supported serial port speed list. |
| Reference | V25ter |

### *3.5.1.2.13 +IFC - DTE-Modem Local Flow Control*

| **+IFC - DTE-Modem Local Flow Control** | |
|---|---|
| **AT+IFC=<by_te>,** | Set command selects the flow control behaviour of the serial port in both |

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| | |
|---|---|
| **<by_ta>** | directions: from **DTE** to **modem** (**<by_ta>** option) and from **modem** to **DTE** (**<by_te>**)<br><br>Parameter:<br>**<by_te>** - flow control option for the data received by **DTE**<br>0 - flow control None<br>1 - **XON/XOFF** filtered<br>2 - **C105 (RTS)** (factory default)<br>3 - **XON/XOFF** not filtered<br><br>**<by_ta>** - flow control option for the data sent by **modem**<br>0 - flow control None<br>1 - **XON/XOFF**<br>2 - **C106 (CTS)** (factory default)<br><br>Note: This command is equivalent to **&K** command. |
| **AT+IFC?** | Read command returns active flow control settings. |
| **AT+IFC=?** | Test command returns all supported values of the parameters **<by_te>** and **<by_ta>**. |
| Reference | V25ter |

### *3.5.1.2.14 +ILRR - DTE-Modem Local Rate Reporting*

| **+ILRR - DTE-Modem Local Rate Reporting** | |
|---|---|
| **AT+ILRR=<n>** | Set command controls whether or not the **+ILRR:<rate>** information text is transmitted from the **modem** to the **DTE**.<br>Parameter:<br>**<n>**<br>0 - local port speed rate reporting disabled (factory default)<br>1 - local port speed rate reporting enabled<br><br>Note: this information if enabled is sent upon connection. |
| **AT+ILRR?** | Read command returns active setting of **<n>**. |
| **AT+ILRR=?** | Test command returns all supported values of the parameter **<n>**. |
| Reference | V25ter |

### *3.5.1.2.15 +ICF - DTE-Modem Character Framing*

| **+ICF - DTE-Modem Character Framing** | |
|---|---|
| **AT+ICF=<format> [,<parity>]** | Set command defines the asynchronous character framing to be used when autobauding is disabled.<br><br>Parameters:<br>**<format>** - determines the number of bits in the data bits, the presence of a |

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| | |
|---|---|
| | parity bit, and the number of stop bits in the start-stop frame.<br>0 - autodetection<br>1 - 8 Data, 2 Stop<br>2 - 8 Data, 1 Parity, 1 Stop<br>3 - 8 Data, 1 Stop<br>4 - 7 Data, 2 Stop<br>5 - 7 Data, 1 Parity, 1 Stop<br><br>**<parity>** - determines how the parity bit is generated and checked, if present<br>0 - Odd<br>1 - Even |
| **AT+ICF?** | Read command returns current settings for subparameters **<format>** and **<parity>**. |
| **AT+ICF=?** | Test command returns the ranges of values for the parameters **<format>** and **<parity>** |
| Reference | V25ter |
| Example | `AT+ICF = 0 - auto detect`<br>`AT+ICF = 1 - 8N2`<br>`AT+ICF = 2,0 - 8O1`<br>`AT+ICF = 2,1 - 8E1`<br>`AT+ICF = 3 - 8N1 (default)`<br>`AT+ICF = 5,0 - 7O1`<br>`AT+ICF = 5,1 - 7E1` |

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### 3.5.1.3 Call Control

#### *3.5.1.3.1 D - Dial*

| **D - Dial** | |
|---|---|
| **ATD<number>[;]** | Execution command starts a call to the phone number given as parameter. If ";" is present, a VOICE call to the given number is performed, regardless of the current value of the connection mode set by **+FCLASS** command.<br><br>Parameter:<br>**<number>** - phone number to be dialed<br><br>Note: type of call (data, fax or voice) depends on last **+FCLASS** setting.<br><br>Note: the numbers accepted are 0-9 and *,#,"A", "B", "C", "D","+".<br><br>Note: for backwards compatibility with landline modems modifiers "T", "P", "R", ",", "W", "!", "@" are accepted but have no effect. |
| **ATD><str>[;]** | Issues a call to phone number which corresponding alphanumeric field is **<str>**; all available memories will be searched for the correct entry.<br><br>If "**;**" is present a **voice** call is performed.<br><br>Parameter:<br>**<str>** - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks.<br><br>Note: used character set should be the one selected with either command Select TE character set **+CSCS** or **@CSCS**. |
| **ATD><mem><n>[;]** | Issues a call to phone number in phonebook memory storage **<mem>**, entry location **<n>** (available memories may be queried with **AT+CPBS=?**).<br>If "**;**" is present a **voice** call is performed.<br><br>Parameters:<br>**<mem>** - phonebook memory storage; it must not be enclosed in quotation marks.<br>SM - SIM phonebook<br>FD - SIM fixed dialling-phonebook<br>LD - SIM last-dialling-phonebook<br>MC - device missed (unanswered received) calls list<br>RC - ME received calls list<br><br>**<n>** - entry location; it should be in the range of locations available in the memory used. |
| **ATD><n>[;]** | Issues a call to phone number in entry location **<n>** of the active |

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| D - Dial | |
|---|---|
| | phonebook memory storage (see **+CPBS**).<br>If ";" is present a **voice** call is performed.<br><br>Parameter:<br>**<n>** - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage. |
| **ATDL** | Issues a call to the last number dialed. |
| **ATDS=<nr>[;]** | Issues a call to the number stored in the MODULE internal phonebook position number **<nr>**.<br>If ";" is present a VOICE call is performed.<br><br>Parameter:<br>**<nr>** - internal phonebook position to be called (See commands **&N** and **&Z**) |
| **ATD<number>I[;]**<br>**ATD<number>i[;]** | Issues a call overwriting the CLIR supplementary service subscription default value for this call<br>If ";" is present a VOICE call is performed.<br><br>**I** - invocation, restrict CLI presentation<br>**i** - suppression, allow CLI presentation |
| **ATD<number>G[;]**<br>**ATD<number>g[;]** | Issues a call checking the CUG supplementary service information for the current call. Refer to **+CCUG** command.<br>If ";" is present a VOICE call is performed. |
| **ATD*<gprs_sc>[*<addr>][*[<L2P>][*[<cid>]]]]#** | This command is specific of GPRS functionality and causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.<br><br>Parameters:<br>**<gprs_sc>** - GPRS Service Code, a digit string (value 99) which identifies a request to use the GPRS<br><br>**<addr>** - string that identifies the called party in the address space applicable to the PDP.<br><br>**<L2P>** - 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:<br>1 - PPP<br>Other values are reserved and will result in an **ERROR** response to the Set command.<br><br>**<cid>** - a digit which specifies a particular PDP context definition (see **+CGDCONT** command). |
| Example | *To dial a number in SIM phonebook entry 6:*<br>ATD>SM6 |

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| D - Dial | |
|---|---|
| | OK<br><br>*To have a voice call to the 6-th entry of active phonebook:*<br>ATD>6;<br>OK<br><br>*To call the entry with alphanumeric field* “Name”:<br>ATD>”Name”;<br>OK |
| Reference | V25ter. |

### 3.5.1.3.2 T - Tone Dial

| T - Tone Dial | |
|---|---|
| **ATT** | Set command has no effect is included only for backward compatibility with landline modems. |
| Reference | V25ter. |

### 3.5.1.3.3 P - Pulse Dial

| P - Pulse Dial | |
|---|---|
| **ATP** | Set command has no effect is included only for backward compatibility with landline modems. |
| Reference | V25ter. |

### 3.5.1.3.4 A - Answer

| A - Answer | |
|---|---|
| **ATA** | Execution command is used to answer to an incoming call if automatic answer is disabled.<br><br>Note: This command MUST be the last in the command line and must be followed immediately by a **<CR>** character. |
| Reference | V25ter. |

### 3.5.1.3.5 H - Disconnect

| H - Disconnect | |
|---|---|
| **ATH** | Execution command is used to close the current conversation (voice, data or fax). |

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| | |
|---|---|
| | Note: this command can be issued only in command mode; when a data conversation is active the device is in on-line mode (commands are not sensed and characters are sent to the other party), hence escape sequence (see register **S2**) is required before issuing this command, otherwise if **&D1** option is active, **DTR** pin has to be tied low to return in command mode. |
| Reference | V25ter. |

### *3.5.1.3.6 O - Return To On Line Mode*

| **O - Return To On Line Mode** | |
|---|---|
| **ATO** | Execution command is used to return to on-line mode from command mode. If there's no active connection it returns **ERROR**.<br><br>Note: After issuing this command, if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see register **S2**) or tying low **DTR** pin if **&D1** option is active. |
| Reference | V25ter. |

### *3.5.1.3.7 &G - Guard Tone*

| **&G - Guard Tone** | |
|---|---|
| **AT&G** | Set command has no effect is included only for backward compatibility with landline modems. |

### *3.5.1.3.8 &Q - Sync/Async Mode*

| **&Q - Sync/Async Mode** | |
|---|---|
| **AT&Q** | Set command has no effect is included only for backward compatibility with landline modems. |

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### 3.5.1.4 Modulation Control

#### *3.5.1.4.1 +MS - Modulation Selection*

| **+MS - Modulation Selection** | |
|---|---|
| **AT+MS=<br><carrier>[,<br><automode>[,<br><min_rate>[,<br><max_rate>]]]** | Set command has no effect is included only for backward compatibility with landline modems.<br><br>Parameter:<br>**<carrier>** - a string which specifies the preferred modem carrier to use in originating or answering a connection<br>V21<br>V22<br>V22B<br>V23C<br>V32<br>V34<br><br>**<automode>** - it enables/disables automatic modulation negotiation.<br>0 - disabled<br>1 - enabled. It has effect only if it is defined for the associated modulation.<br>**<min_rate>** - it specifies the lowest value at which the **DCE** may establish a connection.<br>0 - unspecified<br>**<max_rate>** - it specifies the highest value at which the **DCE** may establish a connection.<br>0 - unspecified<br>300..14400 - rate in bps<br><br>Note: to change modulation requested use **+CBST** command. |
| **AT+MS?** | Read command returns the current value of **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters. |
| **AT+MS=?** | Test command returns all supported values of the **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters. |

#### *3.5.1.4.2 %E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward*

| **%E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward** | |
|---|---|
| **AT%E<n>** | Execution command has no effect and is included only for backward compatibility with landline modems. |

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### 3.5.1.5 Compression Control

#### *3.5.1.5.1 +DS - Data Compression*

| **+DS - Data Compression** | |
|---|---|
| **AT+DS=<n>** | Set command sets the V42 compression parameter.<br><br>Parameter:<br>**<n>**<br>0 - no compression, it is currently the only supported value |
| **AT+DS?** | Read command returns current value of the data compression parameter. |
| **AT+DS=?** | Test command returns all supported values of the parameter **<n>** |
| Reference | V25ter |

#### *3.5.1.5.2 +DR - Data Compression Reporting*

| **+DR - Data Compression Reporting** | |
|---|---|
| **AT+DR=<n>** | Set command enables/disables the data compression reporting upon connection.<br><br>Parameter:<br>**<n>**<br>0 - data compression reporting disabled;<br>1 - data compression reporting enabled upon connection.<br><br>Note: if enabled, the following intermediate result code is transmitted before the final result code:<br><br>**+DR: <compression>**<br>(the only supported value for **<compression>** is “NONE”) |
| **AT+DR?** | Read command returns current value of **<n>**. |
| **AT+DR=?** | Test command returns all supported values of the parameter **<n>** |
| Reference | V25ter |

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### 3.5.1.6 Break Control

#### *3.5.1.6.1 \B - Transmit Break To Remote*

| **\B - Transmit Break To Remote** | |
|---|---|
| **AT\B** | Execution command has no effect and is included only for backward compatibility with landline modems |

#### *3.5.1.6.2 \K - Break Handling*

| **\K – Break Handling** | |
|---|---|
| **AT\K<n>** | Execution command has no effect and is included only for backward compatibility with landline modems<br><br>Parameter:<br>**<n>**<br>1..5 |

#### *3.5.1.6.3 \N - Operating Mode*

| **\N - Operating Mode** | |
|---|---|
| **AT\N** | Execution command has no effect and is included only for backward compatibility with landline modems |

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### 3.5.1.7 S Parameters

Basic commands that begin with the letter "**S**" are known as "**S-Parameters**". The number following the "**S**" indicates the "parameter number" being referenced. If the number is not recognized as a valid parameter number, an **ERROR** result code is issued.

If no value is given for the subparameter of an **S-Parameter**, an **ERROR** result code will be issued and the stored value left unchanged.

Note: what follows is a special way to select and set an **S-parameter**:

1. **ATS*n*<CR>** selects ***n*** as current parameter number. If the value of ***n*** is in the range (0, 2, 3, 4, 5, 7, 12, 25, 30, 38), this command establishes **S*n*** as last selected parameter. Every value out of this range and less than 256 can be used but has no meaning and is maintained only for backward compatibility with landline modems.
2. **AT=<value><CR>** or **ATS=<value><CR>** set the contents of the selected **S-parameter**

Example:

| | |
|---|---|
| **ATS7<CR>** | establishes **S7** as last selected parameter. |
| **AT=40<CR>** | sets the content of **S7** to 40 |
| **ATS=15<CR>** | sets the content of **S7** to 15. |

#### *3.5.1.7.1 S0 - Number Of Rings To Auto Answer*

| **S0 - Number Of Rings To Auto Answer** | |
|---|---|
| **ATS0[=<n>]** | Set command sets the number of rings required before device automatically answers an incoming call.<br><br>Parameter:<br>**<n>** - number of rings<br>0 - auto answer disabled (factory default)<br>1..255 - number of rings required before automatic answer. |
| **ATS0?** | Read command returns the current value of **S0** parameter. |
| **ATS0=?** | Test command returns the range for **<n>** without command echo and parenthesis. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

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### 3.5.1.7.2 S1 - Ring Counter

| S1 - Ring Counter | |
|---|---|
| **ATS1** | **S1** is incremented each time the device detects the ring signal of an incoming call. **S1** is cleared as soon as no ring occur.<br><br>Note: the form **ATS1** has no effect. |
| **ATS1?** | Read command returns the value of **S1** ring counter. |
| **ATS1=?** | Test command returns the range of values for **S1** ring counter without command echo and parenthesis. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.5.1.7.3 S2 - Escape Character

| S2 - Escape Character | |
|---|---|
| **ATS2[=<char>]** | Set command sets the ASCII character to be used as escape character.<br><br>Parameter:<br>**<char>** - escape character decimal ASCII<br>0..255 - factory default value is 43 (+).<br><br>Note: the escape sequence consists of three escape characters preceded and followed by ***n*** ms of idle (see **S12** to set ***n***). |
| **ATS2?** | Read command returns the current value of **S2** parameter. |
| **ATS2=?** | Test command returns the range for **<char>** without command echo and parenthesis |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.5.1.7.4 S3 - Command Line Termination Character

| S3 - Command Line Termination Character | |
|---|---|
| **ATS3[=<char>]** | Set command sets the value of the character recognized by the device as command line terminator and generated by the device as part of the header, trailer, and terminator for result codes and information text, along with **S4** parameter.<br><br>Parameter:<br>**<char>** - command line termination character (decimal ASCII)<br>0..127 - factory default value is 13 (ASCII **CR**)<br><br>Note: the “previous” value of **S3** is used to determine the command line termination character for entering the command line containing the **S3** |

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| | |
|---|---|
| | setting command. However the result code issued shall use the “new” value of **S3** (as set during the processing of the command line). |
| **ATS3?** | Read command returns the current value of **S3** parameter. |
| **ATS3=?** | Test command returns the range for **<char>** without command echo and parenthesis. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### *3.5.1.7.5 S4 - Response Formatting Character*

| **S4 - Response Formatting Character** | |
|---|---|
| **ATS4[=<char>]** | Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the **S3** parameter.<br><br>Parameter:<br>**<char>** - response formatting character (decimal ASCII)<br>0..127 - factory default value is 10 (ASCII **LF**)<br><br>Note: if the value of **S4** is changed in a command line the result code issued in response of that command line will use the new value of **S4**. |
| **ATS4?** | Read command returns the current value of **S4** parameter. |
| **ATS4=?** | Test command returns the range for **<char>** without command echo and parenthesis |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### *3.5.1.7.6 S5 - Command Line Editing Character*

| **S5 - Command Line Editing Character** | |
|---|---|
| **ATS5[=<char>]** | Set command sets the value of the character recognized by the device as a request to delete from the command line the immediately preceding character.<br><br>Parameter:<br>**<char>** - command line editing character (decimal ASCII)<br>0..127 - factory default value is 8 (ASCII **BS**). |
| **ATS5?** | Read command returns the current value of **S5** parameter. |
| **ATS5=?** | Test command returns the range for **<char>** without command echo and parenthesis. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

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### 3.5.1.7.7 S7 - Connection Completion Time-Out

| S7 - Connection Completion Time-Out | |
|---|---|
| **ATS7[=<tout>]** | Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by A command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device.<br><br>Parameter:<br>**<tout>** - number of seconds<br>1..255 - factory default value is 60. |
| **ATS7?** | Read command returns the current value of **S7** parameter. |
| **ATS7=?** | Test command returns the range for **<tout>** without command echo and parenthesis. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### 3.5.1.7.8 S12 - Escape Prompt Delay

| S12 - Escape Prompt Delay | |
|---|---|
| **ATS12[=<time>]** | Set command sets:<br><br>• the minimum period, before receipt of the first character of the three escape character sequence, during which no other character has to be detected in order to accept it as valid first character.<br>• the maximum period allowed between receipt of first, or second, character of the three escape character sequence and receipt of the next.<br>• the minimum period, after receipt of the last character of the three escape character sequence, during which no other character has to be detected in order to accept the escape sequence as a valid one.<br><br>Parameter:<br>**<time>** - expressed in fiftieth of a second<br>20..255 - factory default value is 50.<br><br>Note: after **CONNECT** result code it is possible to accept the first character of the three escape character sequence without having to wait for a minimum period to be passed. |
| **ATS12?** | Read command returns the current value of **S12** parameter. |
| **ATS12=?** | Test command returns the range for **<time>** without command echo and parenthesis. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

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### 3.5.1.7.9 S25 - Delay To DTR Off

| S25 - Delay To DTR Off | |
|---|---|
| **ATS25[=<time>]** | Set command defines the amount of time, in hundredths of second, that the device will ignore the **DTR** for taking the action specified by command **&D**.<br><br>Parameter:<br>**<time>** - expressed in hundredths of a second<br>0..255 - factory default value is 5.<br><br>Note: the delay is effective only if its value is greater than 5. |
| **ATS25?** | Read command returns the current value of **S25** parameter. |
| **ATS25=?** | Test command returns the range for **<time>** without command echo and parenthesis.<br><br>Note: the output depends on the choice made through **#SELINT** command. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.5.1.7.10 S30 - Disconnect Inactivity Timer

| S30 - Disconnect Inactivity Timer | |
|---|---|
| **ATS30[=<tout>]** | Set command defines the inactivity timeout in minutes. The device disconnects if no characters are exchanged for a time period of at least **<tout>** minutes.<br><br>Parameter:<br>**<tout>** - expressed in minutes<br>0 - disabled, disconnection due to inactivity is disabled (factory default).<br>1..255 - inactivity timeout value. |
| **ATS30?** | Read command returns the current value of **S30** parameter. |
| **ATS30=?** | Test command returns the range for **<tout>** without command echo and parenthesis.<br><br>Note: the output depends on the choice made through **#SELINT** command. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.5.1.7.11 S38 - Delay Before Forced Hang Up

| S38 -Delay Before Forced Hang Up | |
|---|---|
| **ATS38[=<delay>]** | Set command sets the delay, in seconds, between the device's receipt of **H** command (or **ON**-to-**OFF** transition of **DTR** if device is programmed to follow the signal) and the disconnect operation. |

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| | |
|---|---|
| | Parameter:<br>**<delay>** - expressed in seconds<br>0..254 - the device will wait **<delay>** seconds for the remote device to acknowledge all data in the device buffer before disconnecting (factory default value is 20).<br>255 - the device doesn't time-out and continues to deliver data in the buffer until the connection is lost or the data is delivered.<br><br>Note: **<delay>** parameter can be used to ensure that data in device buffer is sent before device disconnects. |
| **ATS38?** | Read command returns the current value of **S38** parameter. |
| **ATS38=?** | Test command returns the range of supported values for **<delay>** without command echo and parenthesis. |
| Note | For both Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

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## 3.5.2 ETSI GSM 07.07 AT Commands

### 3.5.2.1 General

#### *3.5.2.1.1 +CGMI - Request Manufacturer Identification*

| **+CGMI - Request Manufacturer Identification** | |
|---|---|
| **AT+CGMI** | Execution command returns the device manufacturer identification code without command echo. The output depends on the choice made through **#SELINT** command. |
| **AT+CGMI?** | Read command has the same behaviour as Execution command |
| Reference | GSM 07.07 |

#### *3.5.2.1.2 +CGMM - Request Model Identification*

| **+CGMM - Request Model Identification** | |
|---|---|
| **AT+CGMM** | Execution command returns the device model identification code without command echo. |
| Reference | GSM 07.07 |

#### *3.5.2.1.3 +CGMR - Request Revision Identification*

| **+CGMR - Request Revision Identification** | |
|---|---|
| **AT+CGMR** | Execution command returns device software revision number without command echo. |
| **AT+CGMR?** | Read command has the same behaviour as Execution command |
| Reference | GSM 07.07 |

#### *3.5.2.1.4 +CGSN - Request Product Serial Number Identification*

| **+CGSN - Request Product Serial Number Identification** | |
|---|---|
| **AT+CGSN** | Execution command returns the product serial number, identified as the IMEI of the mobile, without command echo. |
| **AT+CGSN?** | Read command has the same behaviour as Execution command |
| Reference | GSM 07.07 |

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### 3.5.2.1.5 +CSCS - Select TE Character Set

| **+CSCS - Select TE Character Set** | |
|---|---|
| **AT+CSCS [=<chset>]** | Set command sets the current character set used by the device.<br><br>Parameter:<br>**<chset>** - character set<br>"IRA" - ITU-T.50<br>"8859-1" - ISO 8859 Latin 1<br>"PCCP437" - PC character set Code Page 437.<br>"UCS2" - 16-bit universal multiple-octet coded character set (ISO/IEC10646)<br><br>Note: If parameter is omitted then the behaviour of Set command is the same as Read command. |
| **AT+CSCS?** | Read command returns the current value of the active character set. |
| **AT+CSCS=?** | Test command returns the supported values of the parameter **<chset>**.<br>For compatibility with previous versions, Test command returns<br><br>**+CSCS: ("IRA")**<br><br>An enhanced version of Test command has been defined: **AT+CSCS=??**, that provides the complete range of values for **<chset>**. |
| **AT+CSCS=??** | Enhanced test command returns the supported values of the parameter **<chset>** |
| Reference | GSM 07.07 |

### 3.5.2.1.6 +CIMI - Request International Mobile Subscriber Identity (IMSI)

| **+CIMI - Request International Mobile Subscriber Identify (IMSI)** | |
|---|---|
| **AT+CIMI** | Execution command returns the value of the Internal Mobile Subscriber Identity stored in the SIM without command echo.<br><br>Note: a SIM card must be present in the SIM card housing, otherwise the command returns **ERROR**. |
| **AT+CIMI?** | Read command has the same behaviour as Execution command |
| Reference | GSM 07.07 |

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## 3.5.2.2 Call Control

### *3.5.2.2.1 +CHUP - Hang Up Call*

| **+CHUP - Hang Up Call** | |
|---|---|
| **AT+CHUP** | Execution command cancels all active and held calls, also if a multi-party session is running. |
| **AT+CHUP=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

### *3.5.2.2.2 +CBST - Select Bearer Service Type*

| **+CBST - Select Bearer Service Type** | |
|---|---|
| **AT+CBST [=<speed> [,<name> [,<ce>]]]** | Set command sets the bearer service **<name>** with data rate **<speed>**, and the connection element **<ce>** to be used when data calls are originated. Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls (refer **+CSNS**).<br><br>Parameters:<br>The default values of the subparameters are manufacturer specific since they depend on the purpose of the device and data services provided by it. Not all combinations of these subparameters are supported. The supported values are:<br><br>**<speed>**<br>0 - autobauding (automatic selection of the speed, factory default)<br>1 - 300 bps (V.21)<br>2 - 1200 bps (V.22)<br>3 - 1200/75 bps (V.23)<br>4 - 2400 bps (V.22bis)<br>6 - 4800 bps (V.32)<br>7 - 9600 bps (V.32)<br>14 - 14400 bps (V.34)<br>65 - 300 bps (V.110)<br>66 - 1200 bps (V.110)<br>68 - 2400 bps (V.110 or X.31 flag stuffing)<br>70 - 4800 bps (V.110 or X.31 flag stuffing)<br>71 - 9600 bps (V.110 or X.31 flag stuffing)<br>75 - 14400 bps (V110 or X.31 flag stuffing)<br><br>**<name>**<br>0 - data circuit asynchronous (factory default)<br><br>**<ce>**<br>0 - transparent<br>1 - non transparent (default) |

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| +CBST - Select Bearer Service Type | |
|---|---|
| | Note: the settings<br>**AT+CBST=0,0,0**<br>**AT+CBST=14,0,0**<br>**AT+CBST=75,0,0**<br>are not supported.<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command. |
| **AT+CBST?** | Read command returns current value of the parameters **<speed>**, **<name>** and **<ce>** |
| **AT+CBST=?** | Test command returns the supported range of values for the parameters. |
| Reference | GSM 07.07 |

### *3.5.2.2.3 +CRLP - Radio Link Protocol*

| +CRLP - Radio Link Protocol | |
|---|---|
| **AT+CRLP=<iws>[,<mws>[,<T1>[,<N2>[,<ver>]]]]** | Set command sets Radio Link Protocol (RLP) parameters used when non-transparent data calls are originated<br><br>Parameters:<br>**<iws>** - IWF window Dimension<br>1..61 - factory default value is 61<br><br>**<mws>** - MS window Dimension<br>1..61 - default value is 61<br><br>**<T1>** - acknowledge timer (10 ms units).<br>39..255 - default value is 78<br><br>**<N2>** - retransmission attempts<br>1..255 - default value is 6<br><br>**<ver>** - protocol version<br>0 |
| **AT+CRLP?** | Read command returns the current value of the RLP protocol parameters. |
| **AT+CRLP=?** | Test command returns supported range of values of the RLP protocol parameters. |
| Reference | GSM 07.07 |

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### 3.5.2.2.4 +CR - Service Reporting Control

| +CR - Service Reporting Control | |
|---|---|
| **AT+CR=<mode>** | Set command controls whether or not intermediate result code<br><br>**+CR: <serv>**<br><br>is returned from the **TA** to the **TE**, where<br>**<serv>**<br>ASYNC - asynchronous transparent<br>SYNC - synchronous transparent<br>REL ASYNC - asynchronous non-transparent<br>REL SYNC - synchronous non-transparent<br><br>If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the **TA** has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code **CONNECT** is transmitted.<br><br>Parameter:<br>**<mode>**<br>0 - disables intermediate result code report (factory default)<br>1 - enables intermediate result code report.<br><br>This command replaces V.25ter [14] command Modulation Reporting Control **+MR**, which is not appropriate for use with a GSM terminal. |
| **AT+CR?** | Read command returns current intermediate report setting |
| **AT+CR=?** | Test command returns the supported range of values of parameter **<mode>**. |
| Reference | GSM 07.07 |

### 3.5.2.2.5 +CEER - Extended Error Report

| +CEER - Extended Error Report | |
|---|---|
| **AT+CEER** | Execution command returns one or more lines of information text **<report>** in the format:<br><br>**+CEER: <report>**<br><br>This report regards some error condition that may occur:<br>- the failure in the last unsuccessful call setup (originating or answering)<br>- the last call release<br>- the last unsuccessful GPRS attach or unsuccessful PDP context activation, |

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| +CEER - Extended Error Report | |
|---|---|
| | - the last GPRS detach or PDP context deactivation.<br><br>Note: if none of this condition has occurred since power up then No Error condition is reported |
| **AT+CEER?** | Read command reports a information text regarding some error condition that may occur |
| **AT+CEER=?** | Test command returns **OK** result code. |
| Reference | GSM 07.07 |

### *3.5.2.2.6 +CRC - Cellular Result Codes*

| +CRC - Cellular Result Codes | |
|---|---|
| **AT+CRC=<mode>** | Set command controls whether or not the extended format of incoming call indication is used.<br><br>Parameter:<br>**<mode>**<br>0 - disables extended format reporting (factory default)<br>1 - enables extended format reporting<br><br>When enabled, an incoming call is indicated to the **TE** with unsolicited result code:<br><br>**+CRING:<type>**<br><br>instead of the normal **RING**.<br><br>where<br>**<type>** - call type:<br>DATA<br>FAX - facsimile (TS 62)<br>VOICE - normal voice (TS 11) |
| **AT+CRC?** | Read command returns current value of the parameter **<mode>**. |
| **AT+CRC=?** | Test command returns supported values of the parameter **<mode>**. |
| Reference | GSM 07.07 |

### *3.5.2.2.7 +CSNS - Single Numbering Scheme*

| +CSNS - Single Numbering Scheme | |
|---|---|
| **AT+CSNS=<mode>** | Set command selects the bearer or teleservice to be used when mobile terminated single numbering scheme call is established. Parameter values set with **+CBST** command shall be used when **<mode>** equals to a data service. |

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| | |
|---|---|
| | Parameter:<br>**<mode>**<br>0 - voice (factory default)<br>2 - fax (TS 62)<br>4 - data<br><br>Note: if **+CBST** parameter is set to a value that is not applicable to single numbering calls, ME/TA shall map the value to the closest valid one. E.g. if user has set **<speed>=71**, **<name>=0** and **<ce>=1** (non-trasparent asynchronous 9600 bps V.110 ISDN connection) for mobile originated calls, ME/TA shall map the values into non-trasparent asynchronous 9600 bps V.32 modem connection when single numbering scheme call is answered. |
| **AT+CSNS?** | Read command returns current value of the parameter **<mode>**. |
| **AT+CSNS=?** | Test command returns supported values of the parameter **<mode>**. |
| Reference | GSM 07.07 |

### *3.5.2.2.8 +CVHU - Voice Hang Up Control*

| **+CVHU - Voice Hang Up Control** | |
|---|---|
| **AT+CVHU[=<mode>]** | Set command selects whether **ATH** or "**drop DTR**" shall cause a voice connection to be disconnected or not.<br><br>Parameter:<br>**<mode>**<br>0 - "**Drop DTR**" ignored but **OK** result code given. **ATH** disconnects.<br>1 - "**Drop DTR**" and **ATH** ignored but **OK** result code given.<br>2 - "**Drop DTR**" behaviour according to **&D** setting. **ATH** disconnects (factory default).<br><br>Note: if parameter **<mode>** is omitted the behaviour of Set command is the same as Read command. |
| **AT+CVHU?** | Read command reports the current value of the **<mode>** parameter,<br>**+CVHU: <mode>** |
| **AT+CVHU=?** | Test command reports the range of supported values for parameter **<mode>** |

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## 3.5.2.3Network Service Handling

### *3.5.2.3.1 +CNUM - Subscriber Number*

| **+CNUM - Subscriber Number** | |
|---|---|
| **AT+CNUM** | Execution command returns the MSISDN related to the subscriber (the phone number of the device that is stored in the SIM card) in the format:<br><br>**+CNUM: <number>,<type>**<br><br>where<br>**<number>** - string containing the phone number in the format **<type>**<br>**<type>** - type of number:<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+"). |
| Reference | GSM 07.07 |

### *3.5.2.3.2 +COPN - Read Operator Names*

| **+COPN - Read Operator Names** | |
|---|---|
| **AT+COPN** | Execution command returns the list of operator names from the **ME** in the format:<br><br>**+COPN: <numeric1>,<alpha1>[<CR><LF><CR><LF>**<br>**+COPN: <numeric2>,<alpha2>[…]]**<br><br>where:<br>**<numeric*n*>** - string type, operator in numeric format (see **+COPS**)<br>**<alpha*n*>** - string type, operator in long alphanumeric format (see **+COPS**)<br><br>Note: each operator code **<numeric*n*>** that has an alphanumeric equivalent **<alpha*n*>** in the ME memory is returned |
| Reference | GSM 07.07 |

### *3.5.2.3.3 +CREG - Network Registration Report*

| **+CREG - Network Registration Report** | |
|---|---|
| **AT+CREG[=[<mode>]]** | Set command enables/disables network registration reports depending on the parameter **<mode>**.<br><br>Parameter:<br>**<mode>**<br>0 - disable network registration unsolicited result code (factory default)<br>1 - enable network registration unsolicited result code |

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| **+CREG - Network Registration Report** | |
|---|---|
| | 2 - enable network registration unsolicited result code with network Cell identification data<br><br>If **<mode>=1**, network registration result code reports:<br><br>**+CREG: <stat>**<br><br>where<br>**<stat>**<br>0 - not registered, ME is not currently searching a new operator to register to<br>1 - registered, home network<br>2 - not registered, but ME is currently searching a new operator to register to<br>3 - registration denied<br>4 -unknown<br>5 - registered, roaming<br><br>If **<mode>=2**, network registration result code reports:<br><br>**+CREG: <stat>[,<Lac>,<Ci>]**<br><br>where:<br>**<Lac>** - Local Area Code for the currently registered on cell<br>**<Ci>** - Cell Id for the currently registered on cell<br><br>Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell.<br><br>Note: issuing **AT+CREG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CREG=<CR>** is the same as issuing the command **AT+CREG=0<CR>**. |
| **AT+CREG?** | Read command reports the **<mode>** and **<stat>** parameter values in the format:<br><br>**+CREG: <mode>,<stat>[,<Lac>,<Ci>]**<br><br>Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell. |
| **AT+CREG=?** | Test command returns the range of supported **<mode>** |
| Example | `AT`<br>`OK`<br>`at+creg?`<br>`+CREG: 0,2` *(the MODULE is in network searching state)*<br><br>`OK`<br>`at+creg?` |

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| +CREG - Network Registration Report | |
|---|---|
| | `+CREG: 0,2`<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,2`<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,2`<br>`OK`<br>`at+creg?`<br>`+CREG: 0,1` *(the MODULE is registered )*<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,1`<br><br>`OK` |
| Reference | GSM 07.07 |

### *3.5.2.3.4 +COPS - Operator Selection*

| +COPS - Operator Selection | |
|---|---|
| **AT+COPS[=<br>[<mode><br>[,<format><br>[,<oper>]]]]** | Set command forces an attempt to select and register the GSM network operator.<br>**<mode>** parameter defines whether the operator selection is done automatically or it is forced by this command to operator **<oper>**.<br>The operator **<oper>** shall be given in format **<format>**.<br><br>The behaviour of **+COPS** command depends on the last **#COPSMODE** setting.<br><br>**(#COPSMODE=0)**<br>Parameters:<br>**<mode>**<br>0 - automatic choice (the parameter **<oper>** will be ignored) (factory default)<br>1 - manual choice unlocked (network is kept as long as available, then it can be changed with some other suited networks to guarantee the service)<br>2 - deregister from GSM network; the MODULE is kept unregistered until a **+COPS** with **<mode>=0, 1, 4** or **5** is issued<br>3 - set only **<format>** parameter (the parameter **<oper>** will be ignored)<br>4 - manual/automatic **(<oper>** field shall be present); if manual selection fails, automatic mode **(<mode>=0**) is entered |

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| +COPS - Operator Selection | |
|---|---|
| | 5 - manual choice locked (network is kept fixed, if the chosen network is not available, then the mobile has no service)<br><br>**<format>**<br>0 - alphanumeric long form (max length 16 digits)<br>1 - alphanumeric short form<br>2 - Numeric 5 digits [country code (3) + network code (2)]<br><br>**<oper>**: network operator in format defined by **<format>** parameter.<br><br>**(#COPSMODE=1)**<br>Parameters:<br>**<mode>**<br>0 - automatic choice (the parameter **<oper>** will be ignored) (default)<br>1 - manual choice **(<oper>** field shall be present)<br>2 - deregister from GSM network; the MODULE is kept unregistered until a **+COPS** with **<mode>=0, 1** or **4** is issued<br>3 - set only **<format>** parameter (the parameter **<oper>** will be ignored)<br>4 - manual/automatic **(<oper>** field shall be present); if manual selection fails, automatic mode **(<mode>=0**) is entered<br><br>**<format>**<br>0 - alphanumeric long form (max length 16 digits)<br>2 - numeric 5 digits [country code (3) + network code (2)]<br><br>**<oper>**: network operator in format defined by **<format>** parameter.<br><br>Note: **<mode>** parameter setting is stored in NVM and available at next reboot, if it is not **3** (i.e.: set only **<format>** parameter).<br><br>Note: if **<mode>=1 or 4** (or **5** if **#COPSMODE=0**), the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted)<br><br>Note: **<format>** parameter setting is never stored in NVM<br><br>Note: issuing **AT+COPS<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+COPS=<CR>** is the same as issuing the command **AT+COPS=0<CR>**. |
| **AT+COPS?** | Read command returns current value of **<mode>,<format>** and **<oper>** in format **<format>**; if no operator is selected, **<format>** and **<oper>** are omitted<br><br>**+COPS: <mode>[, <format>, <oper>]** |

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| +COPS - Operator Selection | |
|---|---|
| **AT+COPS=?** | Test command returns a list of quadruplets, each representing an operator present in the network.<br><br>The behaviour of Test command depends on the last **#COPSMODE** setting.<br><br>**(#COPSMODE=0)**<br>The command outputs as many rows as the number of quadruplets, each of them in the format:<br><br>**+COPS: (<stat> ,<oper (in <format>=0)>,"",<br><oper (in <format>=2)>)**<br><br>where<br>**<stat>** - operator availability<br>0 - unknown<br>1 - available<br>2 - current<br>3 - forbidden<br><br>**(#COPSMODE=1)**<br>The quadruplets in the list are separated by commas:<br><br>**+COPS: [list of supported (<stat> ,<oper (in <format>=0)>,,<br><oper (in <format>=2)> )s][,,(list of supported <mode>s),<br>(list of supported<format>s)]**<br><br>where<br>**<stat>** - operator availability<br>0 - unknown<br>1 - available<br>2 - current<br>3 - forbidden<br><br>Note: since with this command a network scan is done, this command may require some seconds before the output is given.<br><br>Note: The value of parameter **<oper>** (in **<format>=0**) is the same as the former GM862 family products. |
| Reference | GSM 07.07 |

### *3.5.2.3.5 +CLCK - Facility Lock/ Unlock*

| +CLCK - Facility Lock/Unlock | |
|---|---|
| **AT+CLCK=** | Execution command is used to lock or unlock a **ME** o a network facility. |

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| **+CLCK - Facility Lock/Unlock** | |
|---|---|
| **<fac>,<mode>**<br>**[,<passwd>**<br>**[,<class>]]** | Parameters:<br>**<fac>** - facility<br>"SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued)<br>"AO"- BAOC (Barr All Outgoing Calls)<br>"OI" - BOIC (Barr Outgoing International Calls)<br>"OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country)<br>"AI" - BAIC (Barr All Incoming Calls)<br>"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country)<br>"AB" - All Barring services (applicable only for **<mode>=0**)<br>"AG" - All outGoing barring services (applicable only for **<mode>=0**)<br>"AC" - All inComing barring services (applicable only for **<mode>=0**)<br>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**)<br>"PN" - network Personalisation<br>"PU" - network subset Personalisation<br><br>**<mode>** - defines the operation to be done on the facility<br>0 - unlock facility<br>1 - lock facility<br>2 - query status<br><br>**<passwd>** - shall be the same as password specified for the facility from the **DTE** user interface or with command Change Password **+CPWD**<br><br>**<class>** - represents the class of information of the facility as sum of bits (default is 7)<br>1- voice (telephony)<br>2 - data (refers to all bearer services)<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>Note: when **<mode>=2** and command successful, it returns:<br><br>**+CLCK: <status>**<br><br>where |

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| **+CLCK - Facility Lock/Unlock** | |
|---|---|
| | **<status>** - current status of the facility<br>0 - not active<br>1 - active |
| **AT+CLCK=?** | Test command reports all the facility supported by the device. |
| Reference | GSM 07.07 |
| Note | The improving command **@CLCK** has been defined. |

### *3.5.2.3.6 @CLCK - Facility Lock/ Unlock*

| **@CLCK - Facility Lock/Unlock** | |
|---|---|
| **AT@CLCK=<br><fac>,<mode><br>[,<passwd><br>[,<class>]]** | Execution command is used to lock or unlock a **ME** o a network facility.<br><br>Parameters:<br>**<fac>** - facility<br>"SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued)<br>"AO"- BAOC (Barr All Outgoing Calls)<br>"OI" - BOIC (Barr Outgoing International Calls)<br>"OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country)<br>"AI" - BAIC (Barr All Incoming Calls)<br>"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country)<br>"AB" - All Barring services (applicable only for **<mode>=0**)<br>"AG" - All outGoing barring services (applicable only for **<mode>=0**)<br>"AC" - All inComing barring services (applicable only for **<mode>=0**)<br>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**)<br>"PN" - network Personalisation<br>"PU" - network subset Personalisation<br><br>**<mode>** - defines the operation to be done on the facility<br>0 - unlock facility<br>1 - lock facility<br>2 - query status<br><br>**<passwd>** - shall be the same as password specified for the facility from the **DTE** user interface or with command Change Password **+CPWD**<br><br>**<class>** - represents the class of information of the facility as sum of bits (default is 7)<br>1- voice (telephony)<br>2 - data (refers to all bearer services) |

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| @CLCK - Facility Lock/Unlock | |
|---|---|
| | 4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>Note: when **<mode>=2** and command successful, it returns:<br>**@CLCK: <status>[,<class1>**<br>**[<CR><LF>@CLCK: <status>,<class2>[…]]**<br><br>where<br>**<status>** - the current status of the facility<br>0 - not active<br>1 - active<br>**<class*n*>** - class of information of the facility |
| **AT@CLCK=?** | Test command reports all the facilities supported by the device. |
| Reference | GSM 07.07 |
| Example | *Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:*<br><br>AT@CLCK =”A0”,2<br>@CLCK: <status>,1<br>@CLCK: <status>,2<br>@CLCK: <status>,4<br><br>OK |

### 3.5.2.3.7 +CPWD - Change Facility Password

| +CPWD - Change Facility Password | |
|---|---|
| **AT+CPWD=<fac>, <oldpwd>, <newpwd>** | Execution command changes the password for the facility lock function defined by command Facility Lock **+CLCK**.<br><br>Parameters:<br>**<fac>** - facility<br>“SC” - SIM (PIN request)<br>“AB” - All barring services<br>“P2” - SIM PIN2<br><br>**<oldpwd>** - string type, it shall be the same as password specified for the facility from the ME user interface or with command **+CPWD**.<br>**<newpwd>** - string type, it is the new password |

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| | |
|---|---|
| | Note: parameter **<oldpwd>** is the old password while **<newpwd>** is the new one. |
| **AT+CPWD=?** | Test command returns a list of pairs **(<fac>,<pwdlength>)** which presents the available facilities and the maximum length of their password (**<pwdlength>**) |
| Reference | GSM 07.07 |

### *3.5.2.3.8 +CLIP - Calling Line Identification Presentation*

| **+CLIP - Calling Line Identification Presentation** | |
|---|---|
| **AT+CLIP[=[<n>]]** | Set command enables/disables the presentation of the CLI (Calling Line Identity) at the **TE**. This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call.<br><br>Parameters:<br>**<n>**<br>0 - disables CLI indication (factory default)<br>1 - enables CLI indication<br><br>If enabled the device reports after each **RING** the response:<br><br>**+CLIP: <number>,<type>,<subaddress>,<satype>,<alpha>, <CLI_validity>**<br><br>where:<br>**<number>** - calling line number<br>**<type>** - type of address octet in integer format<br>145 - international numbering scheme (contains the character "+")<br>129 - national numbering scheme<br>**<subaddress>** - string type subaddress of format specified by **<satype>**<br>**<satype>** - type of subaddress octet in integer format<br>**<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected either with command Select **TE** character set **+CSCS** or **@CSCS**.<br>**<CLI_validity>**<br>0 - CLI valid<br>1 - CLI has been withheld by the originator.<br>2 - CLI is not available due to interworking problems or limitation or originating network.<br><br>Note: issuing **AT+CLIP<CR>** is the same as issuing the Read command. |

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| **+CLIP - Calling Line Identification Presentation** | |
|---|---|
| | Note: issuing **AT+CLIP=<CR>** is the same as issuing the command **AT+CLIP=0<CR>**. |
| **AT+CLIP?** | Read command returns the presentation status of the CLI in the format:<br><br>**+CLIP: <n>,<m>**<br><br>where:<br>**<n>**<br>0 - CLI presentation disabled<br>1 - CLI presentation enabled<br><br>**<m>** - status of the CLIP service on the GSM network<br>0 - CLIP not provisioned<br>1 - CLIP provisioned<br>2 - unknown (e.g. no network is present )<br><br>Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it. |
| **AT+CLIP=?** | Test command returns the supported values of the parameter **<n>** |
| Reference | GSM 07.07 |
| Note | The command changes only the report behaviour of the device, it does not change CLI supplementary service setting on the network. |

### *3.5.2.3.9 +CLIR - Calling Line Identification Restriction*

| **+CLIR - Calling Line Identification Restriction** | |
|---|---|
| **AT+CLIR[=[<n>]]** | Set command overrides the CLIR subscription when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command.<br>This command refers to CLIR-service (GSM 02.81) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.<br><br>Parameter:<br>**<n>** - facility status on the Mobile<br>0 - CLIR facility according to CLIR service network status<br>1 - CLIR facility active (CLI not sent)<br>2 - CLIR facility not active (CLI sent)<br><br>Note: issuing **AT+CLIR<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CLIR=<CR>** is the same as issuing the command **AT+CLIR=0<CR>**. |

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| +CLIR - Calling Line Identification Restriction | |
|---|---|
| **AT+CLIR?** | Read command gives the default adjustment for all outgoing calls (**<n>**) and also triggers an interrogation of the provision status of the CLIR service (**<m>**), where<br><br>**<n>** - facility status on the Mobile<br>0 - CLIR facility according to CLIR service network status<br>1 - CLIR facility active (CLI not sent)<br>2 - CLIR facility not active (CLI sent)<br><br>**<m>** - facility status on the Network<br>0 - CLIR service not provisioned<br>1 - CLIR service provisioned permanently<br>2 - unknown (e.g. no network present, etc.)<br>3 - CLI temporary mode presentation restricted<br>4 - CLI temporary mode presentation allowed |
| **AT+CLIR=?** | Test command reports the supported values of parameter **<n>**. |
| Reference | GSM 07.07 |
| Note | This command sets the default behaviour of the device in outgoing calls. |

### *3.5.2.3.10 +CCFC - Call Forwarding Number And Conditions*

| +CCFC - Call Forwarding Number And Condition | |
|---|---|
| **AT+CCFC= <reason>, <cmd>[,<number>[, <type>[,<class> [,,,<time>]]]** | Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.<br><br>Parameters:<br>**<reason>**<br>0 - unconditional<br>1 - mobile busy<br>2 - no reply<br>3 - not reachable<br>4 - all calls (not with query command)<br>5 - all conditional calls (not with query command)<br><br>**<cmd>**<br>0 - disable<br>1 - enable<br>2 - query status<br>3 - registration<br>4 - erasure<br><br>**<number>** - phone number of forwarding address in format specified by **<type>** parameter |

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| **+CCFC - Call Forwarding Number And Condition** | |
|---|---|
| | **<type>** - type of address byte in integer format :<br>145 - international numbering scheme (contains the character "+")<br>129 - national numbering scheme<br><br>**<class>** - sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax)<br>1 - voice (telephony)<br>2 - data<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>**<time>** - time in *seconds* to wait before call is forwarded; it is valid only when **<reason>** "no reply" is enabled (**<cmd>**=1) or queried (**<cmd>**=2)<br>1..30 - automatically rounded to a multiple of 5 seconds (default is 20)<br><br>Note: when **<cmd>=2** and command successful, it returns:<br><br>**+CCFC: <status>,<class1>[,<number>,<type>[,,,<time>]][<CR><LF>**<br>**+CCFC: <status>,<class2>[,<number>,<type>[,,,<time>]][ … ]]**<br><br>where:<br>**<status>** - current status of the network service<br>0 - not active<br>1 - active<br>**<class*n*>** - same as **<class>**<br>**<time>** - it is returned only when **<reason>**=2 (“no reply”) and **<cmd>**=2.<br><br>The other parameters are as seen before. |
| **AT+CCFC=?** | Test command reports supported values for the parameter **<reason>**. |
| Reference | GSM 07.07 |
| Note | When querying the status of a network service **(<cmd>=2**) the response line for 'not active' case **(<status>=0**) should be returned only if service is not active for any **<class>**. |

### *3.5.2.3.11 +CCWA - Call Waiting*

| **+CCWA - Call Waiting** | |
|---|---|
| **AT+CCWA[=[<n>[,<cmd>[,<class>]]]]** | Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query are supported. |

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| **+CCWA - Call Waiting** | |
|---|---|
| | Parameters:<br>**<n>** - enables/disables the presentation of an unsolicited result code:<br>0 - disable<br>1 - enable<br>**<cmd>** - enables/disables or queries the service at network level:<br>0 - disable<br>1 - enable<br>2 - query status<br>**<class>** - is a sum of integers each representing a class of information which the command refers to; default is 7 (voice + data + fax)<br>1 - voice (telephony)<br>2 - data<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>Note: the response to the query command is in the format:<br><br>**+CCWA: <status>,<class1>[<CR><LF>**<br>**+CCWA: <status>,<class2>[ … ]]**<br><br>where<br>**<status>** represents the status of the service:<br>0 - inactive<br>1 - active<br>**<class*n*>** - same as **<class>**<br><br>Note: the unsolicited result code enabled by parameter **<n>** is in the format:<br><br>**+CCWA: <number>,<type>,<class>,<alpha>,<cli_validity>**<br><br>where<br>**<number>** - string type phone number of calling address in format specified by **<type>**<br>**<type>** - type of address in integer format<br>**<class>** - see before<br>**<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with either **+CSCS** or **@CSCS**.<br><br>**<cli_validity>**<br>0 - CLI valid |

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| +CCWA - Call Waiting | |
|---|---|
| | 1 - CLI has been withheld by the originator<br>2 - CLI is not available due to interworking problems or limitations of originating network<br><br>Note: if parameter **<cmd>** is omitted then network is not interrogated.<br><br>Note: in the query command the class parameter must not be issued.<br><br>Note: the difference between call waiting report disabling (**AT+CCWA = 0,1,7**) and call waiting service disabling (**AT+CCWA = 0,0,7**) is that in the first case the call waiting indication is sent to the device by network but this last one does not report it to the **DTE**; instead in the second case the call waiting indication is not generated by the network. Hence the device results busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party.<br><br>Note: The command **AT+CCWA=1,0** has no effect a non sense and must not be issued.<br><br>Note: issuing **AT+CCWA<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CCWA=<CR>** is the same as issuing the command **AT+CCWA=0<CR>**. |
| **AT+CCWA?** | Read command reports the current value of the parameter **<n>**. |
| **AT+CCWA=?** | Test command reports the supported values for the parameter **<n>**. |
| Reference | GSM 07.07 |

### *3.5.2.3.12 +CHLD - Call Holding Services*

| +CHLD - Call Holding Services | |
|---|---|
| **AT+CHLD=<n>** | Execution command controls the network call hold service. With this service it is possible to disconnect temporarily a call and keep it suspended while it is retained by the network, contemporary it is possible to connect another party or make a multiparty connection.<br><br>Parameter:<br>**<n>**<br>0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call.<br>1 - releases all active calls (if any exist), and accepts the other (held or waiting) call<br>1X - releases a specific active call X<br>2 - places all active calls (if any exist) on hold and accepts the other (held or waiting) call.<br>2X - places all active calls on hold except call X with which |

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| | |
|---|---|
| | communication shall be supported<br>3 - adds an held call to the conversation<br><br>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number.<br><br>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation. |
| **AT+CHLD=?** | Test command returns the list of supported **<n>s**.<br><br>**+CHLD: (0,1,2,3)**<br><br>Note: consider what has been written about the Set command relating the actions on a specific call (X). |
| Reference | GSM 07.07 |
| Note | ONLY for VOICE calls |

### *3.5.2.3.13 +CUSD - Unstructured Supplementary Service Data*

| **+CUSD - Unstructured Supplementary Service Data** | |
|---|---|
| **AT+CUSD[=[<n>[,<str>[,<dcs>]]]]** | Set command allows control of the Unstructured Supplementary Service Data (USSD [GSM 02.90]).<br><br>Parameters:<br>**<n>** - is used to disable/enable the presentation of an unsolicited result code.<br>0 - disable the result code presentation in the **DTA**<br>1 - enable the result code presentation in the **DTA**<br><br>**<str>** - USSD-string (when **<str>** parameter is not given, network is not interrogated)<br>- If **<dcs>** indicates that GSM338 default alphabet is used **ME/TA** converts GSM alphabet into current TE character set (see **+CSCS**)<br>- If **<dcs>** indicates that 8-bit data coding scheme is used: **ME/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).<br><br>**<dcs>** - GSM 3.38 Cell Broadcast Data Coding Scheme in integer format (default is 0).<br><br>Note: the unsolicited result code enabled by parameter **<n>** is in the format: |

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| **+CUSD - Unstructured Supplementary Service Data** | |
|---|---|
| | **+CUSD: <m>[,<str>,<dcs>]** to the **TE**<br><br>where:<br><br>**<m>**:<br>0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation).<br>1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)<br>2 - USSD terminated by the network<br>3 - other local client has responded<br>4 - operation not supported<br>5 - network time out<br><br>Note: in case of successful mobile initiated operation, **DTA** waits the USSD response from the network and sends it to the **DTE** before the final result code. This will block the AT command interface for the period of the operation.<br><br>Note: issuing **AT+CUSD<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CUSD=<CR>** is the same as issuing the command **AT+CUSD=0<CR>**. |
| **AT+CUSD?** | Read command reports the current value of the parameter **<n>** |
| **AT+CUSD=?** | Test command reports the supported values for the parameter **<n>** |
| Reference | GSM 07.07 |
| Note | Only mobile initiated operations are supported |

### *3.5.2.3.14 +CAOC - Advice Of Charge*

| **+CAOC - Advice Of Charge** | |
|---|---|
| **AT+CAOC[=[<mode>]]** | Set command refers to the Advice of Charge supplementary services, that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information.<br><br>Parameter:<br>**<mode>**<br>0 - query CCM value<br>1 - disables unsolicited CCM reporting<br>2 - enables unsolicited CCM reporting<br><br>Note: the unsolicited result code enabled by parameter **<mode>** is in the format: |

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| **+CAOC - Advice Of Charge** | |
|---|---|
| | **+CCCM: <ccm>**<br><br>where:<br>**<ccm>** - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. "00001E" indicates decimal value 30)<br><br>Note: the unsolicited result code **+CCCM** is sent when the CCM value changes, but not more than every 10 seconds.<br><br>Note: issuing **AT+CAOC<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CAOC=<CR>** is the same as issuing the command **AT+CAOC=0<CR>**. |
| **AT+CAOC?** | Read command reports the value of parameter **<mode>** in the format:<br><br>**+CAOC: <mode>** |
| **AT+CAOC=?** | Test command reports the supported values for **<mode>** parameter.<br><br>Note: the representation format doesn't match the v.25ter§5.7.3 "Information text formats for test commands". The output is:<br><br>**+CAOC: 0, 1, 2** |
| Reference | GSM 07.07 |
| Note | **+CAOC** command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI and AOCC supplementary services; it is not stored in the SIM. |

### *3.5.2.3.15 +CLCC - List Current Calls*

| **+CLCC - List Current Calls** | |
|---|---|
| **AT+CLCC** | Execution command returns the list of current calls and their characteristics in the format:<br><br>**[+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type> [<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>[...]]]**<br><br>where:<br>**<id*n*>** - call identification number<br><br>**<dir>** - call direction<br>0 - mobile originated call<br>1 - mobile terminated call |

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| **+CLCC - List Current Calls** | |
|---|---|
| | **<stat>** - state of the call<br>0 - active<br>1 - held<br>2 - dialling (**MO** call)<br>3 - alerting (**MO** call)<br>4 - incoming (**MT** call)<br>5 - waiting (**MT** call)<br><br>**<mode>** - call type<br>0 - voice<br>1 - data<br>2 - fax<br>9 - unknown<br><br>**<mpty>** - multiparty call flag<br>0 - call is not one of multiparty (conference) call parties<br><br>**<number>** - phone number in format specified by **<type>**<br><br>**<type>** - type of phone number byte in integer format<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+")<br><br>Note: If no call is active then only **OK** message is sent. This command is useful in conjunction with command **+CHLD** to know the various call status for call holding. |
| Reference | GSM 07.07 |

### *3.5.2.3.16 +CSSN - SS Notification*

| **+CSSN - SS Notification** | |
|---|---|
| **AT+CSSN[=[<n>[,<m>]]]** | It refers to supplementary service related network initiated notifications.<br>Set command enables/disables the presentation of notification result codes from **TA** to **TE**.<br><br>Parameters:<br>**<n>** - sets the **+CSSI** result code presentation status<br>0 - disable<br>1 - enable<br><br>**<m>** - sets the **+CSSU** result code presentation status<br>0 - disable<br>1 - enable |

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| **+CSSN - SS Notification** | |
|---|---|
| | When **<n>=1** and a supplementary service notification is received after a mobile originated call setup, an unsolicited code:<br><br>**+CSSI: <code1>**<br><br>is sent to **TE** before any other **MO** call setup result codes, where:<br>**<code1>**:<br>1 - some of the conditional call forwardings are active<br>2 - call has been forwarded<br>3 - call is waiting<br>5 - outgoing calls are barred<br>6 - incoming calls are barred<br><br>When **<m>=1** and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code<br><br>**+CSSU: <code2>**<br><br>is sent to **TE**, where:<br>**<code2>**:<br>0 - this is a forwarded call (**MT** call setup)<br>2 - call has been put on hold (during a voice call)<br>3 - call has been retrieved (during a voice call)<br><br>Note: issuing **AT+CSSN<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSSN=<CR>** is the same as issuing the command **AT+CSSN=0<CR>**. |
| **AT+CSSN?** | Read command reports the current value of the parameters. |
| **AT+CSSN=?** | Test command reports the supported range of values for parameters **<n>**, **<m>**. |
| Reference | GSM 07.07 |

### *3.5.2.3.17 +CCUG - Closed User Group Supplementary Service Control*

| **+CCUG - Closed User Group Supplementary Service Control** | |
|---|---|
| **AT+CCUG[= [<n>[,<index> [,<info>]]]]** | Set command allows control of the Closed User Group supplementary service [GSM 02.85].<br><br>Parameters:<br>**<n>**<br>0 - disable CUG temporary mode (factory default).<br>1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing |

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| | |
|---|---|
| | calls.<br><br>**<index>**<br>0..9 - CUG index<br>10 - no index (preferential CUG taken from subscriber data) (default)<br><br>**<info>**<br>0 - no information (default)<br>1 - suppress Outgoing Access (OA)<br>2 - suppress preferential CUG<br>3 - suppress OA and preferential CUG<br><br>Note: issuing **AT+CCUG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CCUG=<CR>** is the same as issuing the command **AT+CCUG=0<CR>**. |
| **AT+CCUG?** | Read command reports the current value of the parameters |
| **AT+CCUG=?** | Test command reports the supported range of values for the parameters **<n>**, **<index>**, **<info>** |
| Reference | GSM 07.07 |

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## 3.5.2.4 Mobile Equipment Control

### *3.5.2.4.1 +CPAS - Phone Activity Status*

| **+CPAS - Phone Activity Status** | |
|---|---|
| **AT+CPAS** | Execution command reports the device status in the form:<br><br>**+CPAS: <pas>**<br><br>Where:<br>**<pas>** - phone activity status<br>0 - ready (device allows commands from **TA/TE**)<br>1 - unavailable (device does not allow commands from **TA/TE**)<br>2 - unknown (device is not guaranteed to respond to instructions)<br>3 - ringing (device is ready for commands from **TA/TE**, but the ringer is active)<br>4 - call in progress (device is ready for commands from **TA/TE**, but a call is in progress) |
| **AT+CPAS?** | Read command has the same effect as Execution command. |
| **AT+CPAS=?** | Test command reports the supported range of values for **<pas>**.<br><br>Note: although **+CPAS** is an execution command, ETSI 07.07 requires the Test command to be defined. |
| Reference | GSM 07.07 |

### *3.5.2.4.2 +CFUN - Set Phone Functionality*

| **+CFUN - Set Phone Functionality** | |
|---|---|
| **AT+CFUN=<fun>** | Set command selects the level of functionality in the **ME**.<br><br>Parameter:<br>**<fun>** - is the power saving function mode<br>0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set **<fun>** level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event stops power saving and takes the ME back to full functionality level **<fun>=1**.<br>1 - mobile full functionality with power saving disabled (factory default)<br>2 - disabled TX<br>4 - disabled both TX and RX<br>5 - mobile full functionality with power saving enabled<br><br>Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity. |

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| | |
|---|---|
| | Note: to place the telephone in power saving mode, set the **<fun>** parameter at value = 5 and the line **DTR** (RS232) must be set to **OFF**. Once in power saving, the **CTS** line switch to the **OFF** status to signal that the telephone is really in power saving condition.<br>During the power saving condition, before sending any AT command on the serial line, the **DTR** must be enabled and it must be waited for the **CTS** (RS232) line to go in **ON** status.<br>Until the **DTR** line is **ON**, the telephone will not return back in the power saving condition.<br><br>Note: the power saving function does not affect the network behavior of the MODULE, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call arrives during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code |
| **AT+CFUN?** | Read command reports the current level of functionality. |
| **AT+CFUN=?** | Test command returns the list of supported values for **<fun>**<br><br>For compatibility with previous versions, Test command returns<br>**+CFUN: (1, 5)**<br><br>An enhanced version of Test command has been defined: **AT+CFUN=??**, that provides the complete range of values for **<fun>**. |
| **AT+CFUN=??** | Enhanced test command returns the list of supported values for **<fun>** |
| Reference | GSM 07.07 |

### *3.5.2.4.3 +CPIN - Enter PIN*

| **+CPIN - Enter PIN** | |
|---|---|
| **AT+CPIN[=<pin> [,<newpin>]]** | Set command sends to the device a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).<br>If the PIN required is SIM PUK or SIM PUK2, the **<newpin>** is required. This second pin, **<newpin>**,will replace the old pin in the SIM.<br>The command may be used to change the SIM PIN by sending it with both parameters **<pin>** and **<newpin>** when PIN request is pending; if no PIN request is pending the command will return an error code and to change the PIN the command **+CPWD** must be used instead.<br><br>Parameters:<br>**<pin>** - string type value<br>**<newpin>** - string type value.<br><br>To check the status of the PIN request use the command **AT+CPIN?**<br><br>Note: If all parameters are omitted then the behaviour of Set command is |

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| **+CPIN - Enter PIN** | |
|---|---|
| | the same as Read command. |
| **AT+CPIN?** | Read command reports the PIN/PUK/PUK2 request status of the device in the form:<br><br>**+CPIN:<code>**<br>where:<br>**<code>** - PIN/PUK/PUK2 request status code<br>READY - ME is not pending for any password<br>SIM PIN - ME is waiting SIM PIN to be given<br>SIM PUK - ME is waiting SIM PUK to be given<br>PH-SIM PIN - ME is waiting phone-to-SIM card password to be given<br>PH-FSIM PIN - ME is waiting phone-to-very first SIM card password to be given<br>PH-FSIM PUK - ME is waiting phone-to-very first SIM card unblocking password to be given<br>SIM PIN2 - ME is waiting SIM PIN2 to be given; this **<code>** is returned only when the last executed command resulted in PIN2 authentication failure (i.e. **+CME ERROR: 17**)<br>SIM PUK2 - ME is waiting SIM PUK2 to be given; this **<code>** is returned only when the last executed command resulted in PUK2 authentication failure (i.e. **+CME ERROR: 18**)<br>PH-NET PIN - ME is waiting network personalization password to be given<br>PH-NET PUK - ME is waiting network personalization unblocking password to be given<br>PH-NETSUB PIN - ME is waiting network subset personalization password to be given<br>PH-NETSUB PIN - ME is waiting network subset personalization unblocking password to be given<br>PH-SP PIN - ME is waiting service provider personalization password to be given<br>PH-SP PUK - ME is waiting service provider personalization unblocking password to be given<br>PH-CORP PIN - ME is waiting corporate personalization password to be given<br>PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given<br><br>Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use either the **AT+CLCK=SC,<mode>, <pin>** command or the **AT@CLCK=SC,<mode>, <pin>** command. |
| Example | `AT+CMEE=1`<br>`OK`<br>`AT+CPIN?`<br>`+CME ERROR: 10` *`error: you have to insert the SIM`*<br>`AT+CPIN?` |

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| **+CPIN - Enter PIN** | |
|---|---|
| | `+CPIN: READY` *you inserted the SIM and device is not waiting for PIN to be given*<br><br>`OK` |
| Note | What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK |

| | | | |
|---|---|---|---|
| **A** | **#SRP** | **#CAMOFF** | **+IPR** |
| **D** | **#CAP** | **#CAMEN** | **+ICF** |
| **H** | **#CODEC** | **#TPHOTO** | **+IFC** |
| **O** | **#CBC** | **#RPHOTO** | **+CMUX** |
| **E** | **#I2S1** | **#SELCAM** | **+CNMI** |
| **I** | **#STM** | **#CAMQUA** | **+CPAS** |
| **L** | **#SHFEC** | **#CMODE** | **+CCLK** |
| **M** | **#SHFSD** | **#CAMRES** | **+CALA** |
| **P** | **#HFMICG** | **#CAMTXT** | **+CRSM** |
| **Q** | **#HSMICG** | **#CAMZOOM** | **+CLIP** |
| **S** | **#GPIO** | **#CAMCOL** | **+DR** |
| **T** | **#SGPO** | **#OBJL** | **+DS** |
| **V** | **#GGPI** | **#OBJR** | **+MS** |
| **X** | **#ADC** | **#COPSMODE** | **+GCAP** |
| **Z** | **#QTEMP** | **#DIALMODE** | **+GCI** |
| **&C** | **#DAC** | **#SEMAIL** | **+ILRR** |
| **&D** | **#RSEN** | **#EMAILD** | **+CALM** |
| **&F** | **#RTCSTAT** | **#EUSER** | **+CHUP** |
| **&K** | **#ACAL** | **#EPASSW** | **+FCLASS** |
| **&N** | **#PCT** | **#ESMTP** | **+FMI** |
| **&P** | **#WAKE** | **#EADDR** | **+FMM** |
| **&S** | **#SHDN** | **#EMAILMSG** | **+FMR** |
| **&V** | **#JDR** | **#ESAV** | **+FTS** |
| **&W** | **#CSURV** | **#ERST** | **+FRS** |
| **&Y** | **#CSURVC** | **#QSS** | **+FTM** |
| **&Z** | **#CSURVU** | **#SSCTRACE** | **+FRM** |
| **%E** | **#CSURVUC** | **+CFUN** | **+FRH** |
| **%L** | **#CSURVF** | **+CGMI** | **+FTH** |
| **%Q** | **#CSURVNLF** | **+CGMM** | **+FLO** |
| **\K** | **#CSURVB** | **+CGMR** | **+FPR** |
| **\Q** | **#CSURVBC** | **+GMI** | **+FDD** |
| **\R** | **#PASSW** | **+GMM** | **+CSNS** |
| **\V** | **#PKTSZ** | **+GMR** | **+CRLP** |
| **#BND** | **#SKTSAV** | **+CGSN** | **+CR** |
| **#AUTOBND** | **#SKTSET** | **+GSN** | **+CREG** |
| **#CGMI** | **#SKTOP** | **+CRC** | **+CGREG** |
| **#CGMM** | **#SKTTO** | **+CMEE** | **+COPS** |
| **#CGMR** | **#USERID** | **+CPIN** | **+CBC** |

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| +CPIN - Enter PIN | |
|---|---|
| | <table><tr><td>#CGSN</td><td>#DSTO</td><td>+CSQ</td><td>+CIND</td></tr><tr><td>#MONI</td><td>#SKTCT</td><td>+CSDH</td><td>+CMER</td></tr><tr><td>#SERVINFO</td><td>#SKTRST</td><td>+CRSL</td><td></td></tr><tr><td>#SELINT</td><td>#FTPPUTPH</td><td>+CLVL</td><td></td></tr><tr><td>#SRS</td><td>#CAMON</td><td>+CMUT</td><td></td></tr></table><br>All the above commands, but the ones in the grayed cells, can be issued even if the SIM card is not inserted yet.<br><br>All the above commands, but **+CSDH** and **+CNMI**, can be issued even if ME is waiting for phone-To-SIM card password to be given |
| Reference | GSM 07.07 |

### *3.5.2.4.4 +CSQ - Signal Quality*

| +CSQ - Signal Quality | |
|---|---|
| **AT+CSQ** | Execution command reports received signal quality indicators in the form:<br><br>**+CSQ: <rssi>,<ber>**<br>where<br>**<rssi>** - received signal strength indication<br>0 - (-113) dBm or less<br>1 - (-111) dBm<br>2..30 - (-109)dBm..(-53)dBm / 2 dBm per step<br>31 - (-51)dBm or greater<br>99 - not known or not detectable<br><br>**<ber>** - bit error rate (in percent)<br>0 - less than 0.2%<br>1 - 0.2% to 0.4%<br>2 - 0.4% to 0.8%<br>3 - 0.8% to 1.6%<br>4 - 1.6% to 3.2%<br>5 - 3.2% to 6.4%<br>6 - 6.4% to 12.8%<br>7 - more than 12.8%<br>99 - not known or not detectable<br><br>Note: this command should be used instead of the **%Q** and **%L** commands, since GSM relevant parameters are the radio link ones and no line is present, hence **%Q %L** and have no meaning. |
| **AT+CSQ?** | Read command has the same effect as Execution command. |
| **AT+CSQ=?** | Test command returns the supported range of values of the parameters **<rssi>** and **<ber>**. |

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| **+CSQ - Signal Quality** | |
|---|---|
| | Note: although **+CSQ** is an execution command without parameters, ETSI 07.07 requires the Test command to be defined. |
| Reference | GSM 07.07 |

### *3.5.2.4.5 +CIND - Indicator Control*

| **+CIND - Indicator Control** | |
|---|---|
| **AT+CIND[=[<state>[,<state>[,…]]]]** | Set command is used to control the registration state of ME indicators, in order to automatically send the **+CIEV** URC, whenever the value of the associated indicator changes. The supported indicators (**<descr>**) and their order appear from test command **AT+CIND=?**<br><br>Parameter:<br>**<state>** - registration state<br>0 - the indicator is deregistered; there's no unsolicited result code (**+CIEV** URC) automatically sent by the ME to the application, whenever the value of the associated indicator changes; the value, can be directly queried with **+CIND?**<br>1 - the indicator is registered: an unsolicited result code (**+CIEV** URC) is automatically sent by the ME to the application, whenever the value of the associated indicator changes; it is still possible to query the value through **+CIND?** (default)<br><br>Note: issuing **AT+CIND<CR>** causes the read command to be executed<br><br>Note: issuing **AT+CIND=<CR>** causes all the indicators to be registered, as the command **AT+CIND=1,1,1,1,1,1,1,1,1** was issued. |
| **AT+CIND?** | Read command returns the current value of ME indicators, in the format:<br><br>**+CIND: <ind>[,<ind>[,…]]**<br><br>Note: the order of the values **<ind>s** is the same as that in which the associated indicators appear from test command **AT+CIND=?** |
| **AT+CIND=?** | Test command returns pairs, where string value **<descr>** is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format:<br><br>**+CIND: (<descr>, (list of supported <ind>s))[,(<descr>, (list of supported <ind>s))[,…]]**<br><br>where:<br>**<descr>** - indicator names as follows (along with their **<ind>** ranges)<br>"battchg" - battery charge level<br>**<ind>** - battery charge level indicator range |

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| | |
|---|---|
| | 0..5<br>99 - not measurable<br><br>“signal” - signal quality<br>**<ind>** - signal quality indicator range<br>0..7<br>99 - not measurable<br><br>“service” - service availability<br>**<ind>** - service availability indicator range<br>0 - not registered to any network<br>1 - registered to home network<br><br>“sounder” - sounder activity<br>**<ind>** - sounder activity indicator range<br>0 - there’s no any sound activity<br>1 - there’s some sound activity<br><br>“message” - message received<br>**<ind>** - message received indicator range<br>0 - there is no unread short message at memory location “SM”<br>1 - unread short message at memory location “SM”<br><br>“call” - call in progress<br>**<ind>** - call in progress indicator range<br>0 - there’s no calls in progress<br>1 - at least a call has been established<br><br>“roam” - roaming<br>**<ind>** - roaming indicator range<br>0 - registered to home network or not registered<br>1 - registered to other network<br><br>“smsfull” - a short message memory storage in the MT has become full (1), or memory locations are available (0)<br>**<ind>** - short message memory storage indicator range<br>0 - memory locations are available<br>1 - a short message memory storage in the MT has become full.<br><br>“rssi” - received signal (field) strength<br>**<ind>** - received signal strength level indicator range<br>0 - signal strength ≤ 112 dBm<br>1..4 - signal strength in 15 dBm steps<br>5 - signal strength ≥ 51 dBm<br>99 - not measurable |
| Example | *Next command causes all the indicators to be registered*<br>`AT+CIND=1,1,1,1,1,1,1,1,1` |

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| | |
|---|---|
| | *Next command causes all the indicators to be de-registered*<br>AT+CIND=0,0,0,0,0,0,0,0,0<br>*Next command to query the current value of all indicators*<br>AT+CIND?<br>CIND: 4,0,1,0,0,0,0,0,2<br><br>OK |
| Note | See command **+CMER** |
| Reference | GSM 07.07 |

### 3.5.2.4.6 +CMER - Mobile Equipment Event Reporting

| **+CMER - Mobile Equipment Event Reporting** | |
|---|---|
| **AT+CMER[=<br>[<mode><br>[,<keyp><br>[,<disp><br>[,<ind><br>[,<bfr>]]]]]]** | Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (n.b.: sending of URCs in the case of key pressings or display changes are currently not implemented).<br><br>Parameters:<br>**<mode>** - controls the processing of unsolicited result codes<br>0 - discard **+CIEV** Unsolicited Result Codes.<br>1 - discard **+CIEV** Unsolicited Result Codes when TA-TE link is reserved (e.g. on-line data mode); otherwise forward them directly to the TE.<br>2 - buffer **+CIEV** Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE.<br>3 - forward **+CIEV** Unsolicited Result Codes directly to the TE; when TA is in on-line data mode each **+CIEV** URC is replaced with a **Break** (100 ms), and is stored in a buffer; onche the ME goes into command mode (after **+++** was entered), all URCs stored in the buffer will be output.<br><br>**<keyp>** - keypad event reporting<br>0 - no keypad event reporting<br><br>**<disp>** - display event reporting<br>0 - no display event reporting<br><br>**<ind>** - indicator event reporting<br>0 - no indicator event reporting<br>2 - indicator event reporting<br><br>**<bfr>** - TA buffer clearing<br>0 - TA buffer of unsolicited result codes is cleared when <mode> 1..3 is entered |

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| **+CMER - Mobile Equipment Event Reporting** | |
|---|---|
| | Note: issuing **AT+CMER<CR>** causes the read command to be executed<br><br>Note: issuing **AT+CMER=<CR>** causes the command **AT+CMER=0,0,0,0,0** to be issued. |
| **AT+CMER?** | Read command returns the current setting of parameters, in the format:<br><br>**+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>** |
| **AT+CMER=?** | Test command returns the range of supported values for parameters **<mode>, <keyp>, <disp>, <ind>, <bfr>**, in the format:<br><br>**+CMER: (list of supported <mode>s),(list of supported <keyp>s), (list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)** |
| Reference | GSM 07.07 |

### *3.5.2.4.7 +CPBS - Select Phonebook Memory Storage*

| **+CPBS - Select Phonebook Memory Storage** | |
|---|---|
| **AT+CPBS [=<storage>]** | Set command selects phonebook memory storage **<storage>**, which will be used by other phonebook commands.<br><br>Parameter:<br>**<storage>**<br>"SM" - SIM phonebook<br>"FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM)<br>"LD" - SIM last-dialling-phonebook (**+CPBW** and **+CPBF** are not applicable for this storage)<br>"MC" - device missed (unanswered received) calls list **(+CPBW** and **+CPBF** are not applicable for this storage)<br>"RC" - **ME** received calls list (**+CPBW** and **+CPBF** are not applicable for this storage)<br><br>Note: If parameter is omitted then Set command has the same behaviour as Read command. |
| **AT+CPBS?** | Read command returns the actual values of the parameter **<storage>**, the number of occupied records **<used>** and the maximum index number **<total>**, in the format:<br><br>**+CPBS: <storage>,<used>,<total>**<br><br>Note: For **<storage>="MC"**: if there are more than one missed calls from the same number the read command will return only the last call |
| **AT+CPBS=?** | Test command returns the supported range of values for the parameters **<storage>**. |

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| | |
|---|---|
| | Note: the presentation format of the Test command output is the set of available values for **<storage>**, each of them enclosed in parenthesis:<br><br>**+CPBS: ("SM"),("FD"),("LD"),("MC"),("RC")** |
| Reference | GSM 07.07 |

### *3.5.2.4.8 +CPBR - Read Phonebook Entries*

| **+CPBR - Read Phonebook Entries** | |
|---|---|
| **AT+CPBR=<br><index1><br>[,<index2>]** | Execution command returns phonebook entries in location number range **<index1>**..**<index2>** from the current phonebook memory storage selected with **+CPBS**. If **<index2>** is omitted, only location **<index1>** is returned.<br><br>Parameters:<br>**<index1>** - integer type value in the range of location numbers of phonebook memory<br>**<index2>** - integer type value in the range of location numbers of phonebook memory<br><br>The response format is:<br>**+CPBR: <index>,<number>,<type>,<text>**<br><br>where:<br>**<index>** - the current position number of the PB index (to see the range of values use **+CPBR=?**)<br>**<number>** - the phone number stored in the format **<type>**<br>**<type>** - type of phone number byte in integer format<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+")<br>**<text>** - the alphanumeric text associated to the number; used character set should be the one selected with either command **+CSCS** or **@CSCS**.<br><br>Note: if “MC” is the current selected phonebook memory storage, all the missed calls coming from the same number will be saved as one missed call and **+CPBR** will show just one line of information.<br><br>Note: If all queried locations are empty (but available), no information text lines will be returned, while if listing fails in an **ME** error, **+CME ERROR: <err>** is returned. |
| **AT+CPBR=?** | Test command returns the supported range of values of the parameters in the form:<br><br>**+CPBR: (<minIndex> - <maxIndex>),<nlength>,<tlength>** |

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| | |
|---|---|
| | where:<br>**<minIndex>** - the minimum **<index>** number, integer type<br>**<maxIndex>** - the maximum **<index>** number, integer type<br>**<nlength>** - maximum **<number>** field length, integer type<br>**<tlength>** - maximum **<name>** field length, integer type |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |
| Reference | GSM 07.07 |

### *3.5.2.4.9 +CPBF - Find Phonebook Entries*

| **+CPBF - Find Phonebook Entries** | |
|---|---|
| **AT+CPBF=<br><findtext>** | Execution command issues a search for the phonebook records that have the **<findtext>** sub-string at the start of the **<text>** field<br><br>Parameter:<br>**<findtext>** - string type, it is NOT case sensitive; used character set should be the one selected with either command **+CSCS** or **@CSCS**.<br><br>The command returns a report in the form:<br><br>**+CPBF: <index1>,<number>,<type>,<text>[[…]<CR><LF>**<br>**+CPBF: <index*n*>,<number>,<type>,<text>]**<br><br>where **<index*n*>**, **<number>**, **<type>**, and **<text>** have the same meaning as in the command **+CPBR** report.<br><br>Note: if no PB records satisfy the search criteria then an **ERROR** message is reported. |
| **AT+CPBF=?** | Test command reports the maximum lengths of fields **<number>** and **<text>** in the PB entry in the form:<br><br>**+CPBF: [<max_number_length>],[<max_text_length>]** |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |
| Reference | GSM 07.07 |

### *3.5.2.4.10 +CPBW - Write Phonebook Entry*

| **+CPBW - Write Phonebook Entry** | |
|---|---|
| **AT+CPBW=<br>[<index>]<br>[,<number>** | Execution command stores at the position **<index>** a phonebook record defined by **<number>**, **<type>** and **<text>** parameters |

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| | |
|---|---|
| **[,<type>**<br>**[,<text>]]]** | Parameters:<br>**<index>** - record position<br>**<number>** - string type, phone number in the format **<type>**<br>**<type>** - the type of number<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+")<br>**<text>** - the text associated to the number, string type; used character set should be the one selected with either command **+CSCS** or **@CSCS**.<br><br>Note: If record number **<index>** already exists, it will be overwritten.<br><br>Note: if only **<index>** is given, the record number **<index>** is deleted.<br><br>Note: if **<index>** is omitted, the number **<number>** is stored in the first free phonebook location.<br><br>Note: omission of all the subparameters causes an **ERROR** result code. |
| **AT+CPBW=?** | Test command returns location range supported by the current storage as a compound value, the maximum length of **<number>** field supported number format of the storage and maximum length of **<text>** field. The format is:<br><br>**+CPBW: (list of supported <index>s),[<nlength>],**<br>**(list of supported <type>s),[<tlength>]**<br><br>where:<br>**<nlength>** - integer type value indicating the maximum length of field **<number>**<br>**<tlength>** - integer type value indicating the maximum length of field **<text>** |
| Reference | GSM 07.07 |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |

### *3.5.2.4.11 +CCLK - Clock Management*

| **+CCLK - Clock Management** | |
|---|---|
| **AT+CCLK**<br>**[=<time>]** | Set command sets the real-time clock of the ME.<br><br>Parameter:<br>**<time>** - current time as quoted string in the format :<br>"yy/MM/dd,hh:mm:ss±zz"<br>yy - year (two last digits are mandatory), range is 00..99<br>MM - month (two last digits are mandatory), range is 01..12 |

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| | |
|---|---|
| | dd - day (two last digits are mandatory), range is 01..31 (if the month MM has less than 31 days, the clock will be set for the next month)<br>hh - hour (two last digits are mandatory), range is 00..23<br>mm - minute (two last digits are mandatory), range is 00..59<br>ss - seconds (two last digits are mandatory), range is 00..59<br>±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48<br><br>Note: If the parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT+CCLK?** | Read command returns the current setting of the real-time clock, in the format **<time>**.<br><br>Note: the three last characters of **<time>** are not returned by **+CCLK?** because the **ME** doesn't support time zone information. |
| **AT+CCLK=?** | Test command returns the **OK** result code. |
| Example | `AT+CCLK="02/09/07,22:30:00+00"`<br>`OK`<br>`AT+CCLK?`<br>`+CCLK: 02/09/07,22:30:25`<br><br>`OK` |
| Reference | GSM 07.07 |

### *3.5.2.4.12 +CALA - Alarm Management*

| **+CALA - Alarm Management** | |
|---|---|
| **AT+CALA[= <time>[,<n> [,<type>[,<text>]]]]** | Set command stores in the internal Real Time Clock the current alarm time and settings defined by the parameters **<time>**, **<n>**, **<type>**, and **<text>**. When the RTC time reaches the alarm time then the alarm starts, the behaviour of the MODULE depends upon the setting **<type>** and if the device was already **ON** at the moment when the alarm time had come.<br><br>Parameter:<br>**<time>** - current alarm time as quoted string in the same format as defined for **+CCLK** command: "yy/MM/dd,hh:mm:ss±zz"<br><br>**<n>** - index of the alarm<br>0 - The only value supported is 0.<br><br>**<type>** - alarm behaviour type<br>0 - reserved for other equipment use.<br>1 - the MODULE simply wakes up fully operative as if the **ON/OFF** button had been pressed. If the device is already **ON** at the alarm time, then it does nothing. |

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| **+CALA - Alarm Management** | |
|---|---|
| | 2 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s:<br>**+CALA: <text>**<br>where **<text>** is the **+CALA** optional parameter previously set.<br><br>The device keeps on sending the unsolicited code every 3s until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. (default)<br>3 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see command **#SRP**)<br>The device keeps on playing the alarm tone until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down.<br>4 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin **GPIO6** high, provided its **<direction>** has been set to alarm output, and keeps it in this state until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down.<br>5 - the MODULE will make both the actions as for **<type>=2** and **<type>=3**.<br>6 - the MODULE will make both the actions as for **<type>=2** and **<type>=4**.<br>7 - the MODULE will make both the actions as for **<type>=3** and **<type>=4**.<br>**<text>** - unsolicited alarm code text string. It has meaning only if **<type>** is equal to 2 or 5 or 6.<br><br>Note: The "alarm mode" is indicated by hardware pin **CTS** to the **ON** status and **DSR** to the **OFF** status, while the "power saving" status is indicated by a **CTS** - **OFF** and **DSR** - **OFF** status. The normal operating status is indicated by **DSR** - **ON**.<br>During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state.<br><br>Note: If the parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT+CALA?** | Read command reports the current alarm time stored in the internal Real |

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| **+CALA - Alarm Management** | |
|---|---|
| | Time Clock, if present, in the format:<br>**+CALA: <time>,<n>,<type>[,<text>]**<br><br>Note: if no alarm is present a **<CR><LF>** is issued. |
| **AT+CALA=?** | Test command reports the list of supported **<n>s**, the list of supported **<type>s**, and **<text>** maximum length |
| Example | `AT+CALA="02/09/07,23:30:00+00"`<br>`OK` |
| Reference | GSM 07.07 |

### *3.5.2.4.13 +CRSM - Restricted SIM Access*

| **+CRSM - Restricted SIM Access** | |
|---|---|
| **AT+CRSM=<br><command><br>[,<fileid><br>[,<P1>,<P2>,<P3><br>[,<data>]]]** | Execution command transmits to the **ME** the SIM **<command>** and its required parameters. **ME** handles internally all **SIM-ME** interface locking and file selection routines. As response to the command, **ME** sends the actual SIM information parameters and response data.<br><br>Parameters:<br>**<command>** - command passed on by the **ME** to the SIM<br>176 - READ BINARY<br>178 - READ RECORD<br>192 - GET RESPONSE<br>214 - UPDATE BINARY<br>220 - UPDATE RECORD<br>242 - STATUS<br><br>**<fileid>** - identifier of an elementary datafile on SIM. Mandatory for every command except STATUS.<br><br>**<P1>**,**<P2>**,**<P3>** - parameter passed on by the **ME** to the SIM; they are mandatory for every command except GET RESPONSE and STATUS<br>0..255<br><br>**<data>** - information to be read/written to the SIM (hexadecimal character format).<br><br>The response of the command is in the format:<br><br>**+CRSM: <sw1>,<sw2>[,<response>]**<br><br>where:<br>**<sw1>**,**<sw2>** - information from the SIM about the execution of the actual |

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| +CRSM - Restricted SIM Access | |
|---|---|
| | command either on successful or on failed execution.<br>**<response>** - on a successful completion of the command previously issued it gives the requested data (hexadecimal character format). It's not returned after a successful UPDATE BINARY or UPDATE RECORD command.<br><br>Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files.<br><br>Note: use only decimal numbers for parameters **<command>**, **<fileid>**, **<P1>**, **<P2>** and **<P3>**. |
| **AT+CRSM=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07, GSM 11.11 |

### *3.5.2.4.14 +CALM - Alert Sound Mode*

| +CALM - Alert Sound Mode | |
|---|---|
| **AT+CALM[=<mode>]** | Set command is used to select the general alert sound mode of the device.<br><br>Parameter:<br>**<mode>**<br>0 - normal mode<br>1 - silent mode; no sound will be generated by the device, except for alarm sound<br>2 - stealth mode; no sound will be generated by the device<br><br>Note: if silent mode is selected then incoming calls will not produce alerting sounds but only the unsolicited messages **RING** or **+CRING**.<br><br>Note: If parameter is omitted then the behaviour of Set command is the same as Read command. |
| **AT+CALM?** | Read command returns the current value of parameter **<mode>**. |
| **AT+CALM=?** | Test command returns the supported values for the parameter **<mode>** as compound value.<br><br>For compatibility with previous versions, Test command returns<br>**+CALM: (0,1)**<br><br>An enhanced version of Test command has been defined: **AT+CALM=??**, that provides the complete range of values for **<mode>**. |
| **AT+CALM=??** | Enhanced test command returns the complete range of values for the parameter **<mode>** as compound value: |

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| | |
|---|---|
| | **+CALM: (0-2)** |
| Reference | GSM 07.07 |

### *3.5.2.4.15 +CRSL - Ringer Sound Level*

| **+CRSL - Ringer Sound Level** | |
|---|---|
| **AT+CRSL[= <level>]** | Set command is used to select the incoming call ringer sound level of the device.<br><br>Parameter:<br>**<level>** - ringer sound level<br>0 - Off<br>1 - low<br>2 - middle<br>3 - high<br>4 - progressive<br><br>Note: if parameter is omitted then the behaviour of Set command is the same as Read command |
| **AT+CRSL?** | Read command reports the current **<level>** setting of the call ringer in the format:<br><br>**+CRSL: <level>** |
| **AT+CRSL=?** | Test command reports **<level>** supported values as compound value.<br><br>For compatibility with previous versions, Test command returns<br>**+CRSL: (0-3)**<br><br>An enhanced version of Test command has been defined: **AT+CRSL=??**, that provides the complete range of values for **<level>**. |
| **AT+CRSL=??** | Enhanced Test command returns the complete range of supported values for the parameter **<mode>**:<br><br>**+CRSL: (0-4)** |
| Reference | GSM 07.07 |

### *3.5.2.4.16 +CLVL - Loudspeaker Volume Level*

| **+CLVL - Loudspeaker Volume Level** | |
|---|---|
| **AT+CLVL[= <level>]** | Set command is used to select the volume of the internal loudspeaker audio output of the device.<br><br>Parameter:<br>**<level>** - loudspeaker volume |

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| | |
|---|---|
| | 0..*max* - the value of *max* can be read by issuing the Test command **AT+CLVL=?**<br><br>Note: If the parameter is omitted the behavior of Set command is the same as Read command. |
| **AT+CLVL?** | Read command reports the current **<level>** setting of the loudspeaker volume in the format:<br><br>**+CLVL: <level>** |
| **AT+CLVL=?** | Test command reports **<level>** supported values range in the format:<br><br>**+CLVL: (0-*max*)** |
| Reference | GSM 07.07 |

### *3.5.2.4.17 +CMUT - Microphone Mute Control*

| **+CMUT – Microphone Mute Control** | |
|---|---|
| **AT+CMUT[=[<n>]]** | Set command enables/disables the muting of the microphone audio line during a voice call.<br><br>Parameter:<br>**<n>**<br>0 - mute off, microphone active (factory default)<br>1 - mute on, microphone muted.<br><br>Note: this command mutes/activates both microphone audio paths, internal mic and external mic.<br><br>Note: issuing **AT+CMUT<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CMUT=<CR>** is the same as issuing the command **AT+CMUT=0<CR>**. |
| **AT+CMUT?** | Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format:<br><br>**+CMUT: <n>** |
| **AT+CMUT=?** | Test command reports the supported values for **<n>** parameter. |
| Reference | GSM 07.07 |

### *3.5.2.4.18 +CACM - Accumulated Call Meter*

| **+CACM - Accumulated Call Meter** | |
|---|---|
| **AT+CACM[= <pwd>]** | Set command resets the Advice of Charge related Accumulated Call Meter stored in SIM (ACM): it contains the total number of home units for both the |

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| | |
|---|---|
| | current and preceding calls.<br><br>Parameter:<br>**<pwd>** - to access this command PIN2 password is required<br><br>Note: If the parameter is omitted the behavior of Set command is the same as Read command. |
| **AT+CACM?** | Read command reports the current value of the SIM ACM in the format:<br><br>**+CACM: <acm>**<br><br>where:<br>**<acm>** - accumulated call meter in home units, string type: three bytes of the ACM value in hexadecimal format (e.g. “00001E” indicates decimal value 30)<br><br>Note: the value **<acm>** is in units whose price and currency is defined with command **+CPUC** |
| Reference | GSM 07.07 |

### *3.5.2.4.19 +CAMM - Accumulated Call Meter Maximum*

| **+CAMM - Accumulated Call Meter Maximum** | |
|---|---|
| **AT+CAMM[= <acmmax>, <pwd>]** | Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches **<acmmax>** value further calls are prohibited.<br><br>Parameter:<br>**<acmmax>** - ACMmax value, integer type: it is the maximum number of home units allowed to be consumed by the subscriber.<br>**<pwd>** - PIN2 password<br><br>Note: The **<acmmax>=0** value disables the feature.<br><br>Note: if the parameters are omitted the behaviour of Set command is the same as Read command. |
| **AT+CAMM?** | Read command reports the ACMmax value stored in SIM in the format:<br><br>**+CAMM : <acmm>**<br><br>where:<br>**<acmm>** - ACMmax value in home units, string type: three bytes of the ACMmax value in hexadecimal format (e.g. “00001E” indicates decimal value 30) |
| Reference | GSM 07.07 |

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### 3.5.2.4.20 +CPUC - Price per Unit and Currency Table

| **+CPUC - Price Per Unit And Currency Table** | |
|---|---|
| **AT+CPUC[= <currency>, <ppu>,<pwd>]** | Set command sets the values of Advice of Charge related Price per Unit and Currency Table stored in SIM (PUCT). The PUCT information can be used to convert the home units (as used in commands **+CAOC**, **+CACM** and **+CAMM**) into currency units.<br><br>Parameters:<br>**<currency>** - string type; three-character currency code (e.g. LIT, USD, DEM etc..); used character set should be the one selected with either command **+CSCS** or **@CSCS**.<br>**<ppu>** - price per unit, string type (dot is used as decimal separator) e.g. "1989.27"<br>**<pwd>** - SIM PIN2 is usually required to set the values<br><br>Note: if the parameters are omitted the behavior of Set command is the same as Read command. |
| **AT+CPUC?** | Read command reports the current values of **<currency>** and **<ppu>** parameters in the format:<br><br>**+CACM : <currency>,<ppu>** |
| Reference | GSM 07.07 |

### 3.5.2.4.21 +CCID - Read ICCID (Integrated Circuit Card Identification)

| **+CCID - Read ICCID (Integrated Circuit Card Identification)** | |
|---|---|
| **AT+CCID** | Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM) |
| **AT+ CCID?** | Read command has the same effect as Execution command. |
| **AT+CCID=?** | Test command reports **OK**. |

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## 3.5.2.5 Mobile Equipment Errors

### *3.5.2.5.1 +CMEE - Report Mobile Equipment Error*

| **+CMEE - Report Mobile Equipment Error** | |
|---|---|
| **AT+CMEE[=[<n>]]** | Set command enables/disables the report of result code:<br><br>**+CME ERROR: <err>**<br><br>as an indication of an error relating to the **+Cxxx** commands issued. When enabled, device related errors cause the **+CME ERROR: <err>** final result code instead of the default **ERROR** final result code. **ERROR** is anyway returned normally when the error message is related to syntax, invalid parameters, or **DTE** functionality.<br><br>Parameter:<br>**<n>** - enable flag<br>0 - disable **+CME ERROR:<err>** reports, use only **ERROR** report.<br>1 - enable **+CME ERROR:<err>** reports, with **<err>** in numeric format<br>2 - enable **+CME ERROR: <err>** reports, with **<err>** in verbose format<br><br>Note: issuing **AT+CMEE<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CMEE=<CR>** is the same as issuing the command **AT+CMEE=0<CR>**. |
| **AT+CMEE?** | Read command returns the current value of subparameter **<n>**<br><br>**+CMEE: <n>** |
| **AT+CMEE=?** | Test command returns the range of values for subparameter **<n>** in the format:<br><br>**+CMEE: 0, 1, 2**<br><br>Note: the representation format of the Test command output is not included in parenthesis. |
| Note | **+CMEE** has no effect on the final result code **+CMS** |
| Reference | GSM 07.07 |

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## 3.5.2.6 Voice Control

### *3.5.2.6.1 +VTS - DTMF Tones Transmission*

| **+VTS - DTMF Tones Transmission** | |
|---|---|
| **AT+VTS= <dtmfstring> [,duration]** | Execution command allows the transmission of DTMF tones.<br><br>Parameters:<br>**<dtmfstring>** - string of **<dtmf>s,** i.e. ASCII characters in the set **(0-9), #,*,(A-D)**; the string can be at most 255 **<dtmf>s** long; it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through **+VTD** command.<br>**<duration>** - duration of a tone in 1/100 sec.; this parameter can be specified only if the length of first parameter is just one ASCII character<br>0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current **+VTD** setting is.<br>1..255 - a single DTMF tone will be transmitted for a time **<duration>** (in 10 ms multiples), no matter what the current **+VTD** setting is.<br><br>Note: this commands operates in voice mode only (see **+FCLASS**). |
| **AT+VTS=?** | For compatibility with previous versions, Test command returns<br>**+VTS: (),(),()**<br><br>An enhanced version of Test command has been defined: **AT+VTS=??**, that provides the correct range of values for **<DTMF>**. |
| **AT+VTS=??** | Test command provides the list of supported **<dtmf>s** and the list of supported **<duration>s** in the format:<br><br>**(list of supported <dtmf>s)[,(list of supported <duration>s)]** |
| Reference | GSM 07.07 and TIA IS-101 |

### *3.5.2.6.2 +VTD - Tone Duration*

| **+VTD - Tone Duration** | |
|---|---|
| **AT+VTD[= <duration>]** | Set command sets the length of tones transmitted with **+VTS** command.<br><br>Parameter:<br>**<duration>** - duration of a tone<br>0 - the duration of every single tone is dependent on the network (factory default)<br>1..255 - duration of every single tone in 1/10 sec.<br><br>Note: If parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT+VTD?** | Read command reports the current Tone Duration, in the format: |

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| | |
|---|---|
| | **<duration>** |
| **AT+VTD=?** | Test command provides the list of supported **<duration>s** in the format: **(list of supported <duration>s)** |
| Reference | GSM 07.07 and TIA IS-101 |

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## 3.5.2.7 Commands For GPRS

### *3.5.2.7.1 +CGCLASS - GPRS Mobile Station Class*

| **+CGCLASS - GPRS Mobile Station Class** | |
|---|---|
| **AT+CGCLASS [=<class>]** | Set command sets the GPRS class according to **<class>** parameter.<br><br>Parameter:<br>**<class>** - GPRS class<br>"B" - GSM/GPRS (factory default)<br>"CG" - class C in GPRS only mode (GPRS only)<br>"CC" - class C in circuit switched only mode (GSM only)<br><br>Note: the setting is saved in NVM (and available on following reboot).<br><br>Note: if parameter **<class>** is omitted, then the behaviour of Set command is the same as Read command. |
| **AT+CGCLASS?** | Read command returns the current value of the GPRS class in the format:<br><br>**+CGLASS: <class>** |
| **AT+CGCLASS=?** | Test command reports the range for the parameter **<class>** |

### *3.5.2.7.2 +CGATT - GPRS Attach Or Detach*

| **+CGATT - GPRS Attach Or Detach** | |
|---|---|
| **AT+CGATT[= <state>]** | Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter **<state>**.<br><br>Parameter:<br>**<state>** - state of GPRS attachment<br>0 - detached<br>1 - attached<br><br>Note: If the parameter is omitted the behaviour of Execution command is the same as Read command. |
| **AT+CGATT?** | Read command returns the current GPRS service state. |
| **AT+CGATT=?** | Test command requests information on the supported GPRS service states. |
| Example | AT+CGATT?<br>+CGATT: 0<br><br>OK<br>AT+CGATT=?<br>+CGATT: (0,1)<br><br>OK<br>AT+CGATT=1 |

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| +CGATT - GPRS Attach Or Detach | |
|---|---|
| | OK |
| Reference | GSM 07.07 |

### 3.5.2.7.3 +CGREG - GPRS Network Registration Status

| +CGREG - GPRS Network Registration Status | |
|---|---|
| **AT+CGREG[=[<n>]]** | Set command controls the presentation of an unsolicited result code **+CGREG**: (see format below).<br><br>Parameter:<br>**<n>** - result code presentation mode<br>0 - disable network registration unsolicited result code<br>1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code:<br><br>**+CGREG: <stat>**<br><br>where:<br>**<stat>** - registration status<br>0 - not registered, terminal is not currently searching a new operator to register to<br>1 - registered, home network<br>2 - not registered, but terminal is currently searching a new operator to register to<br>3 - registration denied<br>4 - unknown<br>5 - registered, roaming<br>2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code:<br><br>**+CGREG: <stat>[,<lac>,<ci>]**<br><br>where:<br>**<stat>** - registration status (see above for values)<br>**<lac>** - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)<br>**<ci>** - cell ID in hexadecimal format<br><br>Note: issuing **AT+CGREG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CGREG=<CR>** is the same as issuing the command |

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| **+CGREG - GPRS Network Registration Status** | |
|---|---|
| | **AT+CGREG=0<CR>**. |
| **AT+CGREG?** | Read command returns the status of result code presentation mode **<n>** and the integer **<stat>** which shows whether the network has currently indicated the registration of the terminal in the format:<br><br>**+CGREG:<n>,<stat>**. |
| **AT+CGREG=?** | Test command returns supported values for parameter **<n>** |
| Reference | GSM 07.07 |

### *3.5.2.7.4 +CGDCONT - Define PDP Context*

| **+CGDCONT - Define PDP Context** | |
|---|---|
| **AT+CGDCONT[=<br>[<cid><br>[,<PDP_type><br>[,<APN><br>[,<PDP_addr><br>[,<d_comp><br>[,<h_comp><br>[,<pd1><br>[,…[,pdN]]]]]]]]]]** | Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, **<cid>**<br><br>Parameters:<br>**<cid>** - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition.<br>1..*max* - where the value of *max* is returned by the Test command<br>**<PDP_type>** - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol<br>"IP" - Internet Protocol<br>"PPP" - Point to Point Protocol<br>**<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.<br>**<PDP_addr>** - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the **+CGPADDR** command.<br>**<d_comp>** - numeric parameter that controls PDP data compression<br>0 - off (default if value is omitted)<br>1 - on<br>**<h_comp>** - numeric parameter that controls PDP header compression<br>0 - off (default if value is omitted)<br>1 - on<br>**<pd1>**, …, **<pdN>** - zero to N string parameters whose meanings are specific to the **<PDP_type>**<br><br>Note: a special form of the Set command, **+CGDCONT=<cid>**, causes the values for context number **<cid>** to become undefined.<br><br>Note: issuing **AT+CGDCONT<CR>** is the same as issuing the Read command. |

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| **+CGDCONT - Define PDP Context** | |
|---|---|
| | Note: issuing **AT+CGDCONT=<CR>** returns the **OK** result code. |
| **AT+CGDCONT?** | Read command returns the current settings for each defined context in the format:<br><br>**+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>, <h_comp>[,<pd1>[,…[,pdN]]]<CR><LF>[<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp> [,<pd1>[,…[,pdN]]]<CR><LF>[…]]** |
| **AT+CGDCONT=?** | Test command returns values supported as a compound value |
| Example | `AT+CGDCONT=1,"IP","APN","10.10.10.10",0,0`<br>`OK`<br>`AT+CGDCONT?`<br>`+CGDCONT: 1,"IP","APN","10.10.10.10",0,0`<br><br>`OK`<br>`AT+CGDCONT=?`<br>`+CGDCONT: (1-5),"IP",,,(0-1),(0-1)`<br><br>`OK` |
| Reference | GSM 07.07 |

### *3.5.2.7.5 +CGQMIN - Quality Of Service Profile (Minimum Acceptable)*

| **+CGQMIN - Quality Of Service Profile (Minimum Acceptable)** | |
|---|---|
| **AT+CGQMIN[=<br>[<cid><br>[,<precedence><br>[,<delay><br>[,<reliability><br>[,<peak><br>[,<mean>]]]]]]]** | Set command allows to specify a minimum acceptable profile which is checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message.<br><br>Parameters:<br>**<cid>** - PDP context identification (see **+CGDCONT** command).<br>**<precedence>** - precedence class<br>**<delay>** - delay class<br>**<reliability>** - reliability class<br>**<peak>** - peak throughput class<br>**<mean>** - mean throughput class<br><br>If a value is omitted for a particular class then this class is not checked.<br><br>Note: a special form of the Set command, **+CGQMIN=<cid>** causes the requested profile for context number **<cid>** to become undefined.<br><br>Note: issuing **AT+CGQMIN<CR>** is the same as issuing the Read command. |

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| +CGQMIN - Quality Of Service Profile (Minimum Acceptable) | |
|---|---|
| | Note: issuing **AT+CGQMIN=<CR>** returns the **OK** result code. |
| **AT+CGQMIN?** | Read command returns the current settings for each defined context in the format:<br><br>**+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean><CR><LF>[<CR><LF>+CGQMIN: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean><CR><LF>[…]]**<br><br>If no PDP context has been defined, it has no effect and **OK** result code is returned. |
| **AT+CGQMIN=?** | Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:<br><br>**+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)**<br><br>Note: only the "IP" PDP_Type is currently supported. |
| Example | `AT+CGQMIN=1,0,0,3,0,0`<br>`OK`<br>`AT+CGQMIN?`<br>`+CGQMIN: 1,0,0,5,0,0`<br><br>`OK`<br>`AT+CGQMIN=?`<br>`+CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-19,31)`<br><br>`OK` |
| Reference | GSM 07.07; GSM 03.60 |

### *3.5.2.7.6 +CGQREQ - Quality Of Service Profile (Requested)*

| +CGQREQ - Quality Of Service Profile (Requested) | |
|---|---|
| **AT+CGQREQ[= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]]** | Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, **<cid>**.<br><br>Parameters:<br>**<cid>** - PDP context identification (see **+CGDCONT** command).<br>**<precedence>** - precedence class<br>**<delay>** - delay class<br>**<reliability>** - reliability class<br>**<peak>** - peak throughput class<br>**<mean>** - mean throughput class |

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| +CGQREQ - Quality Of Service Profile (Requested) | |
|---|---|
| | If a value is omitted for a particular class then this class is not checked.<br><br>Note: a special form of the Set command, **+CGQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined.<br><br>Note: issuing **AT+CGQREQ<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CGQREQ=<CR>** returns the **OK** result code. |
| **AT+CGQREQ?** | Read command returns the current settings for each defined context in the format:<br><br>**+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean><CR><LF>[<CR><LF>+CGQREQ: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean><CR><LF>[…]]**<br><br>If no PDP context has been defined, it has no effect and **OK** result code is returned. |
| **AT+CGQREQ=?** | Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:<br><br>**+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)**<br><br>Note: only the "IP" PDP_Type is currently supported. |
| Example | AT+CGQREQ?<br>+CGQREQ: 1,0,0,3,0,0<br><br>OK<br>AT+CGQREQ=1,0,0,3,0,0<br>OK<br>AT+CGQREQ=?<br>+CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-19,31)<br><br>OK |
| Reference | GSM 07.07; GSM 03.60 |

### *3.5.2.7.7 +CGACT - PDP Context Activate Or Deactivate*

| +CGACT - PDP Context Activate Or Deactivate | |
|---|---|
| **AT+CGACT[= [<state>[,<cid> [,<cid>[,…]]]]]** | Execution command is used to activate or deactivate the specified PDP context(s) |

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| | |
|---|---|
| | Parameters:<br>**<state>** - indicates the state of PDP context activation<br>0 - deactivated<br>1 - activated<br><br>**<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command)<br><br>Note: if no **<cid>**s are specified the activation/deactivation form of the command activates/deactivates all defined contexts.<br><br>Note: issuing **AT+CGACT<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CGACT=<CR>** returns the **OK** result code. |
| **AT+CGACT?** | Read command returns the current activation state for all the defined PDP contexts in the format:<br><br>**+CGACT: <cid>,<state><CR><LF>[<CR><LF>+CGACT: <cid>,<state><CR><LF>[…]]** |
| **AT+CGACT=?** | Test command reports information on the supported PDP context activation states parameters in the format:<br><br>**+CGACT: (0-1)** |
| Example | `AT+CGACT?`<br>`+CGACT: 1,1`<br><br>`OK`<br>`AT+CGACT=1,1`<br>`OK` |
| Reference | GSM 07.07 |

### *3.5.2.7.8 +CGPADDR - Show PDP Address*

| **+CGPADDR - Show PDP Address** | |
|---|---|
| **AT+CGPADDR= [<cid>[,<cid> [,…]]]** | Execution command returns a list of PDP addresses for the specified context identifiers in the format:<br><br>**+CGPADDR: <cid>,<PDP_addr><CR><LF>[<CR><LF> +CGPADDR: <cid>,<PDP_addr><CR><LF>[…]]**<br><br>Parameters:<br>**<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). If no **<cid>** is specified, the addresses for all defined contexts are returned.<br>**<PDP_addr>** - a string that identifies the terminal in the address space applicable to the PDP. The address may be static or |

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| +CGPADDR - Show PDP Address | |
|---|---|
| | dynamic. For a static address, it will be the one set by the **+CGDCONT** command 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_addr>** is omitted if none is available |
| **AT+CGPADDR=?** | Test command returns a list of defined **<cid>**s. |
| Example | AT#GPRS=1<br>+IP: xxx.yyy.zzz.www<br><br>OK<br>AT+CGPADDR=1<br>+CGPADDR: 1,"xxx.yyy.zzz.www"<br><br>OK<br>AT+CGPADDR=?<br>+CGPADDR: (1)<br><br>OK |
| Reference | GSM 07.07 |

### *3.5.2.7.9 +CGDATA - Enter Data State*

| +CGDATA - Enter Data State | |
|---|---|
| **AT+CGDATA= [<L2P>,[<cid> [,<cid>[,...]]]]** | Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types.<br><br>Parameters:<br>**<L2P>** - string parameter that indicates the layer 2 protocol to be used<br>"PPP" - PPP Point-to-point protocol<br>**<cid>** - numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command).<br><br>Note: if parameter **<L2P>** is omitted, the layer 2 protocol is unspecified |
| **AT+CGDATA=?** | Test command reports information on the supported layer 2 protocols.<br>Note: the representation format of the Test command output is not included in parenthesis |
| Example | AT+CGDATA=?<br>+CGDATA: "PPP"<br>OK<br>AT+CGDATA="PPP",1<br>OK |
| Reference | GSM 07.07 |

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## 3.5.2.8 Commands For Battery Charger

### *3.5.2.8.1 +CBC - Battery Charge*

| **+CBC - Battery Charge** | |
|---|---|
| **AT+CBC** | Execution command returns the current Battery Charge status in the format:<br><br>**+CBC: <bcs>,<bcl>**<br><br>where:<br>**<bcs>** - battery charge status<br>0 - **ME** is powered by the battery<br>1 - **ME** has a battery connected, and charger pin is being powered<br>2 - **ME** does not have a battery connected<br>3 - Recognized power fault, calls inhibited<br>**<bcl>** - battery charge level<br>0 - battery is exhausted, or ME does not have a battery connected<br>25 - battery charge remained is estimated to be 25%<br>50 - battery charge remained is estimated to be 50%<br>75 - battery charge remained is estimated to be 75%<br>100 - battery is fully charged.<br><br>Note: **<bcs>=1** indicates that the battery charger supply is inserted and the battery is being recharged if necessary with it. Supply for **ME** operations is taken anyway from VBATT pins.<br><br>Note: without battery/power connected on VBATT pins or during a power fault the unit is not working, therefore values **<bcs>=2** and **<bcs>=3** will never appear. |
| **AT+CBC?** | Read command has the same effect as Execution command. |
| **AT+CBC=?** | Test command returns parameter values supported as a compound value. For compatibility with previous versions, Test command returns<br><br>**+CBC: (0-2),(0-100)**<br><br>An enhanced version of Test command has been defined: **AT+CBC=??**, that provides the complete range of values for **<bcs>** and **<bcl>**.<br><br>Note: although **+CBC** is an execution command, ETSI 07.07 requires the Test command to be defined. |
| **AT+CBC=??** | Enhanced test command returns the complete range of values for **<bcs>** and **<bcl>**:<br><br>**+CBC: (0-3),(0-100)** |
| Example | `AT+CBC`<br>`+CBC: 0,75` |

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| **+CBC - Battery Charge** | |
|---|---|
| | OK |
| Note | The **ME** does not make differences between being powered by a battery or by a power supply on the VBATT pins, so it is not possible to distinguish between these two cases. |
| Reference | GSM 07.07 |

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# 3.5.3 ETSI GSM 07.05 AT Commands for SMS and CBS

## 3.5.3.1 General Configuration

### *3.5.3.1.1 +CSMS - Select Message Service*

| **+CSMS - Select Message Service** | |
|---|---|
| **AT+CSMS [=<service>]** | Set command selects messaging service **<service>**. It returns the types of messages supported by the **ME**:<br><br>Parameter:<br>**<service>**<br>0 - The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 version 4.7.0 (factory default)<br>1 - The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2+.<br><br>Set command returns current service setting along with the types of messages supported by the ME:<br><br>**+CSMS: <service>,<mt>,<mo>,<bm>**<br><br>where:<br>**<mt>** - mobile terminated messages support<br>0 - type not supported<br>1 - type supported<br>**<mo>** - mobile originated messages support<br>0 - type not supported<br>1 - type supported<br>**<bm>** - broadcast type messages support<br>0 - type not supported<br>1 - type supported<br><br>Note: If parameter is omitted then the behavior of Set command is the same as Read command. |
| **AT+CSMS?** | Read command reports current service setting along with supported message types in the format:<br><br>**+CSMS: <service>,<mt>,<mo>,<cb>**<br><br>where:<br>**<service>** - messaging service (see above)<br>**<mt>** - mobile terminated messages support (see above)<br>**<mo>** - mobile originated messages support (see above)<br>**<bm>** - broadcast type messages support (see above) |
| **AT+CSMS=?** | Test command reports a list of all services supported by the device. the |

| +CSMS - Select Message Service | |
|---|---|
| | supported value of the parameter **<service>**. |
| Reference | GSM 07.05; GSM 03.40; GSM 03.41 |

### *3.5.3.1.2 +CPMS - Preferred Message Storage*

| +CPMS - Preferred Message Storage | |
|---|---|
| **AT+CPMS[= <memr> [,<memw> [,<mems>]]]** | Set command selects memory storages **<memr>**, **<memw>** and **<mems>** to be used for reading, writing, sending and storing SMs.<br><br>Parameters:<br>**<memr>** - memory from which messages are read and deleted<br>"SM" - SIM SMS memory storage<br>"ME" - **ME** internal storage (read only, no delete)<br><br>**<memw>** - memory to which writing and sending operations are made<br>"SM" - SIM SMS memory storage<br><br>**<mems>** - memory to which received SMs are preferred to be stored<br>"SM" - SIM SMS memory storage<br><br>The command returns the memory storage status in the format:<br><br>**+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals>**<br><br>where<br>**<usedr>** - number of SMs stored into **<memr>**<br>**<totalr>** - max number of SMs that **<memr>** can contain<br>**<usedw>** - number of SMs stored into **<memw>**<br>**<totalw>** max number of SMs that **<memw>** can contain<br>**<useds>** - number of SMs stored into **<mems>**<br>**<totals>** - max number of SMS that **<mems>** can contain<br><br>Note: The only supported memory storage for writing and sending SMs is the SIM internal memory "SM", so **<memw>=<mems>="SM"**.<br><br>Note: the received class 0 SMS are stored in the "ME" memory regardless the **<mems>** setting and they are automatically deleted at power off.<br><br>Note: If all parameters are omitted the behavior of Set command is the same as Read command. |
| **AT+CPMS?** | Read command reports the message storage status in the format:<br><br>**+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>, <mems>,<useds>,<totals>** |

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| +CPMS - Preferred Message Storage | |
|---|---|
| | where **<memr>**, **<memw>** and **<mems>** are the selected storage memories for reading, writing and storing respectively. |
| **AT+CPMS=?** | Test command reports the supported values for parameters **<memr>**, **<memw>** and **<mems>** |
| Example | AT+CPMS?<br>+CPMS: "SM",5,10,"SM",5,10,"SM",5,10<br><br>OK *you have 5 out of 10 SMS SIM positions occupied* |
| Reference | GSM 07.05 |

### *3.5.3.1.3 +CMGF - Message Format*

| +CMGF - Message Format | |
|---|---|
| **AT+CMGF[= [<mode>]]** | Set command selects the format of messages used with send, list, read and write commands.<br><br>Parameter:<br>**<mode>**<br>0 - PDU mode, as defined in GSM 3.40 and GSM 3.41 (factory default)<br>1 - text mode<br><br>Note: issuing **AT+CMGF<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CMGF=<CR>** is the same as issuing the command **AT+CMGF=0<CR>**. |
| **AT+CMGF?** | Read command reports the current value of the parameter **<mode>**. |
| **AT+CMGF=?** | Test command reports the supported value of **<mode>** parameter. |
| Reference | GSM 07.05 |

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## 3.5.3.2 Message Configuration

### *3.5.3.2.1 +CSCA - Service Center Address*

| **+CSCA - Service Center Address** | |
|---|---|
| **AT+CSCA[=<br>[<number><br>[,<type>]]]** | Set command sets the Service Center Address to be used for mobile originated SMS transmissions.<br><br>Parameter:<br>**<number>** - SC phone number in the format defined by **<type>**<br>**<type>** - the type of number<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+")<br><br>Note: to use the SM service, is mandatory to set a Service Center Address at which service requests will be directed.<br><br>Note: in Text mode, this setting is used by send and write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the **<pdu>** parameter equals zero.<br><br>Note: issuing **AT+CSCA<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSCA=<CR>** causes an **OK** result code to be issued. |
| **AT+CSCA?** | Read command reports the current value of the SCA in the format:<br><br>**+CSCA: <number>,<type>**<br><br>Note: if SCA is not present the device reports an error message. |
| **AT+ CSCA=?** | Test command returns the **OK** result code. |
| Reference | GSM 07.05 |

### *3.5.3.2.2 +CSMP - Set Text Mode Parameters*

| **+CSMP - Set Text Mode Parameters** | |
|---|---|
| **AT+CSMP[=<br>[<fo><br>[,<vp><br>[,<pid><br>[,<dcs>]]]]]** | Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used **(+CMGF=1**)<br><br>Parameters:<br>**<fo>** - depending on the command or result code:<br>first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.<br>**<vp>** - depending on SMS-SUBMIT **<fo>** setting: |

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| +CSMP - Set Text Mode Parameters | |
|---|---|
| | GSM 03.40 TP-Validity-Period either in integer format (default 167) or in quoted time-string format<br>**<pid>** - GSM 03.40 TP-Protocol-Identifier in integer format.<br>**<dcs>** - depending on the command or result code:<br>GSM 03.38 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme<br><br>Note: issuing **AT+CSMP<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSMP=<CR>** is the same as issuing the command **AT+CSMP=0<CR>**. |
| **AT+CSMP?** | Read command reports the current setting in the format:<br><br>**+CSMP: < fo>,<vp>,<pid>,<dcs>** |
| **AT+CSMP=?** | Test command reports the supported range of values for **<fo>**, **<vp>**, **<pid>** and **<dcs>** parameters. |
| Example | *Set the parameters for an outgoing message with 24 hours of validity period and default properties:*<br><br>`AT+CSMP=17,167,0,0`<br>`OK` |
| Reference | GSM 07.05; GSM 03.40; GSM 03.38 |

### *3.5.3.2.3 +CSDH - Show Text Mode Parameters*

| +CSDH - Show Text Mode Parameters | |
|---|---|
| **AT+CSDH[=[<show>]]** | Set command controls whether detailed header information is shown in text mode **(+CMGF=1**) result codes.<br><br>Parameter:<br>**<show>**<br>0 - do not show header values defined in commands +CSCA and +CSMP (**<sca>**, **<tosca>**, **<fo>**, **<vp>**, **<pid>** and **<dcs>**) nor **<length>**, **<toda>** or **<tooa>** in **+CMT**, **+CMGL**, **+CMGR** result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in **+CMGR** result code do not show **<pid>**, **<mn>**, **<da>**, **<toda>**, **<length>** or **<cdata>**<br>1 - show the values in result codes<br><br>Note: issuing **AT+CSDH<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSDH=<CR>** is the same as issuing the command **AT+CSDH=0<CR>**. |
| **AT+CSDH?** | Read command reports the current setting in the format: |

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| +CSDH - Show Text Mode Parameters | |
|---|---|
| | **+CSDH: <show>** |
| **AT+CSDH=?** | Test command reports the supported range of values for parameter **<show>** |
| Reference | GSM 07.05 |

### *3.5.3.2.4 +CSCB - Select Cell Broadcast Message Types*

| +CSCB -Select Cell Broadcast Message Types | |
|---|---|
| **AT+CSCB[=<br>[<mode><br>[,<mids><br>[,<dcss>]]]]** | Set command selects which types of Cell Broadcast Messages are to be received by the device.<br><br>Parameter:<br>**<mode>**<br>0 - the message types defined by **<mids>** and **<dcss>** are accepted (factory default)<br>1 - the message types defined by **<mids>** and **<dcss>** are rejected<br><br>**<mids>** - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string (“”).<br><br>**<dcss>** - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (“”).<br><br>Note: issuing **AT+CSCB<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSCB=<CR>** is the same as issuing the command **AT+CSCB=0<CR>**. |
| **AT+CSCB?** | Read command reports the current value of parameters **<mode>**, **<mids>** and **<dcss>**. |
| **AT+CSCB=?** | Test command returns the range of values for parameter **<mode>**. |
| Example | AT+CSCB?<br>+CSCB: 1,"","" <br><br>OK *(all CBMs are accepted, none is rejected)*<br>AT+CSCB=0,"0,1,300-315,450","0-3"<br>OK |
| Reference | GSM 07.05, GSM 03.41, GSM 03.38. |

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### 3.5.3.2.5 +CSAS - Save Settings

| **+CSAS - Save Settings** | |
|---|---|
| **AT+CSAS [=<profile>]** | Execution command saves settings which have been made by the **+CSCA** **+CSMP** and **+CSCB** commands in local non volatile memory.<br><br>Parameter:<br>**<profile>**<br>0 - it saves the settings to NVM (factory default).<br>1..n - SIM profile number; the value of n depends on the SIM and its max is 3.<br><br>Note: certain settings may not be supported by the SIM and therefore they are always saved to NVM, regardless the value of **<profile>**.<br><br>Note: If parameter is omitted the settings are saved in the non volatile memory. |
| **AT+CSAS?** | Read command has the same effect as Execution command with parameter omitted. |
| **AT+CSAS=?** | Test command returns the possible range of values for the parameter **<profile>**. |
| Reference | GSM 07.05 |

### 3.5.3.2.6 +CRES - Restore Settings

| **+CRES - Restore Settings** | |
|---|---|
| **AT+CRES [=<profile>]** | Execution command restores message service settings saved by **+CSAS** command from either NVM or SIM.<br><br>Parameter:<br>**<profile>**<br>0 - it restores message service settings from NVM.<br>1..n - it restores message service settings from SIM. The value of n depends on the SIM and its max is 3.<br><br>Note: certain settings may not be supported by the SIM and therefore they are always restored from NVM, regardless the value of **<profile>**.<br><br>Note: If parameter is omitted the command restores message service settings from NVM. |
| **AT+CRES?** | Read command has the same effect as Execution command with parameter omitted. |
| **AT+CRES=?** | Test command returns the possible range of values for the parameter **<profile>**. |
| Reference | GSM 07.05 |

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## 3.5.3.3 Message Receiving And Reading

### *3.5.3.3.1 +CNMI - New Message Indications To Terminal Equipment*

| **+CNMI - New Message Indications To Terminal Equipment** | |
|---|---|
| **AT+CNMI[=[ <mode>[,<mt> [,<bm>[,<ds> [,<bfr>]]]]]]** | Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**.<br><br>Parameter:<br>**<mode>** - unsolicited result codes buffering option<br>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.<br>1 - Discard indication and reject new received message unsolicited result codes when **TA-TE** link is reserved, otherwise forward them directly to the **TE**.<br>2 - Buffer unsolicited result codes in the **TA** in case the **DTE** is busy and flush them to the **TE** after reservation. Otherwise forward them directly to the **TE**.<br>3 - if **<mt>** is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too.<br>**<mt>** - result code indication reporting for SMS-DELIVER<br>0 - No SMS-DELIVER indications are routed to the **TE**.<br>1 - If SMS-DELIVER is stored into **ME/TA**, indication of the memory location is routed to the **TE** using the following unsolicited result code:<br>**+CMTI: <memr>,<index>**<br>where:<br>**<memr>** - memory storage where the new message is stored<br>"SM"<br>"ME"<br>**<index>** - location on the memory where SM is stored.<br>2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the **TE** using the following unsolicited result code:<br><br>**(PDU Mode)**<br>**+CMT: <length><CR><LF><pdu>**<br>where:<br>**<length>** - PDU length<br>**<pdu>** - PDU message<br><br>**(TEXT Mode)**<br><br>**+CMT:<oa>,<scts>*[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]*<CR><LF><data>** (the information written in italics will be present depending on **+CSDH** last setting) |

**+CNMI - New Message Indications To Terminal Equipment**

where:

**<oa>** - originating address, string type converted in the currently selected character set (see **+CSCS**)

**<scts>** - arrival time of the message to the SC

***<tooa>***, ***<tosca>*** - type of number **<oa>** or ***<sca>***:

129 - number in national format

145 - number in international format (contains the "+")

***<fo>*** - first octet of GSM 03.40

***<pid>*** - Protocol Identifier

***<dcs>*** - Data Coding Scheme

***<sca>*** - Service Centre address, string type, converted in the currently selected character set (see **+CSCS**)

***<length>*** - text length

**<data>** - TP-User-Data

Class 2 messages and messages in the message waiting indication group (stored message) result in indication as defined in **<mt>=1**.

3 - 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 reporting option

0 - Cell Broadcast Messages are not sent to the **DTE**

2 - New Cell Broadcast Messages are sent to the **DTE** with the unsolicited result code:

**(PDU Mode)**

**+CBM: <length><CR><LF><PDU>**

where:

**<length>** - PDU length

**<PDU>** - message PDU

**(TEXT Mode)**

**+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data>**

where:

**<sn>** - message serial number

**<mid>** - message ID

**<dcs>** - Data Coding Scheme

**<pag>** - page number

**<pags>** - total number of pages of the message

**<data>** - CBM Content of Message

**<ds>** - SMS-STATUS-REPORTs reporting option

0 - status report receiving is not reported to the **DTE**

1 - the status report is sent to the **DTE** with the following unsolicited result code:

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| **+CNMI - New Message Indications To Terminal Equipment** | |
|---|---|
| | **(PDU Mode)**<br>**+CDS: <length><CR><LF><PDU>**<br>where:<br>**<length>** - PDU length<br>**<PDU>** - message PDU<br><br>**(TEXT Mode)**<br>**+CDS: <fo>,<mr>,,,<scts>,<dt>,<st>**<br>where:<br>**<fo>** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br><br>2 - if a status report is stored, then the following unsolicited result code is sent:<br>**+CDSI: <memr>,<index>**<br>where:<br>**<memr>** - memory storage where the new message is stored "SM"<br>**<index>** - location on the memory where SM is stored<br>**<bfr>** - buffered result codes handling method:<br>0 - **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)<br>1 - TA buffer of unsolicited result codes defined within this command is cleared when **<mode>=1..3** is entered.<br><br>Note: issuing **AT+CNMI<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CNMI=<CR>** is the same as issuing the command **AT+CNMI=0<CR>**. |
| **AT+CNMI?** | Read command returns the current parameter settings for **+CNMI** command in the form:<br><br>**+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** |
| **AT+CNMI=?** | Test command reports the supported range of values for the **+CNMI** command parameters.<br><br>For compatibility with previous versions, Test command returns:<br><br>**+CNMI: (0-2)*,(0-3),(0,2),(0-2),(0,1)***<br><br>An enhanced version of Test command has been defined: **AT+CNMI=??**, that provides the complete range of values for parameter **<mode>**. |

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| **+CNMI - New Message Indications To Terminal Equipment** | |
|---|---|
| **AT+CNMI=??** | Enhanced test command reports the supported range of values for all the **+CNMI** command parameters. |
| Reference | GSM 07.05 |
| Note | **DTR** signal is ignored, hence the indication is sent even if the **DTE** is inactive (**DTR** signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while **DTE** is not, at **DTE** startup is suggested to check whether new messages have reached the device meanwhile with command **AT+CMGL=0** that lists the new messages received. |

### *3.5.3.3.2 +CMGL - List Messages*

| **+CMGL - List Messages** | |
|---|---|
| **AT+CMGL [=<stat>]** | Execution command reports the list of all the messages with status value **<stat>** stored into **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>The parameter type and the command output depend on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>Parameter:<br>**<stat>**<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent<br>3 - stored message already sent<br>4 - all messages.<br><br>Each message to be listed is represented in the format:<br><br>**+CMGL: <index>,<stat>,<length><CR><LF><pdu>**<br><br>where<br>**<index>** - message position in the memory storage list.<br>**<stat>** - status of the message<br>**<length>** - length of the PDU in bytes<br>**<pdu>** - message in PDU format according to GSM 3.40<br><br>**(Text Mode)**<br>Parameter:<br>**<stat>**<br>"REC UNREAD" - new message<br>"REC READ" - read message<br>"STO UNSENT" - stored message not yet sent |

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| **+CMGL - List Messages** | |
|---|---|
| | "STO SENT" - stored message already sent<br>"ALL" - all messages.<br><br>Each message to be listed is represented in the format (the information written in italics will be present depending on **+CSDH** last setting):<br><br>**+CMGL: <index>,<stat>,<oa/da>,,*[,<tooa/toda>,<length>]***<br>**<CR><LF> <data>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<oa/da>** - originator/destination address, string type, represented in the currently selected character set (see **+CSCS**)<br>***<tooa/toda>*** - type of number **<oa/da>**<br>129 - number in national format<br>145 - number in international format (contains the "+")<br>***<length>*** - text length<br>**<data>** - **TP-User-Data**<br><br>Each message delivery confirm is represented in the format**:**<br><br>**+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<fo>** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br><br>Note: **OK** result code is sent at the end of the listing.<br><br>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status. |
| **AT+CMGL?** | Read command has the same effect as Execution command with parameter omitted |
| **AT+CMGL=?** | Test command returns a list of supported **<stat>s** |
| Note | If Text Mode **(+CMGF=1**) the Test command output is not included in parenthesis<br><br>**AT+CMGL=?**<br>**+CMGL: "REC UNREAD","REC READ","STO UNSENT",**<br>**"STO SENT","ALL"** |
| Note | The improving command @**CMGL** has been defined |

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| **+CMGL - List Messages** | |
|---|---|
| Reference | GSM 07.05 |

### *3.5.3.3.3 @CMGL - List Messages*

| **@CMGL - List Messages** | |
|---|---|
| **AT@CMGL [=<stat>]** | Execution command reports the list of all the messages with status value **<stat>** stored into **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>The parameter type and the command output depend on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>Parameter:<br>**<stat>**<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent<br>3 - stored message already sent<br>4 - all messages.<br><br>Each message to be listed is represented in the format:<br><br>**@CMGL: <index>,<stat>,<length><CR><LF><pdu>**<br><br>where<br>**<index>** - message position in the memory storage list.<br>**<stat>** - status of the message<br>**<length>** - length of the PDU in bytes<br>**<pdu>** - message in PDU format according to GSM 3.40<br><br>**(Text Mode)**<br>Parameter:<br>**<stat>**<br>"REC UNREAD" - new message<br>"REC READ" - read message<br>"STO UNSENT" - stored message not yet sent<br>"STO SENT" - stored message already sent<br>"ALL" - all messages.<br><br>Each message to be listed is represented in the format (the information written in italics will be present depending on **+CSDH** last setting):<br><br>**@CMGL: <index>,<stat>,<oa/da>,,*[,<tooa/toda>,<length>]*** |

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| @CMGL - List Messages | |
|---|---|
| | **<CR><LF> <data>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<oa/da>** - originator/destination address, string type, represented in the currently selected character set (see **+CSCS**)<br>***<tooa/toda>*** - type of number **<oa/da>**<br>129 - number in national format<br>145 - number in international format (contains the "+")<br>***<length>*** - text length<br>**<data>** - TP-User-Data<br><br>Each message delivery confirm is represented in the format**:**<br><br>**@CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<fo>** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br><br>Note: The command differs from the **+CMGL** because at the end of the listing a **<CR><LF>** is put before the **OK** result code.<br><br>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status. |
| **AT@CMGL?** | Read command has the same effect as Execution command with parameter omitted |
| **AT@CMGL=?** | Test command returns a list of supported **<stat>s** |
| Note | If Text Mode **(+CMGF=1**) the Test command output is not included in parenthesis<br><br>**AT@CMGL=?**<br>**@CMGL: "REC UNREAD","REC READ","STO UNSENT", "STO SENT","ALL"** |
| Reference | GSM 07.05 |

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### 3.5.3.3.4 +CMGR - Read Message

| **+CMGR - Read Message** | |
|---|---|
| **AT+CMGR=<br><index>** | Execution command reports the message with location value **<index>** from **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>Parameter:<br>**<index>** - message index.<br><br>The output depends on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>The output has the following format:<br><br>**+CMGR: <stat>,<length><CR><LF><pdu>**<br><br>where<br>**<stat>** - status of the message<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent<br>3 - stored message already sent<br>**<length>** - length of the PDU in bytes.<br>**<pdu>** - message in PDU format according to GSM 3.40.<br><br>The status of the message and entire message data unit **<pdu>** is returned.<br><br>**(Text Mode)**<br>Output format for received messages (the information written in italics will be present depending on **+CSDH** last setting):<br><br>**+CMGR: <stat>,<oa>,,<scts>** ***[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*****<CR><LF><data>**<br><br>Output format for sent messages:<br>**+CMGR: <stat>,<da>,*[,<toda>,<fo>,<pid>,<dcs>,,<sca>,<tosca>,<length>]*<CR><LF><data>**<br><br>Output format for message delivery confirm:<br>**+CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**<br><br>where:<br>**<stat>** - status of the message<br>"REC UNREAD" - new received message unread<br>"REC READ" - received message read |

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| **+CMGR - Read Message** | |
|---|---|
| | "STO UNSENT" - message stored not yet sent<br>"STO SENT" - message stored already sent<br>***<fo>*** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br>***<pid>*** - Protocol Identifier<br>***<dcs>*** - Data Coding Scheme<br>**<oa>** - Originator address, string type represented in the currently selected character set (see **+CSCS**)<br>**<da>** - Destination address, string type represented in the currently selected character set (see **+CSCS**)<br>***<sca>*** - Service Centre number<br>***<tooa>,<toda >,<tosca>*** - type of number **<oa>**,**<da>**,***<sca>***<br>129 - number in national format<br>145 - number in international format (contains the "+")<br>***<length>*** - text length<br>**<data>** - TP-User_data<br><br>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.<br><br>Note: an error result code is sent on empty record **<index>**. |
| **AT+CMGR=?** | Test command returns the **OK** result code. |
| Note | The improving command **@CMGR** has been defined |
| Reference | GSM 07.05 |

### *3.5.3.3.5 @CMGR - Read Message*

| **@CMGR - Read Message** | |
|---|---|
| **AT@CMGR=<br><index>** | Execution command reports the message with location value **<index>** from **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>Parameter:<br>**<index>** - message index.<br><br>The output depends on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>The output has the following format:<br><br>**@CMGR: <stat>,<length><CR><LF><pdu>** |

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**@CMGR - Read Message**

where
**<stat>** - status of the message
0 - new message
1 - read message
2 - stored message not yet sent
3 - stored message already sent
**<length>** - length of the PDU in bytes.
**<pdu>** - message in PDU format according to GSM 3.40.

The status of the message and entire message data unit **<pdu>** is returned.

**(Text Mode)**

Output format for received messages (the information written in italics will be present depending on **+CSDH** last setting):

**@CMGR: <stat>,<oa>,,<scts> *[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><text>**

Output format for sent messages:
**@CMGR: <stat>,<da>,*[,<toda>,<fo>,<pid>,<dcs>,,<sca>,<tosca>,<length>]*<CR><LF><text>**

Output format for message delivery confirm:
**@CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**

where:
**<stat>** - status of the message
"REC UNREAD" - new received message unread
"REC READ" - received message read
"STO UNSENT" - message stored not yet sent
"STO SENT" - message stored already sent
***<fo>*** - first octet of the message PDU
**<mr>** - message reference number
**<scts>** - arrival time of the message to the SC
**<dt>** - sending time of the message
**<st>** - message status as coded in the PDU
***<pid>*** - Protocol Identifier
***<dcs>*** - Data Coding Scheme
**<oa>** - Originator address, string type represented in the currently selected character set (see **+CSCS**)
**<da>** - Destination address, string type represented in the currently selected character set (see **+CSCS**)
***<sca>*** - Service Centre number
***<tooa>***,***<toda >***,***<tosca>*** - type of number **<oa>**,**<da>**,***<sca>***

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| **@CMGR - Read Message** | |
|---|---|
| | 129 - number in national format<br>145 - number in international format (contains the "+")<br>***<length>*** - text length<br>**<text>** - message text<br><br>Note: the command differs from the **+CMGR** because after the message **<pdu>** or **<text>** a **<CR><LF>** is put before the **OK** result code.<br><br>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.<br><br>Note: an error result code is sent on empty record **<index>**. |
| **AT@CMGR=?** | Test command has no effect; the answer is **OK** |
| Reference | GSM 07.05 |

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## 3.5.3.4 Message Sending And Writing

### *3.5.3.4.1 +CMGS - Send Message*

| **+CMGS - Send Message** | |
|---|---|
| *(PDU Mode)*<br>**AT+CMGS=**<br>**<length>** | **(PDU Mode)**<br>Execution command sends to the network a message.<br><br>Parameter:<br>**<length>** - length of the PDU to be sent in bytes (excluding the SMSC address octets).<br>7..164<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>and waits for the specified number of bytes.<br><br>Note: the **DCD** signal shall be in **ON** state while PDU is given.<br><br>Note: the echoing of given characters back from the TA is controlled by echo command **E**<br><br>Note: the **PDU** shall be hexadecimal format (each octet of the **PDU** is given as two IRA character long hexadecimal number) and given in one line.<br><br>Note: when the length octet of the SMSC address (given in the **PDU**) equals zero, the SMSC address set with command **+CSCA** is used; in this case the SMSC Type-of-Address octet shall not be present in the **PDU**.<br><br>To send the message issue **Ctrl-Z** char (0x1A hex).<br>To exit without sending the message issue **ESC** char (0x1B hex).<br><br>If message is successfully sent to the network, then the result is sent in the format:<br><br>**+CMGS: <mr>**<br>where<br>**<mr>** - message reference number.<br><br>Note: if message sending fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued. |

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| **+CMGS - Send Message** | |
|---|---|
| *(Text Mode)*<br>**AT+CMGS=<da> [,<toda>]** | **(Text Mode)**<br>Execution command sends to the network a message.<br><br>Parameters:<br>**<da>** - destination address, string type.<br>**<toda>** - type of destination address<br>129 - number in national format<br>145 - number in international format (contains the "+")<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>After this prompt text can be entered; the entered text should be formatted as follows:<br><br>- if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used.<br>- if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**)<br><br>Note: the **DCD** signal shall be in **ON** state while text is entered.<br><br>Note: the echoing of entered characters back from the TA is controlled by echo command **E**<br><br>To send the message issue **Ctrl-Z** char (0x1A hex).<br>To exit without sending the message issue **ESC** char (0x1B hex).<br><br>If message is successfully sent to the network, then the result is sent in the format:<br><br>**+CMGS: <mr>**<br>where<br>**<mr>** - message reference number.<br><br>Note: if message sending fails for some reason, an error code is reported. |

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| +CMGS - Send Message | |
|---|---|
| | Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.<br><br>Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if GSM 03.38 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used |
| Note | To avoid malfunctions is suggested to wait for the **+CMGS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands. |
| Reference | GSM 07.05 |

### *3.5.3.4.2 +CMSS - Send Message From Storage*

| +CMSS - Send Message From Storage | |
|---|---|
| **AT+CMSS= <index>[,<da> [,<toda>]]** | Execution command sends to the network a message which is already stored in the **<memw>** storage (see **+CPMS**) at the location **<index>**.<br><br>Parameters:<br>**<index>** - location value in the message storage **<memw>** of the message to send<br>**<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**); if it is given it shall be used instead of the one stored with the message.<br>**<toda>** - type of destination address<br>129 - number in national format<br>145 - number in international format (contains the "+")<br><br>If message is successfully sent to the network then the result is sent in the format:<br><br>**+CMSS: <mr>**<br>where:<br>**<mr>** - message reference number.<br><br>If message sending fails for some reason, an error code is reported:<br><br>**+CMS ERROR:<err>**<br><br>Note: to store a message in the **<memw>** storage see command **+CMGW**.<br><br>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued. |
| Note | To avoid malfunctions is suggested to wait for the **+CMSS: <mr>** or **+CMS** |

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| **+CMSS - Send Message From Storage** | |
|---|---|
| | **ERROR: <err>** response before issuing further commands. |
| Reference | GSM 07.05 |

### *3.5.3.4.3 +CMGW - Write Message To Memory*

| **+CMGW - Write Message To Memory** | |
|---|---|
| *(PDU Mode)*<br>**AT+CMGW=**<br>**<length>**<br>**[,<stat>]** | **(PDU Mode)**<br>Execution command writes in the **<memw>** memory storage a new message.<br><br>Parameter:<br>**<length>** - length in bytes of the PDU to be written.<br>7..164<br>**<stat>** - message status.<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent (default)<br>3 - stored message already sent<br><br>The device responds to the command with the prompt '>' and waits for the specified number of bytes.<br><br>To write the message issue **Ctrl-Z** char (0x1A hex).<br>To exit without writing the message issue **ESC** char (0x1B hex).<br><br>If message is successfully written in the memory, then the result is sent in the format:<br><br>**+CMGW: <index>**<br>where:<br>**<index>** - message location index in the memory **<memw>**.<br><br>If message storing fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. |
| *(Text Mode)*<br>**AT+CMGW[=<da>[,**<br>**<toda>**<br>**[,<stat>]]]** | **(Text Mode)**<br>Execution command writes in the **<memw>** memory storage a new message.<br><br>Parameters:<br>**<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**).<br>**<toda>** - type of destination address.<br>129 - number in national format |

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| +CMGW - Write Message To Memory | |
|---|---|
| | 145 - number in international format (contains the "+")<br>**<stat>** - message status.<br>"REC UNREAD" - new received message unread<br>"REC READ" - received message read<br>"STO UNSENT" - message stored not yet sent (default)<br>"STO SENT" - message stored already sent<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>After this prompt text can be entered; the entered text should be formatted as follows:<br><br>- if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used.<br>- if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**)<br><br>Note: the **DCD** signal shall be in ON state while text is entered.<br><br>Note: the echoing of entered characters back from the TA is controlled by echo command **E**<br><br>To write the message issue **Ctrl-Z** char (0x1A hex).<br>To exit without writing the message issue **ESC** char (0x1B hex).<br><br>If message is successfully written in the memory, then the result is sent in the format:<br><br>**+CMGW: <index>**<br>where:<br>**<index>** - message location index in the memory **<memw>**.<br><br>If message storing fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. |

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| **+CMGW - Write Message To Memory** | |
|---|---|
| | Note: it is possible to save a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if GSM 03.38 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used |
| Reference | GSM 07.05 |
| Note | To avoid malfunctions is suggested to wait for the **+CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands. |

### *3.5.3.4.4 +CMGD - Delete Message*

| **+CMGD - Delete Message** | |
|---|---|
| **AT+CMGD= <index> [,<delflag>]** | Execution command deletes from memory **<memr>** the message(s).<br><br>Parameter:<br>**<index>** - message index in the selected storage **<memr>**<br>**<delflag>** - an integer indicating multiple message deletion request.<br>0 (or omitted) - delete message specified in **<index>**<br>1 - delete all read messages from **<memr>** storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched<br>2 - delete all read messages from **<memr>** storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched<br>3 - delete all read messages from **<memr>** storage, sent and unsent mobile originated messages, leaving unread messages untouched<br>4 - delete all messages from **<memr>** storage.<br><br>Note: if **<delflag>** is present and not set to 0 then **<index>** is ignored and ME shall follow the rules for **<delflag>** shown above.<br><br>Note: if the location to be deleted is empty, an error message is reported. |
| **AT+CMGD=?** | Test command shows the valid memory locations and optionally the supported values of **<delflag>**.<br><br>**+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)]** |
| Example | `AT+CMGD=?`<br>`+CMGD: (1,2,3,6,7,17,18,19,20,37,38,39,47),(0-4)`<br><br>`OK` |
| Reference | GSM 07.05 |

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# 3.5.4 FAX Class 1 AT Commands

## 3.5.4.1 General Configuration

NOTE: All the test command results are without command echo

### *3.5.4.1.1 +FMI - Manufacturer ID*

| **+FMI - Manufacturer ID** | |
|---|---|
| **AT+FMI?** | Read command reports the manufacturer ID. The output depends on the choice made through **#SELINT** command. |
| Example | `AT+FMI?`<br>`Telit_Mobile_Terminals`<br>`OK` |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.5.4.1.2 +FMM - Model ID*

| **+FMM - Model ID** | |
|---|---|
| **AT+FMM?** | Read command reports the model ID |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.5.4.1.3 +FMR - Revision ID*

| **+FMR - Revision ID** | |
|---|---|
| **AT+FMR?** | Read command reports the software revision ID |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.5.4.2Transmission/Reception Control

### *3.5.4.2.1 +FTS - Stop Transmission And Pause*

| **+FTS - Stop Transmission And Pause** | |
|---|---|
| **AT+FTS=<time>** | Execution command causes the modem to terminate a transmission and wait for **<time>** 10ms intervals before responding with **OK** result.<br><br>Parameter:<br>**<time>** - duration of the pause, expressed in 10ms intervals.<br>0..255 |
| **AT+FTS=?** | Test command returns all supported values of the parameter **<time>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.5.4.2.2 +FRS - Wait For Receive Silence*

| **+FRS - Wait For Receive Silence** | |
|---|---|
| **AT+FRS=<time>** | Execution command causes the modem to listen and report **OK** when silence has been detected for the specified period of time. This command will terminate when the required silence period is detected or when the **DTE** sends another character other than **XON** or **XOFF**.<br><br>Parameter:<br>**<time>** - amount of time, expressed in 10ms intervals.<br>..0..255 |
| **AT+FRS=?** | Test command returns all supported values of the parameter **<time>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.5.4.2.3 +FTM - Transmit Data Modulation*

| **+FTM - Transmit Data Modulation** | |
|---|---|
| **AT+FTM=<mod>** | Execution command causes the module to transmit facsimile data using the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>24 - V27ter/2400 bps<br>48 - V27ter/4800 bps<br>72 - V29/7200 bps<br>96 - V29/9600 bps |
| **AT+FTM=?** | Test command returns all supported values of the parameter **<mod>**.<br><br>Note: the output is not bracketed |

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| **+FTM - Transmit Data Modulation** | |
|---|---|
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### 3.5.4.2.4 +FRM - Receive Data Modulation

| **+FRM - Receive Data Modulation** | |
|---|---|
| **AT+FRM=<mod>** | Execution command causes the module to receive facsimile data using the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>24 - V27ter/2400 bps<br>48 - V27ter/4800 bps<br>72 - V29/7200 bps<br>96 - V29/9600 bps |
| **AT+FRM=?** | Test command returns all supported values of the parameter **<mod>**.<br><br>Note: the output is not bracketed |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### 3.5.4.2.5 +FTH - Transmit Data With HDLC Framing

| **+FTH - Transmit Data With HDLC Framing** | |
|---|---|
| **AT+FTH=<mod>** | Execution command causes the module to transmit facsimile data using HDLC protocol and the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>3 - V21/300 bps |
| **AT+FTH=?** | Test command returns all supported values of the parameter **<mod>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### 3.5.4.2.6 +FRH - Receive Data With HDLC Framing

| **+FRH - Receive Data Data With HDLC Framing** | |
|---|---|
| **AT+FRH=<mod>** | Execution command causes the module to receive facsimile data using HDLC protocol and the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>3 - V21/300 bps |
| **AT+FRH=?** | Test command returns all supported values of the parameter **<mod>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.5.4.3Serial Port Control

### *3.5.4.3.1 +FLO - Select Flow Control Specified By Type*

| **+FLO - Select Flow Control Specified By Type** | |
|---|---|
| **AT+FLO=<type>** | Set command selects the flow control behaviour of the serial port in both directions: from **DTE** to **DTA** and from **DTA** to **DTE**.<br>Parameter:<br>**<type>** - flow control option for the data on the serial port<br>0 - flow control None<br>1 - flow control Software (**XON-XOFF**)<br>2 - flow control Hardware (**CTS-RTS**) – (factory default)<br><br>Note: This command is a shortcut of the **+IFC** command.<br>Note: **+FLO's** settings are functionally a subset of **&K's** ones. |
| **AT+FLO?** | Read command returns the current value of parameter **<type>** |
| **AT+FLO=?** | Test command returns all supported values of the parameter **<type>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.5.4.3.2 +FPR - Select Serial Port Rate*

| **+FPR - Select Serial Port Rate** | |
|---|---|
| **AT+FPR=<rate>** | Set command selects the the serial port speed in both directions, from **DTE** to **DTA** and from **DTA** to **DTE**. When autobauding is selected, then the speed is detected automatically.<br><br>Parameter:<br>**<rate>** - serial port speed selection<br>0 - autobauding |
| **AT+FPR?** | Read command returns the current value of parameter **<rate>** |
| **AT+FPR=?** | Test command returns all supported values of the parameters **<rate>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.5.4.3.3 +FDD - Double Escape Character Replacement Control*

| **+FDD - Double Escape Character Replacement Control** | |
|---|---|
| **AT+FDD=<mode>** | Set command concerns the use of the **<DLE><SUB>** pair to encode consecutive escape characters (**<10h><10h>**) in user data.<br>Parameter<br>**<mode>**<br>0 - currently the only available value. The **DCE** decode of **<DLE><SUB>** is either **<DLE><DLE>** or discard. The **DCE** encode of **<10h><10h>** is **<DLE><DLE><DLE><DLE>** |
| **AT+FDD?** | Read command returns the current value of parameter **<mode>** |
| **AT+FDD=?** | Test command returns all supported values of parameter **<mode>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.5.5 Custom AT Commands

### 3.5.5.1 General Configuration AT Commands

#### *3.5.5.1.1 #CGMI - Manufacturer Identification*

| **#CGMI - Manufacturer Identification** | |
|---|---|
| **AT#CGMI** | Execution command returns the device manufacturer identification code with command echo. The output depends on the choice made through **#SELINT** command. |
| **AT#CGMI?** | Read command has the same effect as the Execution command |

#### *3.5.5.1.2 #CGMM - Model Identification*

| **#CGMM - Model Identification** | |
|---|---|
| **AT#CGMM** | Execution command returns the device model identification code with command echo. |
| **AT#CGMM?** | Read command has the same effect as the Execution command |

#### *3.5.5.1.3 #CGMR - Revision Identification*

| **#CGMR - Revision Identification** | |
|---|---|
| **AT#CGMR** | Execution command returns device software revision number with command echo. |
| **AT#CGMR?** | Read command has the same effect as the Execution command |

#### *3.5.5.1.4 #CGSN - Product Serial Number Identification*

| **#CGSN - Product Serial Number Identification** | |
|---|---|
| **AT#CGSN** | Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo. |
| **AT#CGSN?** | Read command has the same effect as the Execution command |

#### *3.5.5.1.5 #CIMI - International Mobile Subscriber Identity (IMSI)*

| **#CIMI - International Mobile Subscriber Identity (IMSI)** | |
|---|---|
| **AT#CIMI** | Execution command returns the international mobile subscriber identity, identified as the IMSI number, with command echo. |
| **AT#CIMI?** | Read command has the same effect as the Execution command |

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### 3.5.5.1.6 #CAP - Change Audio Path

| #CAP - Change Audio Path | |
|---|---|
| **AT#CAP[=[<n>]]** | Set command switches the active audio path depending on parameter **<n>**<br><br>Parameter:<br>**<n>** - audio path<br>0 - audio path follows the Axe input (factory default):<br>if Axe is low, handsfree is enabled;<br>if Axe is high, internal path is enabled<br>1 - enables handsfree external mic/ear audio path<br>2 - enables internal mic/ear audio path<br><br>Note: The audio path are mutually exclusive, enabling one disables the other.<br><br>Note: when changing the audio path, the volume level is set at the previously stored value for that audio path (see **+CLVL**).<br><br>Note: issuing **AT#CAP<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAP=<CR>** is the same as issuing the command **AT#CAP=0<CR>**. |
| **AT#CAP?** | Read command reports the active audio path in the format:<br><br>**#CAP: <n>**. |
| **AT#CAP=?** | Test command reports the supported values for the parameter **<n>**. |

### 3.5.5.1.7 #SRS - Select Ringer Sound

| #SRS - Select Ringer Sound | |
|---|---|
| **AT#SRS[=<n>,<tout>]** | Set command sets the ringer sound.<br><br>Parameters:<br>**<n>** - ringing tone<br>0 - current ringing tone<br>1..*max* - ringing tone number, where *max* can be read by issuing the Test command **AT#SRS=?**.<br><br>**<tout>** - ringing tone playing time-out in seconds.<br>0 - ringer is stopped (if present) and current ringer sound is set.<br>1..60 - ringer sound playing for **<tout>** seconds and, if **<n> > 0,** ringer sound **<n>** is set as default ringer sound.<br><br>Note: when the command is issued with **<n> > 0** and **<tout> > 0**, the **<n>** |

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| #SRS - Select Ringer Sound | |
|---|---|
| | ringing tone is played for **<tout>** seconds and stored as default ringing tone.<br><br>Note: if command is issued with **<n> > 0** and **<tout> = 0**, the playing of the ringing is stopped (if present) and **<n>** ringing tone is set as current.<br><br>Note: if command is issued with **<n> = 0** and **<tout> > 0** then the current ringing tone is played.<br><br>Note: if both **<n>** and **<tout>** are **0** then the default ringing tone is set as current and ringing is stopped.<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command |
| **AT#SRS?** | Read command reports current selected ringing and its status in the form:<br><br>**#SRS: <n>,<status>**<br><br>where:<br>**<n>** - ringing tone number<br>1..*max*<br><br>**<status>** - ringing status<br>0 - selected but not playing<br>1 - currently playing |
| **AT#SRS=?** | Test command reports the supported values for the parameters **<n>** and **<tout>** |

### *3.5.5.1.8 #SRP -Select Ringer Path*

| #SRP - Select Ringer Path | |
|---|---|
| **AT#SRP[=[<n>]]** | Set command selects the ringer path towards whom sending ringer sounds and all signalling tones.<br><br>Parameter:<br>**<n>** - ringer path number<br>0 - sound output towards current selected audio path (see command **#CAP**)<br>1 - sound output towards handsfree<br>2 - sound output towards handset<br>3 - sound output towards Buzzer Output pin GPIO7<br><br>Note: In order to use the Buzzer Output an external circuitry must be added to drive it properly from the GPIO7 pin, furthermore the GPIO7 pin direction must be set to Buzzer output (Alternate function); see command **#GPIO**. |

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| #SRP - Select Ringer Path | |
|---|---|
| | Note: issuing **AT#SRP<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SRP=<CR>** is the same as issuing the command **AT#SRP=0<CR>**. |
| **AT#SRP?** | Read command reports the selected ringer path in the format:<br><br>**#SRP: <n>**. |
| **AT#SRP=?** | Test command reports the supported values for the parameter **<n>**. |
| Example | AT#SRP=?<br>#SRP: (0-3)<br><br>OK<br>AT#SRP=3<br>OK |

### 3.5.5.1.9 #STM - Signaling Tones Mode

| #STM - Signaling Tones Mode | |
|---|---|
| **AT#STM [=<mode>]** | Set command enables/disables the signalling tones output on the audio path selected with **#SRP** command<br><br>Parameter:<br>**<mode>** - signalling tones status<br>0 - signalling tones disabled<br>1 - signalling tones enabled<br><br>Note: **AT#STM=0** has the same effect as **AT@CALM=2**; **AT#STM=1** has the same effect either as **AT+CALM=0** or **AT@CALM=0**.<br><br>Note: If parameter is omitted then the behaviour of Set command is the same as Read command |
| **AT#STM?** | Read command reports whether the current signaling tones status is enabled or not, in the format:<br><br>**#STM: <mode>** |
| **AT#STM=?** | Test command reports supported range of values for parameter **<mode>**. |

### 3.5.5.1.10 #PCT - Display PIN Counter

| #PCT - Display PIN Counter | |
|---|---|
| **AT#PCT** | Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on **+CPIN** requested password in the format: |

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| | |
|---|---|
| | **#PCT: <n>**<br>where:<br>**<n>** - remaining attempts<br>0 - the SIM is blocked.<br>1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given.<br>1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given. |
| **AT#PCT?** | Read command has the same behaviour as Execution command. |

### *3.5.5.1.11 #SHDN - Software Shut Down*

| **#SHDN - Software Shutdown** | |
|---|---|
| **AT#SHDN** | Execution command causes device detach from the network and shut down. Before definitive shut down an **OK** response is returned.<br><br>Note: after the issuing of this command any previous activity is terminated and the device will not respond to any further command.<br><br>Note: to turn it on again Hardware pin ON/OFF must be tied low. |
| **AT#SHDN?** | Read command has the same behaviour as Execution command. |

### *3.5.5.1.12 #WAKE - Wake From Alarm Mode*

| **#WAKE - Wake From Alarm Mode** | |
|---|---|
| **AT#WAKE[= <opmode>]** | Execution command stops any eventually present alarm activity and, if the module is in **alarm mode**, it exits the **alarm mode** and enters the **normal operating mode**.<br><br>Parameter:<br>**<opmode>** - operating mode<br>0 - normal operating mode; the module exits the **alarm mode**, enters the **normal operating mode**, any alarm activity is stopped (e.g. alarm tone playing) and an **OK** result code is returned.<br><br>Note: if parameter is omitted, the command returns the **operating status** of the device in the format:<br><br>**#WAKE: <status>**<br>where:<br>**<status>**<br>0 - normal operating mode<br>1 - alarm mode or normal operating mode with some alarm activity.<br><br>Note: the **alarm mode** is indicated by status **ON** of hardware pin **CTS** and |

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| #WAKE - Wake From Alarm Mode | |
|---|---|
| | by status **ON** of pin **DSR**, the **power saving** status is indicated by a **CTS - OFF** and **DSR - OFF** status; the **normal operating status** is indicated by **DSR - ON**.<br><br>Note: during the **alarm mode** the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SM, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state. |
| **AT#WAKE?** | Read command has the same effect as Execution command when parameter is omitted. |

### *3.5.5.1.13 #QTEMP -Query Temperature Overflow*

| #QTEMP - Query Temperature Overflow | |
|---|---|
| **AT#QTEMP [=<mode>]** | Set command has currently no effect. The interpretation of parameter **<mode>** is currently not implemented: any value assigned to it will simply have no effect.<br><br>Note: if parameter **<mode>** is omitted the behaviour of Set command is the same as Read command |
| **AT#QTEMP?** | Read command queries the device internal temperature sensor for over temperature and reports the result in the format:<br><br>**#QTEMP: <temp>**<br>where<br>**<temp>** - over temperature indicator<br>0 - the device temperature is in the working range<br>1 - the device temperature is out of the working range |
| **#QTEMP=?** | Test command reports supported range of values for parameter **<mode>**. |
| Note | The device should not be operated out of its working temperature range; if temperature is out of range proper functioning of the device is not ensured. |

### *3.5.5.1.14 #SGPO - Set General Purpose Output*

| #SGPO - Set General Purpose Output | |
|---|---|
| **AT#SGPO[= [<stat>]]** | Set command sets the value of the general purpose output pin **GPIO2**.<br><br>Parameter:<br>**<stat>**<br>0 - output pin cleared to 0 (**LOW**)<br>1 - output pin set to 1 (**HIGH**) |

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| #SGPO - Set General Purpose Output | |
|---|---|
| | Note: the **GPIO2** is an OPEN COLLECTOR output, the command sets the transistor base level, hence the open collector output is negated:<br>**AT#SGPO=0** sets the open collector output **HIGH**<br>**AT#SGPO=1** sets the open collector output **LOW**<br>A pull up resistor is required on pin **GPIO2**.<br><br>Note: issuing **AT#SGPO<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SGPO=<CR>** is the same as issuing the command **AT#SGPO=0<CR>**. |
| **AT#SGPO?** | Read command reports the **#SGPO** command setting, hence the opposite status of the open collector pin in the format:<br><br>**#SGPO: <stat>**. |
| **AT#SGPO=?** | Test command reports the supported range of values of parameter **<stat>**. |
| **Note** | This command is meaningful only for GM862 family |

### *3.5.5.1.15 #GGPI - General Purpose Input*

| #GGPI - General Purpose Input | |
|---|---|
| **AT#GGPI[=[<dir>]]** | Set command sets the general purpose input pin **GPIO1**.<br><br>Parameter:<br>**<dir>** - auxiliary input GPIO1 setting<br>0 - the Read command **AT#GGPI?** reports the logic input level read from GPIO1 pin.<br><br>Note: The device has an insulated input pin ( the input goes the base of an internal decoupling transistor) which can be used as a logic general purpose input. This command sets the read behaviour for this pin, since only direct read report is supported, the issue of this command is not needed.<br>In future uses the behavior of the read input may be more complex.<br><br>Note: If parameter is omitted then the behaviour of Set command is the same as Read command |
| **AT#GGPI?** | Read command reports the read value for the input pin GPIO1, in the format:<br><br>**#GGPI: <dir>,<stat>**<br><br>where<br>**<dir> -** direction setting (see **#GGPI=<dir>** )<br>**<stat>** - logic value read from pin GPIO1<br><br>Note: Since the reading is done after the insulating transistor, the reported |

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| #GGPI - General Purpose Input | |
|---|---|
| | value is the opposite of the logic status of the GPIO1 input pin. |
| **AT#GGPI=?** | Test command reports supported range of values for parameter **<dir>**. |
| **Note** | This command is meaningful only for GM862 family |

### *3.5.5.1.16 #GPIO - General Purpose Input/Output Pin Control*

| #GPIO - General Purpose Input/Output Pin Control | |
|---|---|
| **AT#GPIO[=<pin>, <mode>[,<dir>]]** | Execution command sets the value of the general purpose output pin **GPIO<pin>** according to **<dir>** and **<mode>** parameter.<br>Not all configuration for the three parameters are valid.<br><br>Parameters:<br>**<pin>** - GPIO pin number; supported range is from 1 to a value that depends on the hardware, but **GPIO1** is input only and **GPIO2** is output only.<br>**<mode>** - its meaning depends on **<dir>** setting:<br>0 - no meaning if **<dir>=0** - INPUT<br>- output pin cleared to 0 (LOW) if **<dir>=1** - OUTPUT<br>- no meaning if **<dir>=2** - ALTERNATE FUNCTION<br>1 - no meaning if **<dir>=0** - INPUT<br>- output pin set to 1 (HIGH) if **<dir>=1** - OUTPUT<br>- no meaning if **<dir>=2** - ALTERNATE FUNCTION<br>2 - Reports the read value from the input pin if **<dir>=0** - INPUT<br>- Reports the read value from the input pin if **<dir>=1** - OUTPUT<br>- Reports a no meaning value if **<dir>=2** - ALTERNATE FUNCTION<br>**<dir>** - GPIO pin direction<br>0 - pin direction is INPUT<br>1 - pin direction is OUTPUT<br>2 - pin direction is ALTERNATE FUNCTION (see Note).<br><br>Note: when **<mode>=2** (and **<dir>** is omitted) the command reports the direction and value of pin **GPIO<pin>** in the format:<br><br>**#GPIO: <dir>,<stat>**<br>where<br>**<dir>** - current direction setting for the **GPIO<pin>**<br>**<stat>**<br>• logic value read from pin **GPIO<pin>** in the case the pin **<dir>** is set to input;<br>• logic value present in output of the pin **GPIO<pin>** in the case the pin **<dir>** is currently set to output;<br>• no meaning value for the pin **GPIO<pin>** in the case the pin **<dir>** is set to alternate function.<br><br>Note: (valid only for **GPIO1**) since the reading is done after the insulating |

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| #GPIO - General Purpose Input/Output Pin Control | |
|---|---|
| | transistor, the reported value is the opposite of the logic status of the **GPIO1** input pin<br><br>Note: if all parameters are omitted the command reports the read direction and value of all **GPIO** pin, int the format:<br><br>**#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[…]]**<br><br>Note: "ALTERNATE FUNCTION" value is valid only for following pins:<br>• **GPIO5** - alternate function is “RF Transmission Monitor”<br>• **GPIO6** - alternate function is "Alarm Output" (see **+CALA**)<br>• **GPIO7** - alternate function is "Buzzer Output" (see **#SRP**)<br><br>Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.<br><br>Note: The **GPIO2** is an OPEN COLLECTOR output, the command sets the transistor base level, hence the open collector output is negated |
| **AT#GPIO?** | Read command has the same effect as Execution command when all parameters are omitted. |
| **AT#GPIO=?** | Test command reports the supported range of values of the command parameters **<pin>**, **<mode>** and **<dir>**. |
| Example | `AT#GPIO=3,0,1`<br>`OK`<br>`AT#GPIO=3,2`<br>`#GPIO: 1,0`<br>`OK`<br>`AT#GPIO=4,1,1`<br>`OK`<br>`AT#GPIO=5,0,0`<br>`OK`<br>`AT#GPIO=6,2`<br>`#GPIO: 0,1`<br>`OK` |

### *3.5.5.1.17 #I2S1 - Set PCM Output For Channel 1*

| #I2S1 - Set PCM Output For Channel 1 | |
|---|---|
| **AT#I2S1[= <mode> [,<clockmode>, <clockrate>]]** | Set command sets the type of operation.<br><br>Parameters:<br>**<mode>**<br>0 - PCM1 is not enabled; audio is forwarded to the analog line; PCM pins can be used as UART1 and GPIO. |

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| #I2S1 - Set PCM Output For Channel 1 | |
|---|---|
| | 1 - PCM1 is enabled; audio is forwarded to the PCM block; PCM pin cannot be used for UART1; any service on UART1 is suspended<br>2 - PCM1 is enabled; audio is forwarded both to the PCM block and to the analog line; PCM pins cannot be used for UART1; any service on UART1 is suspended<br>**<clockmode>**<br>0 - PCM acts as slave<br>1 - PCM acts as master<br>**<clockrate>**<br>64 - 64 kHz.<br>128 - 128 kHz.<br>256 - 256 kHz.<br>512 - 512 kHz<br>1024 - 1024 kHz<br>2048 - 2048 kHz<br><br>Note: issuing **AT#I2S1<CR>** is the same as issuing the Read command. |
| **AT#I2S1?** | Read command reports the last setting, in the format:<br><br>**#I2S1: <mode>,<clockmode>,<clockrate>** |
| **AT#I2S1=?** | Reports the range of supported values for parameters **<mode>, <clockmode>** and **<clockrate>** |

### *3.5.5.1.18 #E2SMSRI - SMS Ring Indicator*

| #E2SMSRI - SMS Ring Indicator | |
|---|---|
| **AT#E2SMSRI[=[<n>]]** | Set command enables/disables the Ring Indicator pin response to an incoming SMS message. If enabled, a negative going pulse is generated on receipt of an incoming SMS message. The duration of this pulse is determined by the value of **<n>**.<br><br>Parameter:<br>**<n>** - RI enabling<br>0 - disables RI pin response for incoming SMS messages (factory default)<br>50..1150 - enables RI pin response for incoming SMS messages. The value of **<n>** is the duration in ms of the pulse generated on receipt of an incoming SM.<br><br>Note: if **+CNMI=3,1** command is issued and the module is in a GPRS connection, a 100 ms break signal is sent and a 1 sec. pulse is generated on RI pin, no matter if the RI pin response is either enabled or not.<br><br>Note: issuing **AT#E2SMSRI<CR>** is the same as issuing the Read command. |

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| #E2SMSRI - SMS Ring Indicator | |
|---|---|
| | Note: issuing **AT#E2SMSRI=<CR>** returns the **OK** result code. |
| **AT#E2SMSRI?** | Read command reports the duration in ms of the pulse generated on receipt of an incoming SM, in the format:<br><br>**#E2SMSRI: <n>**<br><br>Note: as seen before, the value **<n>=0** means that the RI pin response to an incoming SM is disabled. |
| **AT#E2SMSRI=?** | Reports the range of supported values for parameter **<n>** |

### *3.5.5.1.19 #ADC - Analog/Digital Converter Input*

| #ADC - Analog/Digital Converter Input | |
|---|---|
| **AT#ADC[= <adc>,<mode> [,<dir>]]** | Execution command reads pin**<adc>** voltage, converted by ADC, and outputs it in the format:<br><br>**#ADC: <value>**<br>where:<br>**<value>** - pin**<adc>** voltage, expressed in mV<br><br>Parameters:<br>**<adc>** - index of pin<br>1 - available for GM862-QUAD, GM862-QUAD-PY, GM862-GPS, GE863-QUAD, GE863-PY,GE863-GPS, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br>2 - available only for GE863-QUAD, GE863-PY, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br>3 - available only for GE863-QUAD, GE863-PY, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br><br>**<mode>** - required action<br>2 - query ADC value<br>**<dir>** - direction; its interpretation is currently not implemented<br>0 - no effect.<br><br>If all parameters are omitted the command reports all pins voltage, converted by ADC, in the format:<br><br>**#ADC: <value>[<CR><LF>#ADC: <value>[…]]**<br><br>Note: The command returns the last valid measure. |
| **AT#ADC?** | Read command has the same effect as Execution command when all parameters are omitted. |
| **AT#ADC=?** | Test command reports the supported range of values of the command |

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| | |
|---|---|
| | parameters **<adc>**, **<mode>** and **<dir>**. |

### *3.5.5.1.20 #DAC - Digital/Analog Converter Control*

| **#DAC - Digital/Analog Converter Control** | |
|---|---|
| **AT#DAC[= <enable> [,<value>]]** | Set command enables/disables the DAC_OUT pin.<br><br>Parameters:<br>**<enable>** - enables/disables DAC output.<br>0 - disables pin; it is in high impedance status (factory default)<br>1 - enables pin; the corresponding output is driven<br>**<value>** - scale factor of the integrated output voltage; it must be present if **<enable>=1**<br>0..1023 - 10 bit precision<br><br>Note: **integrated output voltage = MAX_VOLTAGE * value / 1023**<br><br>Note: if all parameters are omitted then the behaviour of Set command is the same as the Read command. |
| **AT#DAC?** | Read command reports whether the DAC_OUT pin is currently enabled or not, along with the integrated output voltage scale factor, in the format:<br><br>**#DAC: <enable>,<value>** |
| **AT#DAC=?** | Test command reports the range for the parameters **<enable>** and **<value>**. |
| Example | *Enable the DAC out and set its integrated output to the 50% of the max value:*<br><br>AT#DAC=1,511<br>OK<br><br>*Disable the DAC out:*<br>AT#DAC=0<br>OK |
| Note | With this command the DAC frequency is selected internally.<br>D/A converter must not be used during POWERSAVING.<br><br>DAC_OUT line must be integrated (for example with a low band pass filter) in order to obtain an analog voltage.<br>For a more in depth description of the integration filter refer to the hardware user guide. |

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### 3.5.5.1.21 #VAUX - Auxiliary Voltage Pin Output

| #VAUX- Auxiliary Voltage Pin Output | |
|---|---|
| **AT#VAUX[=<n>, <stat>]** | Set command enables/disables Auxiliary Voltage pins output.<br><br>Parameters:<br>**<n>** - VAUX pin index<br>1 - there is currently just one VAUX pin<br>**<stat>**<br>0 - output off<br>1 - output on<br>2 - query current value of VAUX pin<br><br>Note: when **<stat>=2** and command is successful, it returns:<br><br>**#VAUX: <value>**<br><br>where:<br>**<value>** - power output status<br>0 - output off<br>1 - output on<br><br>Note: If all parameters are omitted the command has the same behaviour as Read command.<br><br>Note: for the GPS product (GE863-GPS): if the Auxiliary Voltage pins output is disabled while GPS or camera is powered on they'll both also be turned off. |
| **AT#VAUX?** | Read command reports the current status of all auxiliary voltage output pins, in the format:<br><br>**#VAUX: <value>[<CR><LF>#VAUX: <value>[...]]** |
| **AT#VAUX=?** | Test command reports the supported range of values for parameters **<n>**, **<stat>**. |

### 3.5.5.1.22 #AUTOATT – GPRS Auto-Attach Property

| #AUTOATT - Auto-Attach Property | |
|---|---|
| **AT#AUTOATT [=<auto>]** | Set command enables/disables the TE GPRS auto-attach property.<br><br>Parameter:<br>**<auto>**<br>0 - disables GPRS auto-attach property<br>1 - enables GPRS auto-attach property (factory default): after the command **#AUTOATT=1** has been issued (and at every following start-up) the terminal will automatically try to attach to the GPRS service. |

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| #AUTOATT - Auto-Attach Property | |
|---|---|
| | Note: If parameter is omitted then the behaviour of Set command is the same as Read command. |
| **AT#AUTOATT?** | Read command reports whether the auto-attach property is currently enabled or not, in the format:<br><br>**#AUTOATT: <auto>** |
| **AT#AUTOATT=?** | Test command reports available values for parameter **<auto>**. |

### *3.5.5.1.23 #MSCLASS - Multislot Class Control*

| #MSCLASS - Multislot Class Control | |
|---|---|
| **AT#MSCLASS[= <class>, <autoattach>]** | Set command sets the multislot class<br><br>Parameters:<br>**<class>** - multislot class; take care: class 7 is not supported.<br>1..6 - GPRS class<br>8..10 - GPRS class<br><br>**<autotattach>**<br>0 - the new multislot class is enabled only at the next detach/attach or after a reboot.<br>1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure.<br><br>Note: the **<class>** range for former GM862 family products is 1..8, excluding class 7.<br><br>Note: if all parameters are omitted the behaviour of set command is the same as read command. |
| **AT#MSCLASS?** | Read command reports the current value of the multislot class in the format:<br><br>**#MSCLASS: <class>** |
| **AT#MSCLASS=?** | Test command reports the range of available values for parameter **<class>**. |

### *3.5.5.1.24 #MONI - Cell Monitor*

| #MONI - Cell Monitor | |
|---|---|
| **AT#MONI[= [<number>]]** | Set command sets one cell out of seven, in a neighbour of the serving cell including it, from which extract GSM-related informations. |

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| #MONI - Cell Monitor | |
|---|---|
| | Parameter:<br>**<number>**<br>0..6 - it is the ordinal number of a cell, in a neighbour of the serving cell (default 0, serving cell).<br>7 - it is a special request to obtain GSM-related informations from the whole set of seven cells in the neighbour of the serving cell.<br><br>Note: issuing **AT#MONI<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#MONI=<CR>** is the same as issuing the command **AT#MONI=0<CR>**. |
| **AT#MONI?** | Read command reports the following GSM-related informations for selected cell and dedicated channel (if exists).<br><br>a) When extracting data for the serving cell and the network name is known the format is:<br>**#MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>**<br><br>b) When the network name is unknown, the format is:<br>**#MONI: Cc:<cc> Nc:<nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>**<br><br>c) When extracting data for an adjacent cell, the format is:<br>**#MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn> PWR:<dBm> dBm**<br><br>where:<br>**<netname>** - name of network operator<br>**<cc>** - country code<br>**<nc>** - network operator code<br>**<n>** - progressive number of adjacent cell<br>**<bsic>** - base station identification code<br>**<qual>** - quality of reception<br>0..7<br>**<lac>** - localization area code<br>**<id>** - cell identifier<br>**<arfcn>** - assigned radio channel<br>**<dBm>** - received signal strength in dBm<br>**<timadv>** = timing advance<br><br>Note: TA: **<timadv>** is reported only for the serving cell.<br><br>When the last setting done is **AT#MONI=7**, then the Read command reports the above informations for each of the cells in the neighbour of the serving |

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| #MONI - Cell Monitor | |
|---|---|
| | cell, formatting them in a sequence of **<CR><LF>-terminated** strings. |
| **AT#MONI=?** | Test command reports the maximum number of cells, in the neighbour of the serving cell, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format:<br><br>**#MONI: (<MaxCellNo>,<CellSet>)**<br><br>where:<br>**<MaxCellNo>** - maximum number of cells, in the neighbour of the serving cell, from which we can extract GSM-related informations (for compatibility with previous versions of code this value is always **5**).<br>**<CellSet>** - the last setting done with command **#MONI**.<br><br>An enhanced version of the Test command has been defined:<br>**AT#MONI=??** |
| **AT#MONI=??** | Enhanced test command reports the maximum number of cells, in a neighbour of the serving cell and including it, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format:<br><br>**#MONI: (<MaxCellNo>,<CellSet>)**<br><br>where:<br>**<MaxCellNo>** - maximum number of cells, in a neighbour of the serving cell and including it, from which we can extract GSM-related informations. This value is always **7**.<br>**<CellSet>** - the last setting done with command **#MONI**. |
| Note | The refresh time of the measures is preset to 3 sec.<br>The timing advance value is meaningful only during calls or GPRS transfers active. |

### *3.5.5.1.25 #SERVINFO - Serving Cell Information*

| #SERVINFO - Serving Cell Information | |
|---|---|
| **AT#SERVINFO** | Execution command reports informations about serving cell, in the format:<br><br>**#SERVINFO: <B-ARFCN>,<dBM>,<NetNameAsc>,<NetCode>, ,<BSIC>,<LAC>,<TA>,<GPRS>[,[<PB-ARFCN>],[<NOM>], <RAC>,[PAT]]**<br><br>where:<br>**<B-ARFCN>** - BCCH ARFCN of the serving cell<br>**<dBM>** - received signal strength in dBm |

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| #SERVINFO - Serving Cell Information | |
|---|---|
| | **<NetNameAsc>** - operator name, quoted string type<br>**<NetCode>** - country code and operator code, hexadecimal representation<br>**<BSIC>** - Base Station Identification Code<br>**<LAC>** - Localization Area Code<br>**<TA>** - Time Advance: it's available only if a GSM or GPRS is running<br>**<GPRS>** - GPRS supported in the cell<br>0 - not supported<br>1 - supported<br><br>The following informations will be present only if GPRS is supported in the cell<br>**<PB-ARFCN>** - PBCCH ARFCN of the serving cell; it'll be printed only if PBCCH is supported by the cell, otherwise the label **"hopping"** will be printed<br>**<NOM>** - Network Operation Mode<br>.."I"<br>"II"<br>.."III"<br>**<RAC>** - Routing Area Color Code<br>**<PAT>** - Priority Access Threshold<br>..0<br>..3..6 |
| **AT#SERVINFO?** | Read command has the same effect as Execution command |

### *3.5.5.1.26 #COPSMODE - +COPS Mode*

| #COPSMODE - +COPS Mode | |
|---|---|
| **AT#COPSMODE [=<mode>]** | Set command sets the behaviour of **+COPS** command (*see* ***+COPS***).<br><br>Parameter:<br>**<mode>**<br>0 - **+COPS** behaviour like former GM862 family products (default)<br>1 - **+COPS** behaviour compliant with ETSI format<br><br>Note: The setting is saved in NVM (and available on following reboot).<br><br>Note: if parameter **<mode>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#COPSMODE?** | Read command returns the current behaviour of **+COPS** command, in the format:<br><br>**#COPSMODE: <mode>** |

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| #COPSMODE - +COPS Mode | |
|---|---|
| | where<br>**<mode>** - **+COPS** behaviour as seen before. |
| **AT#COPSMODE=?** | Test command returns the range of available values for parameter **<mode>**. |
| Note | It's suggested to reboot the module after every **#COPSMODE** setting. |

### *3.5.5.1.27 #QSS - Query SIM Status*

| #QSS - Query SIM Status | |
|---|---|
| **AT#QSS[=[<mode>]]** | Set command enables/disables the Query SIM Status unsolicited indication in the ME.<br><br>Parameter:<br>**<mode>** - type of notification<br>0 - disabled (factory default); it's possible only to query the current SIM status through Read command **AT#QSS?**<br>1 - enabled; the ME informs at every SIM status change through the following unsolicited indication:<br><br>**#QSS: <status>**<br><br>where:<br>**<status>** - current SIM status<br>0 - SIM NOT INSERTED<br>1 - SIM INSERTED<br><br>Note: issuing **AT#QSS<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#QSS=<CR>** is the same as issuing the command **AT#QSS=0<CR>**. |
| **AT#QSS?** | Read command reports whether the unsolicited indication **#QSS** is currently enabled or not, along with the SIM status, in the format:<br><br>**#QSS: <mode>,<status>**<br>(**<mode>** and **<status>** are described above) |
| **AT#QSS=?** | Test command returns the supported range of values for parameter **<mode>**. |

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### 3.5.5.1.28 #DIALMODE - ATD Dialling Mode

| #DIALMODE - ATD Dialling Mode | |
|---|---|
| **AT#DIALMODE[=<mode>]** | Set command sets voice call **ATD** modality.<br><br>Parameter:<br>**<mode>**<br>0 - **OK** result code is received as soon as it starts remotely ringing (factory default)<br>1 - **OK** result code is received only after the called party answers. Any character typed aborts the call and **NO CARRIER** result code is received.<br>2 - the following custom result codes are received, monitoring step by step the call status:<br>**DIALLING** (MO in progress)<br>**RINGING** (remote ring)<br>**CONNECTED** (remote call accepted)<br>**RELEASED** (after **ATH**)<br>**DISCONNECTED** (remote hang-up)<br><br>Note: **AT#DIALMODE=2** is available also for data calls.<br><br>Note: The setting is saved in NVM and available on following reboot.<br><br>Note: if parameter **<mode>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#DIALMODE?** | Read command returns current **ATD** dialling mode in the format:<br><br>**#DIALMODE: <mode>** |
| **AT#DIALMODE=?** | Test command returns the range of values for parameter **<mode>** |

### 3.5.5.1.29 #ACAL - Automatic Call

| #ACAL - Automatic Call | |
|---|---|
| **AT#ACAL[=[<mode>]]** | Set command enables/disables the automatic call function.<br><br>Parameter:<br>**<mode>**<br>0 - disables the automatic call function (factory default)<br>1 - enables the automatic call function. If enabled (and **&D2** has been issued), the transition **OFF/ON** of **DTR** causes an automatic call to the first number (position 0) stored in the internal phonebook.<br><br>Note: type of call depends on the last issue of command **+FCLASS**.<br><br>Note: issuing **AT#ACAL<CR>** is the same as issuing the Read command. |

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| #ACAL - Automatic Call | |
|---|---|
| | Note: issuing **AT#ACAL=<CR>** is the same as issuing the command **AT#ACAL=0<CR>**. |
| **AT#ACAL?** | Read command reports whether the automatic call function is currently enabled or not, in the format:<br><br>**#ACAL: <mode>** |
| **AT#ACAL=?** | Test command returns the supported range of values for parameter **<mode>**. |
| Note | See **&Z** to write and **&N** to read the number on module internal phonebook. |

### *3.5.5.1.30 #ECAM - Extended Call Monitoring*

| #ECAM - Extended Call Monitoring | |
|---|---|
| **AT#ECAM[=[<onoff>]]** | This command enables/disables the call monitoring function in the **ME**.<br><br>Parameter:<br>**<onoff>**<br>0 - disables call monitoring function (factory default)<br>1 - enables call monitoring function; the **ME** informs about call events, such as incoming call, connected, hang up etc. using the following unsolicited indication:<br><br>**#ECAM: <ccid>,<ccstatus>,<calltype>,,, [<number>,<type>]**<br><br>where<br>**<ccid>** - call ID<br>**<ccstatus>** - call status<br>0 - idle<br>1 - calling (MO)<br>2 - connecting (MO)<br>3 - active<br>4 - hold<br>5 - waiting (MT)<br>6 - alerting (MT)<br>7 - busy<br>**<calltype>** - call type<br>1 - voice<br>2 - data<br>**<number>** - called number (valid only for **<ccstatus>=1**)<br>**<type>** - type of **<number>**<br>129 - national number<br>145 - international number |

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| #ECAM - Extended Call Monitoring | |
|---|---|
| | Note: the unsolicited indication is sent along with usual codes (**OK**, **NO CARRIER**, **BUSY**...).<br><br>Note: issuing **AT#ECAM<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#ECAM=<CR>** returns the **OK** result code. |
| **AT#ECAM?** | Read command reports whether the extended call monitoring function is currently enabled or not, in the format:<br><br>**#ECAM: <onoff>** |
| **AT#ECAM=?** | Test command returns the list of supported values for **<onoff>** |

### *3.5.5.1.31 #SMOV - SMS Overflow*

| #SMOV - SMS Overflow | |
|---|---|
| **AT#SMOV[=[<mode>]]** | Set command enables/disables the SMS overflow signalling function.<br><br>Parameter:<br>**<mode>**<br>0 - disables SMS overflow signaling function(factory default)<br>1 - enables SMS overflow signalling function; when the maximum storage capacity has reached, the following network initiated notification is send:<br><br>**#SMOV: <memo>**<br><br>Note: issuing **AT#SMOV<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SMOV=<CR>** is the same as issuing the command **AT#SMOV=0<CR>**. |
| **AT#SMOV?** | Read command reports whether the SMS overflow signalling function is currently enabled or not, in the format:<br><br>**#SMOV: <mode>** |
| **AT#SMOV=?** | Test command returns the supported range of values of parameter **<mode>**. |

### *3.5.5.1.32 #CODEC - Audio Codec*

| #CODEC - Audio Codec | |
|---|---|
| **AT#CODEC[=<codec>]** | Set command sets the audio codec mode. |

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| | |
|---|---|
| | Parameter:<br>**<codec>**<br>0 - all the codec modes are enabled (factory default)<br>1..31 - value obtained as sum of the following values, each of them representing a specific codec mode:<br><br>1 - **FR**, full rate mode enabled<br>2 - **EFR**, enhanced full rate mode enabled<br>4 - **HR**, half rate mode enabled<br>8 - **AMR-FR**, AMR full rate mode enabled<br>16 - **AMR-HR**, AMR half rate mode enabled<br><br>Note: the setting 0 is equivalent to the setting 31.<br><br>Note: The codec setting is saved in the profile parameters.<br><br>Note: if optional parameter **<codec>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#CODEC?** | Read command returns current audio codec mode in the format:<br><br>**#CODEC: <codec>** |
| **AT#CODEC=?** | Test command returns the range of available values for parameter **<codec>** |
| Example | `AT#CODEC=14`<br>`OK`<br><br>*sets the codec modes HR (4), EFR (2) and AMR-FR (8)* |

### *3.5.5.1.33 #SHFEC - Handsfree Echo Canceller*

| **#SHFEC - Handsfree Echo Canceller** | |
|---|---|
| **AT#SHFEC[=[<mode>]]** | Set command enables/disables the echo canceller function on audio handsfree output.<br><br>Parameter:<br>**<mode>**<br>0 - disables echo canceller for handsfree mode (factory default)<br>1 - enables echo canceller for handsfree mode<br><br>Note: This setting returns to default after power off.<br><br>Note: issuing **AT#SHFEC<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SHFEC=<CR>** is the same as issuing the command **AT#SHFEC=0<CR>**. |
| **AT#SHFEC?** | Read command reports whether the echo canceller function on audio |

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| #SHFEC - Handsfree Echo Canceller | |
|---|---|
| | handsfree output is currently enabled or not, in the format:<br><br>**#SHFEC: <mode>** |
| **AT#SHFEC=?** | Test command returns the supported range of values of parameter **<mode>**. |

### *3.5.5.1.34 #HFMICG - Handsfree Microphone Gain*

| #HFMICG - Handsfree Microphone Gain | |
|---|---|
| **AT#HFMICG[=[<level>]]** | Set command sets the handsfree microphone input gain<br><br>Parameter:<br>**<level>**: handsfree microphone input gain<br>0..7 - handsfree microphone gain (+6dB/step)<br><br>Note: issuing **AT#HFMICG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#HFMICG=<CR>** returns the **OK** result code. |
| **AT#HFMICG?** | Read command returns the current handsfree microphone input gain, in the format:<br><br>**#HFMICG: <level>** |
| **AT#HFMICG=?** | Test command returns the supported range of values of parameter **<level>**. |

### *3.5.5.1.35 #HSMICG - Handset Microphone Gain*

| #HSMICG - Handset Microphone Gain | |
|---|---|
| **AT#HSMICG[=[<level>]]** | Set command sets the handset microphone input gain<br><br>Parameter:<br>**<level>**: handset microphone input gain<br>0..7 - handset microphone gain (+6dB/step)<br><br>Note: issuing **AT#HSMICG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#HSMICG=<CR>** returns the **OK** result code. |
| **AT#HSMICG?** | Read command returns the current handset microphone input gain, in the format: |

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| | |
|---|---|
| | **#HSMICG: <level>** |
| **AT#HSMICG=?** | Test command returns the supported range of values of parameter **<level>**. |

### *3.5.5.1.36 #SHFSD - Set Headset Sidetone*

| **#SHFSD - Set Headset Sidetone** | |
|---|---|
| **AT#SHFSD[=[<mode>]]** | Set command enables/disables the sidetone on headset audio output.<br><br>Parameter:<br>**<mode>**<br>0 - disables the headset sidetone (factory default)<br>1 - enables the headset sidetone.<br><br>Note: This setting returns to default after power off.<br><br>Note: issuing **AT#SHFSD<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SHFSD=<CR>** is the same as issuing the command **AT#SHFSD=0<CR>**. |
| **AT#SHFSD?** | Read command reports whether the headset sidetone is currently enabled or not, in the format:<br>**#SHFSD: <mode>** |
| **AT#SHFSD=?** | Test command returns the supported range of values of parameter **<mode>**. |

### *3.5.5.1.37 #/ - Repeat Last Command*

| **#/ - Repeat Last Command** | |
|---|---|
| **AT#/** | Execute command is used to execute again the last received command. |

### *3.5.5.1.38 #NITZ - Network Timezone*

| **#NITZ - Network Timezone** | |
|---|---|
| **AT#NITZ[=[<val>[,<mode>]]]** | Set command enables/disables automatic date/time updating and Network Timezone unsolicited indication.<br>Date and time information may be sent by the network after GSM registration or after GPRS attach.<br><br>Parameters: |

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| #NITZ - Network Timezone | |
|---|---|
| | **<val>**<br>0 - disables automatic set (factory default)<br>1 - enables automatic set<br>**<mode>**<br>0 - disables unsolicited message (factory default)<br>1 - enables unsolicited message; after date and time updating the following unsolicited indication is sent:<br><br>**#NITZ: "yy/MM/dd,hh:mm:ss"**<br><br>where:<br>**yy** - year<br>**MM** - month (in digits)<br>**dd** - day<br>**hh** - hour<br>**mm** - minute<br>**ss** - second<br><br>Note: issuing **AT#NITZ<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#NITZ=<CR>** is the same as issuing the command **AT#NITZ=0<CR>**. |
| **AT#NITZ?** | Read command reports whether automatic date/time updating is currently enabled or not, and whether Network Timezone unsolicited indication is enabled or not, in the format:<br><br>**#NITZ: <val>,<mode>** |
| **AT#NITZ=?** | Test command returns supported values of parameters **<val>** and **<mode>**. |

### *3.5.5.1.39 #BND - Select Band*

| #BND - Select Band | |
|---|---|
| **AT#BND[=[<band>]]** | Set command selects the current band.<br><br>Parameter<br>**<band>**:<br>0 - GSM 900MHz + DCS 1800MHz<br>1 - GSM 900MHz + PCS 1900MHz<br>2 - GMS 850MHz + PCS 1800MHz (available only on quadri-band modules)<br>3 - GMS 850MHz + PCS 1900MHz (available only on quadri-band modules)<br><br>Note: This setting is maintained even after power off. |

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| | |
|---|---|
| | Note: issuing **AT#BND<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#BND=<CR>** is the same as issuing the command **AT#BND=0<CR>**. |
| **AT#BND?** | Read command returns the current selected band in the format:<br><br>**#BND: <band>** |
| **AT#BND=?** | Test command returns the supported range of values of parameter **<band>**.<br><br>Note: the range of values differs between triband modules and quadric-band modules |

### *3.5.5.1.40 #AUTOBND - Automatic Band Selection*

| **#AUTOBND - Automatic Band Selection** | |
|---|---|
| **AT#AUTOBND[= <value>]** | Set command enables/disables the automatic band selection at power-on.<br><br>Parameter:<br>**<value>**:<br>0 - disables automatic band selection at power-on (factory default)<br>1 - enables automatic band selection at power-on; **+COPS=0** is necessary condition to effectively have automatic band selection at next power-on; the automatic band selection stops as soon as a GSM cell is found.<br><br>Note: if automatic band selection is enabled the band changes every about 90 seconds through available bands until a GSM cell is found.<br><br>Note: if parameter **<value>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#AUTOBND?** | Read command returns whether the automatic band selection is enabled or not in the form:<br><br>**#AUTOBND: <value>** |
| **AT#AUTOBND=?** | Test command returns the range of supported values for parameter **<value>**. |

### *3.5.5.1.41 #SKIPESC - Skip Escape Sequence*

| **#SKIPESC - Skip Escape Sequence** | |
|---|---|
| **AT#SKIPESC[= [<mode>]]** | Set command enables/disables skipping the escape sequence **+++** while transmitting during a data connection.<br><br>Parameter: |

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| #SKIPESC - Skip Escape Sequence | |
|---|---|
| | **<mode>**<br>0 - doesn't skip the escape sequence; its transmission is enabled (factory default).<br>1 - skips the escape sequence; its transmission is not enabled.<br><br>Note: in case of an FTP connection, the escape sequence is not transmitted, regardless of the command setting.<br><br>Note: issuing **AT#SKIPESC<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SKIPESC=<CR>** is the same as issuing the command **AT#SKIPESC=0<CR>**. |
| **AT#SKIPESC?** | Read command reports whether escape sequence skipping is currently enabled or not, in the format:<br><br>**#SKIPESC: <mode>** |
| **AT#SKIPESC=?** | Test command reports supported range of values for parameter **<mode>**. |

### *3.5.5.1.42 #E2ESC - Escape Sequence Guard Time*

| #E2ESC - Escape Sequence Guard Time | |
|---|---|
| **AT#E2ESC[=[<gt>]]** | Set command sets a guard time in seconds for the escape sequence in GPRS to be considered a valid one (and return to on-line command mode).<br><br>Parameter:<br>**<gt>**<br>0 - no guard time (factory default)<br>1..10 - guard time in seconds<br><br>Note: if the Escape Sequence Guard Time is set to a value different from zero, it overrides the one set with **S12**.<br><br>Note: issuing **AT#E2ESC<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#E2ESC=<CR>** returns the **OK** result code. |
| **AT#E2ESC?** | Read command returns current value of the escape sequence guard time, in the format:<br><br>**#E2ESC: <gt>** |
| **AT#E2ESC=?** | Test command returns the **OK** result code. |

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### 3.5.5.1.43 #GAUTH - PPP-GPRS Connection Authentication Type

| #GAUTH - PPP-GPRS Connection Authentication Type | |
|---|---|
| **AT#GAUTH[= <type>]** | Set command sets the PPP-GPRS connection authentication type.<br><br>Parameter<br>**<type>**<br>0 - no authentication<br>1 - PAP authentication (factory default)<br>2 - CHAP authentication<br><br>Note: for GSM connection **<type>** is fixed to PAP<br><br>Note: if parameter **<type>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#GAUTH?** | Read command reports the current PPP-GPRS connection authentication type, in the format:<br><br>**#GAUTH: <type>** |
| **AT#GAUTH=?** | Test command returns the range of supported values for parameter **<type>**. |

### 3.5.5.1.44 #RTCSTAT - RTC Status

| #RTCSTAT - RTC Status | |
|---|---|
| **AT#RTCSTAT[= <status>]** | Set command resets the RTC status flag.<br><br>Parameter:<br>**<status>**<br>0 - Set RTC Status to **RTC HW OK**<br><br>Note: the initial value of RTC status flag is **RTC HW Error** and it doesn't change until a command **AT#RTCSTAT=0** is issued.<br><br>Note: if a power failure occurs and the buffer battery is down the RTC status flag is set to **1**. It doesn't change until command **AT#RTCSTAT=0** is issued.<br><br>Note: if parameter **<status>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#RTCSTAT?** | Read command reports the current value of RTC status flag, in the format:<br><br>**#RTCSTAT: <status>** |
| **AT#RTCSTAT=?** | Test command returns the range of supported values for parameter **<status>** |

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## 3.5.5.2 FTP AT Commands

### *3.5.5.2.1 #FTPTO - FTP Time-Out*

| **#FTPTO - FTP Time-Out** | |
|---|---|
| **AT#FTPTO[=<tout>]** | Set command sets time-out for FTP operations.<br><br>Parameter:<br>**<tout>** - time-out in 100 ms units<br>100..5000 - hundreds of ms (factory default is 100)<br><br>Note: The parameter is not saved in NVM.<br><br>Note: if parameter **<tout>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#FTPTO?** | Read command returns the current FTP operations time-out, in the format:<br><br>**#FTPTO: <tout>** |
| **AT#FTPTO=?** | Test command returns the range of supported values for parameter **<tout>** |

### *3.5.5.2.2 #FTPOPEN - FTP Open*

| **#FTPOPEN - FTP Open** | |
|---|---|
| **AT#FTPOPEN=<server:port>,<username>,<password>,<mode>** | Execution command opens an FTP connection toward the FTP server.<br><br>Parameters:<br>**<server:port>** - string type, address and port of FTP server (factory default port 21).<br>**<username>** - string type, authentication user identification string for FTP.<br>**<password>** - string type, authentication password for FTP.<br>**<mode>**<br>0 - active mode (default)<br>1 - passive mode<br><br>Note: Before opening FTP connection the GPRS must been activated with **AT#GPRS=1** |

### *3.5.5.2.3 #FTPCLOSE - FTP Close*

| **#FTPCLOSE - FTP Close** | |
|---|---|
| **AT#FTPCLOSE** | Execution command closes an FTP connection. |
| **AT#FTPCLOSE?** | Read command behavior is the same as Execution command. |

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### 3.5.5.2.4 #FTPPUT - FTP Put

| #FTPPUT - FTP Put | |
|---|---|
| **AT#FTPPUT= <filename>** | Execution command, issued during an FTP connection, opens a data connection, in order to transfer a file to the server.<br>If the data connection succeeds, a file with name **<filename>** and initial size 0 is created on the FTP server, a **CONNECT** indication is sent and it's possible to transfer the file; otherwise a **NO CARRIER** indication is sent.<br><br>Parameter:<br>**<filename>** - string type, name of the file to create on FTP server.<br><br>Note: use the escape sequence **+++** to close the data connection.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

### 3.5.5.2.5 #FTPPUTPH - FTP Put Photo

| #FTPPUTPH - FTP Put Photo | |
|---|---|
| **AT#FTPPUTPH= <filename>** | Execution command, issued during an FTP connection, opens a data connection, in order to transfer the last photo taken issuing **AT#TPHOTO** to the FTP server.<br>If the data connection succeeds, a file with name **<filename>** and initial size 0 is created on the FTP server, a **CONNECT** indication is sent and it starts transfer the last photo; otherwise a **NO CARRIER** indication is sent.<br><br>Parameter:<br>**<filename>** - string type, name of the file on the FTP server side.<br><br>Note: the file transfer type has to be binary in order to send the photo the right way (see command **#FTPTYPE**).<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| Example | `at#gprs=1`<br>`+IP: ###.###.###.###`<br><br>`OK`<br>`at#camon`<br>`OK`<br>`at#tphoto`<br>`OK`<br>`at#ftpopen="xxx.xxx.xxx.xxx",<usern.>,<passw.>,0`<br>`OK` |

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| #FTPPUTPH - FTP Put Photo | |
|---|---|
| | `at#ftptype=0`<br>`OK`<br>`at#ftpputph="photo.jpg"`<br>`OK`<br>`at#ftpclose`<br>`OK` |

### 3.5.5.2.6 #FTPGET - FTP Get

| #FTPGET - FTP Get | |
|---|---|
| **AT#FTPGET= <filename>** | Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server.<br>If the data connection succeeds a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent.<br>The file is received on the serial port.<br><br>Parameter:<br>**<filename>** - file name, string type.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

### 3.5.5.2.7 #FTPTYPE - FTP Type

| #FTPTYPE - FTP Type | |
|---|---|
| **AT#FTPTYPE[= <type>]** | Set command, issued during an FTP connection, sets the file transfer type.<br><br>Parameter:<br>**<type>** - file transfer type:<br>0 - binary<br>1 - ascii<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.<br><br>Note: If the parameter is omitted then the behaviour of Set command is the same of Read command. |
| **#FTPTYPE?** | Read command returns the current file transfer type, in the format:<br><br>**#FTPTYPE: <type>** |
| **#FTPTYPE=?** | Test command returns the range of available values for parameter **<type>**:<br><br>**#FTPTYPE: (0,1)** |

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### 3.5.5.2.8 #FTPMSG - FTP Read Message

| #FTPMSG - FTP Read Message | |
|---|---|
| **AT#FTPMSG** | Execution command returns the last response from the server. |
| **AT#FTPMSG?** | Read command behaviour is the same as Execution command. |

### 3.5.5.2.9 #FTPDELE - FTP Delete

| #FTPDELE - FTP Delete | |
|---|---|
| **AT#FTPDELE= <filename>** | Execution command, issued during an FTP connection, deletes a file from the remote working directory.<br><br>Parameter:<br>**<filename>** - string type, it's the name of the file to delete.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

### 3.5.5.2.10 #FTPPWD - FTP Print Working Directory

| #FTPPWD - FTP Print Working Directory | |
|---|---|
| **AT#FTPPWD** | Execution command, issued during an FTP connection, shows the current working directory on FTP server.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

### 3.5.5.2.11 #FTPCWD - FTP Change Working Directory

| #FTPCWD - FTP Change Working Directory | |
|---|---|
| **AT#FTPCWD= <dirname>** | Execution command, issued during an FTP connection, changes the working directory on FTP server.<br><br>Parameter:<br>**<dirname>** - string type, it's the name of the new working directory.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

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### *3.5.5.2.12 #FTPLIST - FTP List*

| **#FTPLIST - FTP List** | |
|---|---|
| **AT#FTPLIST[= <name>]** | Execution command, issued during an FTP connection, opens a data connection and starts getting from the server the list of contents of the specified directory or the properties of the specified file.<br><br>Parameter:<br>**<name>** - string type, it's the name of the directory or file.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.<br><br>Note: issuing **AT#FTPLIST<CR>** opens a data connection and starts getting from the server the list of contents of the working directory. |

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## 3.5.5.3 Enhanced Easy GPRS® Extension AT Commands

### *3.5.5.3.1 #USERID - Authentication User ID*

| **#USERID - Authentication User ID** | |
|---|---|
| **AT#USERID [=<user>]** | Set command sets the user identification string to be used during the authentication step.<br><br>Parameter:<br>**<user>** - string type, it's the authentication User Id; the max length for this value is the output of Test command, **AT#USERID=?** (factory default is the empty string "").<br><br>Note: If parameter is omitted then the behaviour of Set command is the same of Read command. |
| **AT#USERID?** | Read command reports the current user identification string, in the format:<br><br>**#USERID: <user>**. |
| **AT#USERID=?** | Test command returns the maximum allowed length of the string parameter **<user>**. |
| Example | `AT#USERID="myName"`<br>`OK`<br>`AT#USERID?`<br>`#USERID: "myName"`<br><br>`OK` |

### *3.5.5.3.2 #PASSW - Authentication Password*

| **#PASSW - Authentication Password** | |
|---|---|
| **AT#PASSW= <pwd>** | Set command sets the user password string to be used during the authentication step.<br><br>Parameter:<br>**<pwd>** - string type, it's the authentication password; the max length for this value is the output of Test command, **AT#PASSW=?** (factory default is the empty string "). |
| **AT#PASSW=?** | Test command returns the maximum allowed length of the string parameter **<pwd>**. |
| Example | `AT#PASSW="myPassword"`<br>`OK` |

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### 3.5.5.3.3 #PKTSZ - Packet Size

| #PKTSZ - Packet Size | |
|---|---|
| **AT#PKTSZ[=[<size>]]** | Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending.<br><br>Parameter:<br>**<size>** - packet size in bytes<br>0 - automatically chosen by the device<br>1..512 - packet size in bytes (factory default is 300)<br><br>Note: issuing **AT#PKTSZ<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#PKTSZ=<CR>** is the same as issuing the command **AT#PKTSZ=0<CR>**. |
| **AT#PKTSZ?** | Read command reports the current packet size value.<br><br>Note: after issuing command **AT#PKTSZ=0**, the Read command reports the value automatically chosen by the device. |
| **AT#PKTSZ=?** | Test command returns the allowed values for the parameter **<size>**. |
| Example | `AT#PKTSZ=100`<br>`OK`<br>`AT#PKTSZ?`<br>`#PKTSZ: 100`<br><br>`OK`<br>`AT#PKTSZ=0`<br>`OK`<br>`AT#PKTSZ?`<br>`#PKTSZ: 300  ->value automatically chosen by device`<br><br>`OK` |

### 3.5.5.3.4 #DSTO - Data Sending Time-Out

| #DSTO - Data Sending Time-Out | |
|---|---|
| **AT#DSTO[=[<tout>]]** | Set command sets the maximum time that the module awaits before sending anyway a packet whose size is less than the default one.<br><br>Parameter:<br>**<tout>** - packet sending time-out in 100ms units (factory default is 50)<br>0 - no time-out, wait forever for packets to be completed before send.<br>1..255 hundreds of ms<br><br>Note: In order to avoid low performance issues, it is suggested to set the data sending time-out to a value greater than 5. |

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| #DSTO - Data Sending Time-Out | |
|---|---|
| | Note: this time-out applies to data whose size is less than packet size and whose sending would have been delayed for an undefined time until new data to be sent had been received and full packet size reached.<br><br>Note: issuing **AT#DSTO<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#DSTO=<CR>** is the same as issuing the command **AT#DSTO=0<CR>**. |
| **AT#DSTO?** | Read command reports the current data sending time-out value. |
| **AT#DSTO=?** | Test command returns the allowed values for the parameter **<tout>**. |
| Example | `AT#DSTO=10  ->1 sec. time-out`<br>`OK`<br>`AT#DSTO?`<br>`#DSTO: 10`<br><br>`OK` |

### 3.5.5.3.5 #SKTTO - Socket Inactivity Time-Out

| #SKTTO - Socket Inactivity Time-Out | |
|---|---|
| **AT#SKTTO[=[<tout>]]** | Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket and deactivating the GPRS context.<br><br>Parameter:<br>**<tout>** - socket inactivity time-out in seconds units<br>0 - no timeout.<br>1..65535 - time-out in sec. units (factory default is 90).<br><br>Note: this time-out applies when no data is exchanged in the socket for a long time and therefore the socket connection has to be automatically closed and the GPRS context deactivated.<br><br>Note: issuing **AT#SKTTO<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+#SKTTO=<CR>** is the same as issuing the command **AT+#SKTTO=0<CR>**. |
| **AT#SKTTO?** | Read command reports the current socket inactivity time-out value. |
| **AT#SKTTO=?** | Test command returns the allowed values for parameter **<tout>**. |
| Example | `AT#SKTTO=30  ->(30 sec. time-out)`<br>`OK`<br>`AT#SKTTO?`<br>`#SKTTO: 30` |

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| #SKTTO - Socket Inactivity Time-Out | |
|---|---|
| | OK |

### 3.5.5.3.6 #SKTSET - Socket Definition

| #SKTSET - Socket Definition | |
|---|---|
| **AT#SKTSET[=<br><socket type>,<br><remote port>,<br><remote addr>,<br>[<closure type>],<br>[<local port>]]** | Set command sets the socket parameters values.<br><br>Parameters:<br>**<socket type>** - socket protocol type<br>0 - TCP (factory default)<br>1 - UDP<br>**<remote port>** - remote host port to be opened<br>0..65535 - port number (factory default is 0)<br>**<remote addr>** - address of the remote host, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host name>**<br>(factory default is the empty string “”)<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br>**<local port>** - local host port to be used on UDP socket<br>0..65535 - port number<br><br>Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused.<br><br>Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused.<br><br>Note: The resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTSET** command, then error message will be issued.<br><br>Note: the DNS Query to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**)<br>- the GPRS coverage is enough to permit a connection.<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command. |
| **AT#SKTSET?** | Read command reports the socket parameters values, in the format:<br><br>**AT#SKTSET: <socket type>,<remote port>,<remote addr>,** |

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| #SKTSET - Socket Definition | |
|---|---|
| | **<closure type>,<local port>** |
| **AT#SKTSET=?** | Test command returns the allowed values for the parameters. |
| Example | `AT#SKTSET=0,1024,"123.255.020.001"`<br>`OK`<br>`AT#SKTSET=0,1024,"www.telit.net"`<br>`OK` |

### 3.5.5.3.7 #SKTOP - Socket Open

| #SKTOP - Socket Open | |
|---|---|
| **AT#SKTOP** | Execution command activates the context number 1, proceeds with the authentication with the user ID and password previously set by **#USERID** and **#PASSW** commands, and opens a socket connection with the host specified in the **#SKTSET** command. Eventually, before opening the socket connection, it issues automatically a DNS query to solve the IP address of the host name.<br><br>If the connection succeeds a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent. |
| **AT#SKTOP?** | Read command behaviour is the same as Execution command. |
| Example | `AT#SKTOP`<br>*`..GPRS context activation, authentication and socket open..`*<br>`CONNECT` |

### 3.5.5.3.8 #QDNS - Query DNS

| #QDNS - Query DNS | |
|---|---|
| **AT#QDNS=<br><host name>** | Execution command executes a DNS query to solve the host name into an IP address.<br><br>Parameter:<br>**<host name>** - host name, string type.<br><br>If the DNS query is successful then the IP address will be reported in the result code:<br><br>**#QDNS:"<host name>",<IP address>**<br><br>Note: the command has to activate the GPRS context if it was not previously activated. In this case the context is deactivated after the DNS query. |

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| #QDNS - Query DNS | |
|---|---|
| | Note: **<IP address>** is in the format: **xxx.xxx.xxx.xxx** |
| Note | This command requires that the authentication parameters are correctly set and that the GPRS network is present. |

### *3.5.5.3.9 #SKTCT - Socket TCP Connection Time-Out*

| #SKTCT - Socket TCP Connection Time-Out | |
|---|---|
| **AT#SKTCT[=<tout>]** | Set command sets the TCP connection time-out for the first **CONNECT** answer from the TCP peer to be received.<br><br>Parameter:<br>**<tout>** - TCP first **CONNECT** answer time-out in 100ms units<br>10..1200 - hundreds of ms (factory default value is 600).<br><br>Note: this time-out applies only to the time that the TCP stack waits for the **CONNECT** answer to its connection request.<br><br>Note: The time for activate the GPRS and resolving the name with the DNS query (if the peer was specified by name and not by address) is not counted in this timeout.<br><br>Note: if parameter is omitted then the behaviour of Set command is the same as Read command. |
| **AT#SKTCT?** | Read command reports the current TCP connection time-out. |
| **AT#SKTCT=?** | Test command returns the allowed values for parameter **<tout>**. |
| Example | `AT#SKTCT=600`<br>`OK`<br>*`socket first connection answer timeout has been set to 60 s.`* |

### *3.5.5.3.10 #SKTSAV - Socket Parameters Save*

| #SKTSAV - Socket Parameters Save | |
|---|---|
| **AT#SKTSAV** | Execution command saves the actual socket parameters in the NVM of the device.<br><br>The socket parameters to store are:<br>- User ID<br>- Password<br>- Packet Size<br>- Socket Inactivity Time-Out<br>- Data Sending Time-Out<br>- Socket Type (UDP/TCP) |

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| | |
|---|---|
| | - Remote Port<br>- Remote Address<br>- TCP Connection Time-Out |
| Example | AT#SKTSAV<br>OK<br>*socket parameters have been saved in NVM* |
| Note | If some parameters have not been previously specified then a default value will be stored. |

### 3.5.5.3.11 #SKTRST - Socket Parameters Reset

| **#SKTRST - Socket Parameters Reset** | |
|---|---|
| **AT#SKTRST** | Execution command resets the actual socket parameters in the NVM of the device to the default ones.<br><br>The socket parameters to reset are:<br>- User ID<br>- Password<br>- Packet Size<br>- Socket Inactivity Timeout<br>- Data Sending Timeout<br>- Socket Type<br>- Remote Port<br>- Remote Address<br>- TCP Connection Time-Out |
| Example | AT#SKTRST<br>OK<br>*socket parameters have been reset* |

### 3.5.5.3.12 #GPRS - GPRS Context Activation

| **#GPRS - GPRS Context Activation** | |
|---|---|
| **AT#GPRS[=[<mode>]]** | Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with **#PASSW** and **#USERID**.<br><br>Parameter:<br>**<mode>** - GPRS context activation mode<br>0 - GPRS context deactivation request<br>1 - GPRS context activation request<br><br>In the case that the GPRS context has been activated, the result code **OK** is preceded by the intermediate result code: |

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| | |
|---|---|
| | **+IP: <ip_address_obtained>**<br><br>reporting the local IP address obtained from the network.<br><br>Note: issuing **AT#GPRS<CR>** reports the current status of the GPRS context, in the format:<br><br>**#GPRS: <status>**<br><br>where:<br>**<status>**<br>0 - GPRS context deactivated<br>1 - GPRS context activated<br>2 - GPRS context activation pending.<br><br>Note: issuing **AT#GPRS=<CR>** is the same as issuing the command **AT#GPRS=0<CR>**. |
| **AT#GPRS?** | Read command has the same effect as the Execution command **AT#GPRS<CR>.** |
| **AT#GPRS=?** | Test command returns the allowed values for parameter **<mode>**. |
| Example | `AT#GPRS=1`<br>`+IP: 129.137.1.1`<br>`OK`<br>*`Now GPRS Context has been activated and our IP is 129.137.1.1`*<br><br>`AT#GPRS=0`<br>`OK`<br>*`Now GPRS context has been deactivated, IP is lost.`* |

### *3.5.5.3.13 #SKTD - Socket Dial*

| **#SKTD - Socket Dial** | |
|---|---|
| **AT#SKTD [=<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]** | Set command opens the socket towards the peer specified in the parameters.<br><br>Parameters:<br>**<socket type>** - socket protocol type<br>0 - TCP (factory default)<br>1 - UDP<br>**<remote port>** - remote host port to be opened<br>0..65535 - port number (factory default is 0)<br>**<remote addr>** - address of the remote host, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host** |

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| #SKTD - Socket Dial | |
|---|---|
| | **name>**<br>(factory default is the empty string “”)<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br>**<local port>** - local host port to be used on UDP socket<br>0..65535 - port number<br><br>Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused.<br><br>Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused.<br><br>Note: the resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTD** command, then an error message will be issued.<br><br>Note: the command to be successful requests that:<br>- the GPRS context 1 is correctly set with **AT+CGDCONT**<br>- the authentication parameters are set **(#USERID**, **#PASSW**) the GPRS coverage is enough to permit a connection<br>- the GPRS has been activated with **AT#GPRS=1**<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command. |
| **AT#SKTD?** | Read command reports the socket dial parameters values, in the format:<br><br>**AT#SKTD: <socket type>,<remote port>,<remote addr>,<br><closure type>,<local port>** |
| **AT#SKTD=?** | Test command returns the allowed values for the parameters. |
| Example | `AT#SKTD=0,1024,"123.255.020.001",255`<br>`CONNECT`<br><br>`AT#SKTD=1,1024,"123.255.020.001", ,1025`<br>`CONNECT`<br>*In this way my local port 1025 is opened to the remote port 1024*<br><br>`AT#SKTD=0,1024,"www.telit.net", 255`<br>`CONNECT` |
| Note | The main difference between this command and the **AT#SKTOP** is that this command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **AT#SKTD** is closed the context (and hence the local IP address) is maintained. |

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### 3.5.5.3.14 #SKTL - Socket Listen

| #SKTL - Socket Listen | |
|---|---|
| **AT#SKTL [=<mode>, <socket type>, <input port>, [<closure type>]]** | Execution command opens/closes the socket listening for connection requests.<br><br>Parameters:<br>**<mode>** - socket mode<br>0 - closes socket listening<br>1 - starts socket listening<br>**<socket type>** - socket protocol type<br>0 - TCP<br>**<input port>** - local host input port to be listened<br>0..65535 - port number<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br><br>Command returns the **OK** result code if successful.<br><br>Note: the command to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**)<br>- the GPRS coverage is enough to permit a connection<br>- the GPRS has been activated with **AT#GPRS=1**<br><br>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command **#FRWL**), an unsolicited code is reported:<br><br>**+CONN FROM: <remote addr>**<br><br>Where:<br>**<remote addr>** - host address of the remote machine that contacted the device.<br><br>When the connection is established the **CONNECT** indication is given and the modem goes into data transfer mode.<br><br>On connection close or when context is closed with **#GPRS=0** the socket is closed and no listen is anymore active.<br><br>If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported:<br><br>**#SKTL: ABORTED**<br><br>Note: if all parameters are omitted the command returns the current socket |

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| #SKTL - Socket Listen | |
|---|---|
| | listening **status** and the last settings of parameters **<input port>** and **<closure type>**, in the format:<br><br>**#SKTL: <status>,<input port>,<closure type>**<br>where<br>**<status>** - socket listening status<br>0 - socket not listening<br>1 - socket listening |
| **AT#SKTL?** | Read command has the same effect as Execution command when parameters are omitted. |
| **AT#SKTL=?** | Test command returns the allowed values for parameters **<mode>**, **<input port>** and **<closure type>**. |
| Example | *Activate GPRS*<br>AT#GPRS=1<br>+IP: ###.###.###.###<br><br>OK<br>*Start listening*<br>AT#SKTL=1,0,1024<br>OK<br>or<br>AT#SKTL=1,0,1024,255<br>OK<br><br>*Receive connection requests*<br>+CONN FROM: 192.164.2.1<br>CONNECT<br><br>*exchange data with the remote host*<br><br>*send escape sequence*<br>+++<br>NO CARRIER<br>*Now listen is not anymore active*<br><br>*to stop listening*<br>AT#SKTL=0,0,1024, 255<br>OK |
| Note | The main difference between this command and the **#SKTD** is that **#SKTL** does not contact any peer, nor does any interaction with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **#SKTL** is closed the context (and hence the local IP address) is maintained.<br><br>The improving command **@SKTL** has been defined. |

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### 3.5.5.3.15 @SKTL - Socket Listen

| @SKTL - Socket Listen | |
|---|---|
| **AT@SKTL [=<mode>, <socket type>, <input port>, [<closure type>]]** | Execution command opens/closes the socket listening for connection requests.<br><br>Parameters:<br>**<mode>** - socket mode<br>0 - closes socket listening<br>1 - starts socket listening<br>**<socket type>** - socket protocol type<br>0 - TCP<br>**<input port>** - local host input port to be listened<br>0..65535 - port number<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br><br>Command returns the **OK** result code if successful.<br><br>Note: the command to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**)<br>- the GPRS coverage is enough to permit a connection<br>- the GPRS has been activated with **AT#GPRS=1**<br><br>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command **#FRWL**), an unsolicited code is reported:<br><br>**+CONN FROM: <remote addr>**<br><br>Where:<br>**<remote addr>** - host address of the remote machine that contacted the device.<br><br>When the connection is established the **CONNECT** indication is given and the modem goes into data transfer mode.<br><br>On connection close or when context is closed with **#GPRS=0** the socket is closed and no listen is anymore active.<br><br>If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported:<br><br>**@SKTL: ABORTED** |

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| **@SKTL - Socket Listen** | |
|---|---|
| | Note: if all parameters are omitted the command returns the current socket listening **status** and the last settings of parameters **<socket type>**, **<input port>** and **<closure type>**, in the format:<br><br>**@SKTL: <status>,<socket type>,<input port>,<closure type>**<br>Where<br>**<status>** - socket listening status<br>0 - socket not listening<br>1 - socket listening |
| **AT@SKTL?** | Read command has the same effect as Execution command when parameters are omitted. |
| **AT@SKTL=?** | Test command returns the allowed values for parameters **<mode>**, **<socket type>**, **<input port>** and **<closure type>**. |
| Example | *Activate GPRS*<br>AT#GPRS=1<br>+IP: ###.###.###.###<br><br>OK<br>*Start listening*<br>AT@SKTL=1,0,1024<br>OK<br>or<br>AT@SKTL=1,0,1024,255<br>OK<br><br>*Receive connection requests*<br>+CONN FROM: 192.164.2.1<br>CONNECT<br><br>*exchange data with the remote host*<br><br>*send escape sequence*<br>+++<br>NO CARRIER<br>*Now listen is not anymore active*<br><br>*to stop listening*<br>AT@SKTL=0,0,1024, 255<br>OK |
| Note | The main difference between this command and the **#SKTD** is that **@SKTL** does not contact any peer, nor does any interaction with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **@SKTL** is closed the context (and hence the local IP address) is maintained. |

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### 3.5.5.3.16 #E2SLRI - Socket Listen Ring Indicator

| **#E2SLRI - Socket Listen Ring Indicator** | |
|---|---|
| **AT#E2SLRI=[<n>]** | Set command enables/disables the Ring Indicator pin response to a Socket Listen connect and, if enabled, the duration of the negative going pulse generated on receipt of connect.<br><br>Parameter:<br>**<n>** - RI enabling<br>0 - RI disabled for Socket Listen connect (factory default)<br>50..1150 - RI enabled for Socket Listen connect; a negative going pulse is generated on receipt of connect and **<n>** is the duration in ms of this pulse. |
| **AT#E2SLRI?** | Read command reports whether the Ring Indicator pin response to a Socket Listen connect is currently enabled or not, in the format:<br><br>**#E2SLRI: <n>** |
| **AT#E2SLRI=?** | Test command returns the allowed values for parameter **<status>.** |

### 3.5.5.3.17 #FRWL - Firewall Setup

| **#FRWL - Firewall Setup** | |
|---|---|
| **AT#FRWL[=<action>,<ip_addr>,<net_mask>]** | Execution command controls the internal firewall settings.<br><br>Parameters:<br>**<action>** - command action<br>0 - remove selected chain<br>1 - add an **ACCEPT** chain<br>2 - remove all chains (**DROP** everything); **<ip_addr>** and **<net_mask>** has no meaning in this case.<br>**<ip_addr>** - remote address to be added into the **ACCEPT** chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx<br>**<net_mask>** - mask to be applied on the **<ip_addr>**; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx<br><br>Command returns **OK** result code if successful.<br><br>Note: the firewall applies for incoming (listening) connections only.<br><br>Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded.<br><br>When a packet comes from the IP address **incoming_IP**, the firewall chain rules will be scanned for matching with the following criteria:<br><br>**incoming_IP & <net_mask> = <ip_addr> & <net_mask>** |

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| #FRWL - Firewall Setup | |
|---|---|
| | If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.<br><br>Note: If all parameters are omitted the command reports the list of all **ACCEPT** chain rules registered in the Firewall settings in the format:<br>**#FRWL: <ip_addr>,<net_mask>**<br>**#FRWL: <ip_addr>,<net_mask>**<br>**....**<br>**OK** |
| **AT#FRWL?** | Read command has the same effect as Execution command when parameters are omitted. |
| **AT#FRWL=?** | Test command returns the allowed values for parameter **<action>.** |
| Example | *Let assume we want to accept connections only from our devices which are on the IP addresses ranging from 197.158.1.1 to 197.158.255.255*<br><br>*We need to add the following chain to the firewall:*<br>AT#FRWL=1,"197.158.1.1","255.255.0.0"<br>OK |
| Note | For outgoing connections made with **#SKTOP** and **#SKTD** the remote host is dynamically inserted into the **ACCEPT** chain for all the connection duration. Therefore the **#FRWL** command shall be used only for defining either the **#SKTL** or the **@SKTL** behaviour, deciding which hosts are allowed to connect to the local device.<br><br>Rules are not saved in NVM, at start-up the rules list will be empty. |

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## 3.5.5.4Easy Camera® Management AT Commands

### *3.5.5.4.1 #CAMON - Camera ON*

| **#CAMON - Camera ON** | |
|---|---|
| **AT#CAMON** | Execution command turns the Camera **ON**. |
| **AT#CAMON?** | Read command has the same behaviour as Execution command |
| Example | `AT#CAMON`<br>`OK`<br>*`camera is now powered up`* |

### *3.5.5.4.2 #CAMOFF - Camera OFF*

| **#CAMOFF - Camera OFF** | |
|---|---|
| **AT#CAMOFF** | Execution command turns the Camera **OFF**.<br><br>Note: for the GPS product (GE863-GPS): if the camera is turned off while GPS or VAUX pin is enabled they'll both also be powered off. |
| **AT#CAMOFF?** | Read command has the same behaviour as Execution command |
| Example | `AT#CAMOFF`<br>`OK`<br>*`camera is now powered down`* |

### *3.5.5.4.3 #CAMEN - Camera ON/OFF*

| **#CAMEN - Camera ON/OFF** | |
|---|---|
| **AT#CAMEN[= <status>]** | Execution command turns camera **ON/OFF**.<br><br>Parameter:<br>**<status>** - camera status<br>0 - turns camera **OFF**<br>1 - turns camera **ON**<br><br>Note: if parameter **<status>** is omitted the Set command is the same as the Read command.<br><br>Note: for the GPS product (GE863-GPS): if the camera is turned off while GPS or VAUX pin is enabled they'll both also be powered off. |
| **AT#CAMEN?** | Read command reports the current camera status and, if the camera is **ON**, the current camera model, in the format:<br><br>**#CAMEN: 0** *if camera is **OFF***<br><br>**#CAMEN: 1,<cam>** *if camera is **ON*** |

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| | |
|---|---|
| | Where:<br>**<cam>** - camera model<br>2 - TRANSCHIP camera |
| **AT#CAMEN=?** | Test command returns the allowed values for parameter **<status>.** |

### 3.5.5.4.4 #SELCAM - Camera Model

| **#SELCAM - Camera Model** | |
|---|---|
| **AT#SELCAM[=[<cam>]]** | Set command selects current camera model<br><br>Parameter:<br>**<cam>** - camera model<br>0 - automatic detection (factory default)<br>2 - TRANSCHIP camera<br>3 - reserved for future use<br>4 - reserved for future use<br>5 - reserved for future use<br><br>Note: issuing **AT#SELCAM<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SELCAM=<CR>** is the same as issuing the command **AT#SELCAM=0<CR>** |
| **AT#SELCAM?** | Read command reports the current camera model in the format:<br>**#SELCAM: <cam>** |
| **AT#SELCAM=?** | Test command returns the allowed values for parameter **<cam>** |

### 3.5.5.4.5 #CAMRES - Camera Resolution

| **#CAMRES - Camera Resolution** | |
|---|---|
| **AT#CAMRES[=[<res>]]** | Set command sets current camera resolution<br><br>Parameter:<br>**<res>** - camera resolution<br>0 - VGA photo output,640x480 (factory default)<br>1 - QVGA photo output, 320x240<br>2 - QQVGA photo output, 160x120<br>3 - reserved for future use<br>4 - reserved for future use<br><br>Note: issuing **AT#CAMRES<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMRES=<CR>** is the same as issuing the command |

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| | |
|---|---|
| | **AT#CAMRES=0<CR>**. |
| **AT#CAMRES?** | Read command reports the current value of the parameter **<res>** in format:<br><br>**#CAMRES:<res>** |
| **AT#CAMRES=?** | Test command returns the allowed values for parameter **<res>**. |

### *3.5.5.4.6 #CAMCOL - Camera Colour Mode*

| **#CAMCOL - Camera Colour Mode** | |
|---|---|
| **AT#CAMCOL[=[<col>]]** | Set command sets current colour mode<br><br>Parameter:<br>**<col>** - camera colour mode<br>0 - colour mode (factory default)<br>1 - Black&White mode<br><br>Note: issuing **AT#CAMCOL<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMCOL=<CR>** is the same as issuing the command **AT#CAMCOL=0<CR>**. |
| **AT#CAMCOL?** | Read command reports the current colour mode, in the format:<br><br>**#CAMCOL: <col>**. |
| **AT#CAMCOL=?** | Test command returns the allowed values for parameter **<col>**. |

### *3.5.5.4.7 #CAMQUA - Camera Photo Quality*

| **#CAMQUA - Camera Photo Quality** | |
|---|---|
| **AT#CAMQUA[=[<qual>]]** | Set command sets the quality of the photo.<br><br>Parameter:<br>**<qual>** - photo quality<br>0 - low quality of picture, high Jpeg compression<br>1 - medium quality of picture, medium Jpeg compression<br>2 - high quality of picture, low Jpeg compression (factory default)<br><br>Note: increasing the photo quality increases its size.<br><br>Note: issuing **AT#CAMQUA<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMQUA=<CR>** is the same as issuing the command **AT#CAMQUA=0<CR>**. |

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| | |
|---|---|
| **AT#CAMQUA?** | Read command reports the current photo quality, in the format:<br><br>**#CAMQUA: <qual>** |
| **AT#CAMQUA=?** | Test command returns the allowed values for parameter **<qual>**. |

### *3.5.5.4.8 #CMODE - Camera Exposure*

| **#CMODE - Camera Exposure** | |
|---|---|
| **AT#CMODE[=[<exp>]]** | Set command sets the camera exposure.<br><br>Parameter:<br>**<exp>** - camera exposure<br>0 - daylight mode, short exposure (factory default)<br>1 - nightlight mode, long exposure<br><br>Note: issuing **AT#CMODE<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CMODE=<CR>** is the same as issuing the command **AT#CMODE=0<CR>** |
| **AT#CMODE?** | Read command reports the current camera exposure in the format:<br><br>**#CMODE: <exp>** |
| **AT#CMODE=?** | Test command returns the allowed values for parameter **<exp>**. |

### *3.5.5.4.9 #CAMZOOM - Camera Zoom*

| **#CAMZOOM - Camera Zoom** | |
|---|---|
| **AT#CAMZOOM[=[<zoom>]]** | Set command sets current zoom.<br><br>Parameter:<br>**<zoom>** - camera zoom<br>0 - no zoom, x1 (factory default)<br>1 - zoom, x2<br>2 - zoom, x4<br>3 - reserved for future use<br><br>Note: issuing **AT#CAMZOOM<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMZOOM=<CR>** is the same as issuing the command **AT#CAMZOOM=0<CR>**. |
| **AT#CAMZOOM?** | Read command reports the current zoom setting, in the format:<br><br>**#CAMZOOM: <zoom>** |

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| #CAMZOOM - Camera Zoom | |
|---|---|
| **AT#CAMZOOM=?** | Test command returns the allowed values for parameter **<zoom>**. |

### 3.5.5.4.10 #CAMTXT - Camera Time/Date Overprint

| #CAMTXT - Camera Time/Date Overprint | |
|---|---|
| **AT#CAMTXT[=[<ov>]]** | Set command sets time/date overprinting.<br><br>Parameter:<br>**<ov>** - time/date overprinting mode<br>0 - no overprinting (factory default)<br>1 - time info printed at the bottom of picture<br>2 - date info printed at the bottom of picture<br>3 - time&date info printed at the bottom of picture<br>4 - reserved for future use<br><br>Note: issuing **AT#CAMTXT<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMTXT=<CR>** is the same as issuing the command **AT#CAMTXT=0<CR>**. |
| **AT#CAMTXT?** | Read command reports the current time/date overprinting mode, in the format:<br><br>**#CAMTXT: <ov>** |
| **AT#CAMTXT=?** | Test command returns the allowed values for parameter **<ov>**. |

### 3.5.5.4.11 #TPHOTO - Camera Take Photo

| #TPHOTO - Camera Take Photo | |
|---|---|
| **AT#TPHOTO** | Execution command is used to take the photo and to store it in the MODULE memory.<br><br>Note: the photo is stored in the MODULE RAM memory, therefore after a power off it is lost.<br><br>Note: there's only 1 position for the photo, every photo will overwrite the previous. |
| **AT#TPHOTO?** | Read command has the same behaviour as Execution command |
| Example | AT#TPHOTO<br>OK<br>*the camera has taken the photo and it is now stored on the MODULE memory* |
| Note | The photo is taken during IDLE time, if the mobile is busy on network |

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| #TPHOTO - Camera Take Photo | |
|---|---|
| | operations, (e.g. during a call) the photo cannot be taken. |

### 3.5.5.4.12 #RPHOTO - Camera Read Photo

| #RPHOTO - Camera Read Photo | |
|---|---|
| **AT#RPHOTO** | Execution command is used to flushing the photo stored in the MODULE RAM memory to the serial line, ending it with the sequence:<br><br>**<CR><LF>OK<CR><LF>** |
| **AT#RPHOTO?** | Read command has the same behaviour as Execution command |
| Example | AT#RPHOTO<br>xxxxxxxxxxxx *(binary digits of the JPEG image)*<br><cr><lf>OK<cr><lf><br>*the photo has been flushed to the serial line* |
| Note | The photo is flushed as hexadecimal characters in the format selected.<br>The baudrate is fixed at 115200, using hardware flow control. |

### 3.5.5.4.13 #OBJL - Object List

| #OBJL- Object List Command | |
|---|---|
| **AT#OBJL[=<obj>]** | Execution command reports the list of the objects stored in the MODULE memory.<br><br>Parameter:<br>**<obj>** - type of objects to be listed, string type.<br>"IMG" - image object.<br><br>Note: the behaviour of the command doesn't change even if the **<obj>** parameter is omitted<br><br>The output format is:<br><br>**#OBJL: <filename>,<size>**<br><br>where:<br>**<filename>** - name of the object; it is always "Snapshot"<br>**<size>** - size of the object in bytes |
| **AT#OBJL?** | Read command has the same behaviour as Execution command |
| **AT#OBJL=?** | Test command has the same behaviour as Execution command |
| Example | AT#OBJL="IMG"<br>#OBJL: Snapshot,47224<br><br>OK |

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### 3.5.5.4.14 #OBJR - Object Read

| #OBJR - Object Read | |
|---|---|
| **AT#OBJR=<obj>, "Snapshot"** | Execution command is used to flushing the photo stored in the MODULE RAM memory to the serial line.<br><br>The difference between this command and **#RPHOTO** is that **#OBJR** output ends without the sequence:<br><br>**<CR><LF>OK<CR><LF>**<br><br>Parameter:<br>**<obj>** - type of objects to be listed, string type<br>"IMG" - Image object<br><br>Note: **"Snapshot"** is the only name of the object. |
| Example | `AT#OBJR="IMG","Snapshot"`<br>`xxxxxxxxxxxx` *binary digits of the JPEG image*<br>*… the photo has been flushed to the serial line.* |
| Note | The photo is flushed as hexadecimal characters in the format selected. The baudrate is fixed at 115200, using hardware flow control. |

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## 3.5.5.5 E-mail Management AT Commands

### *3.5.5.5.1 #ESMTP - E-mail SMTP Server*

| **#ESMTP – E-mail SMTP Server** | |
|---|---|
| **AT#ESMTP [=<smtp>]** | Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name.<br><br>Parameter:<br>**<smtp>** - SMTP server address, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host name>**<br>(factory default is the empty string “”)<br><br>Note: the max length for **<smtp>** is the output of Test command.<br><br>Note: If parameter is omitted then the behaviour of Set command is the same of Read command |
| **AT#ESMTP?** | Read Command reports the current SMTP server address, in the format:<br><br>**#ESMTP: <smtp>** |
| **AT#ESMTP=?** | Test command returns the max length for the parameter **<smtp>.** |
| Example | `AT#ESMTP="smtp.mydomain.com"`<br>`OK` |
| Note | The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the email. |

### *3.5.5.5.2 #EADDR - E-mail Sender Address*

| **#EADDR - E-mail Sender Address** | |
|---|---|
| **AT#EADDR [=<e-addr>]** | Set command sets the sender address string to be used for sending the e-mail.<br><br>Parameter:<br>**<e-addr>** - sender address, string type.<br>- any string value up to max length reported in the Test command.<br>(factory default is the empty string “”)<br><br>Note: If parameter is omitted then the behaviour of Set command is the same of Read command |
| **AT#EADDR?** | Read command reports the current sender address, in the format:<br><br>**#EADDR: <e-addr>** |

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| #EADDR - E-mail Sender Address | |
|---|---|
| **AT#EADDR=?** | Test command returns the maximum allowed length of the string parameter **<e-addr>.** |
| Example | `AT#EADDR="me@email.box.com"`<br>`OK`<br>`AT#EADDR?`<br>`#EADDR: "me@email.box.com"`<br><br>`OK` |

### 3.5.5.5.3 #EUSER - E-mail Authentication User Name

| #EUSER - E-mail Authentication User Name | |
|---|---|
| **AT#EUSER [=<e-user>]** | Set command sets the user identification string to be used during the authentication step of the SMTP.<br><br>Parameter:<br>**<e-user>** - email authentication User ID, string type.<br>- any string value up to max length reported in the Test command. (factory default is the empty string “”)<br><br>Note: if no authentication is required then the **<e-user>** parameter shall be empty "".<br><br>Note: If parameter is omitted then the behaviour of Set command is the same of Read command |
| **AT#EUSER?** | Read command reports the current user identification string, in the format:<br><br>**#EUSER: <e-user>** |
| **AT#EUSER=?** | Test command returns the maximum allowed length of the string parameter **<e-user>**. |
| Example | `AT#EUSER="myE-Name"`<br>`OK`<br>`AT#EUSER?`<br>`#EUSER: "myE-Name"`<br><br>`OK` |
| Note | It is a different user field than the one used for GPRS authentication (see **#USERID**). |

### 3.5.5.5.4 #EPASSW - E-mail Authentication Password

| #EPASSW - E-mail Authentication Password | |
|---|---|
| **AT#EPASSW=** | Set command sets the password string to be used during the authentication |

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| #EPASSW - E-mail Authentication Password | |
|---|---|
| **<e-pwd>** | step of the SMTP.<br><br>Parameter:<br>**<e-pwd>** - email authentication password, string type.<br>- any string value up to max length reported in the Test command. (factory default is the empty string “”)<br><br>Note: if no authentication is required then the **<e-pwd>** parameter shall be empty "". |
| **AT#EPASSW=?** | Test command returns the maximum allowed length of the string parameter **<e-pwd>**. |
| Example | `AT#USERID="myPassword"`<br>`OK` |
| Note | It is a different password field than the one used for GPRS authentication (see **#PASSW**). |

### *3.5.5.5.5 #SEMAIL - E-mail Sending With GPRS Context Activation*

| #SEMAIL - E-mail Sending With GPRS Context Activation | |
|---|---|
| **AT#SEMAIL= <da>,<subj>, <att>[,<filename>]** | Execution command activates a GPRS context, if not previously activated by **#EMAILACT**, and sends an e-mail message. The GPRS context is deactivated when the e-mail is sent.<br><br>Parameters:<br>**<da>** - destination address, string type.<br>**<subj>** - subject of the message, string type.<br>**<att>** - attached image flag<br>0 - don't attach any image<br>1 - attach the last snapshot taken<br>**<filename>** - image name (default is “snapshot.jpg”)<br><br>The device responds to the command with the prompt '**>**' and awaits for the message body text.<br><br>To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex).<br><br>If e-mail message is successfully sent, then the response is **OK**.<br>If message sending fails for some reason, an error code is reported<br><br>Note: Care must be taken to ensure that during the command execution, no other commands are issued.<br><br>To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands. |

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| #SEMAIL - E-mail Sending With GPRS Context Activation | |
|---|---|
| | Note: if GPRS context was previously activated by **#GPRS** it's not possible to successfully send the e-mail message and the response is the result code **activation failed**.<br><br>Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute. |
| Example | `AT#SEMAIL="me@myaddress.com","subject of the mail",1`<br>`>message body… this is the text of the mail message…`<br>`CTRL-Z`<br><br>*`..wait..`*<br>`OK`<br><br>*`Message has been sent.`* |

### 3.5.5.5.6 #EMAILACT - E-mail GPRS Context Activation

| #EMAILACT - E-mail GPRS Context Ativation | |
|---|---|
| **AT#EMAILACT[=[<mode>]]** | Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with **#PASSW** and **#USERID**.<br><br>Parameter:<br>**<mode>** - GPRS context activation mode<br>0 - GPRS context deactivation request<br>1 - GPRS context activation request<br><br>Note: issuing **AT#EMAILACT<CR>** reports the current status of the GPRS context for the e-mail, in the format:<br><br>**#EMAILACT: <status>**<br><br>where:<br>**<status>**<br>0 - GPRS context deactivated<br>1 - GPRS context activated<br><br>Note: issuing **AT#EMAILACT=<CR>** is the same as issuing the command **AT#EMAILACT=0<CR>**. |
| **AT#EMAILACT?** | Read command has the same effect of the Execution command **AT#EMAILACT<CR>**. |
| **AT#EMAILACT=?** | Test command returns the allowed values for parameter **<mode>**. |
| Example | `AT#EMAILACT=1`<br>`OK` |

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| #EMAILACT - E-mail GPRS Context Ativation | |
|---|---|
| | *Now GPRS Context has been activated*<br><br>AT# EMAILACT=0<br>OK<br>*Now GPRS context has been deactivated.* |

### 3.5.5.5.7 #EMAILD - E-mail Sending

| #EMAILD - E-mail Sending | |
|---|---|
| **AT#EMAILD= <da>,<subj>, <att>[,<filename>]** | Execution command sends an e-mail message if GPRS context has already been activated with **AT#EMAILACT=1**.<br><br>Parameters:<br>**<da>** - destination address, string type.<br>**<subj>** - subject of the message, string type<br>**<att>** - attached image flag<br>0 - don't attach any image<br>1 - attach the last snapshot taken<br>**<filename>** - image name (default is “snapshot.jpg”)<br><br>The device responds to the command with the prompt '**>**' and awaits for the message body text.<br><br>To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex).<br><br>If e-mail message is successfully sent, then the response is **OK**.<br>If message sending fails for some reason, an error code is reported<br><br>Note: Care must be taken to ensure that during the command execution, no other commands are issued.<br><br>To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands.<br><br>Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute. |
| Example | AT#EMAILD=”me@myaddress.com”,”subject of the mail”,1<br>>message body… this is the text of the mail message…<br>CTRL-Z<br><br>*..wait..*<br>OK<br>*Message has been sent.* |
| Note | The only difference between this command and the **#SEMAIL** is that this |

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| #EMAILD - E-mail Sending | |
|---|---|
| | command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the **#EMAILACT** setting, thus, when the connection made with **#EMAILD** is closed, the context status is maintained. |

### *3.5.5.5.8 #ESAV - Email Parameters Save*

| #ESAV - Email Parameters Save | |
|---|---|
| **AT#ESAV** | Execution command saves the actual e-mail parameters in the NVM of the device.<br><br>The values stored are:<br>- E-mail User Name<br>- E-mail Password<br>- E-mail Sender Address<br>- E-mail SMTP server |
| Note | If some parameters have not been previously specified then a default value will be taken. |

### *3.5.5.5.9 #ERST - E-mail Parameters Reset*

| #ERST - E-mail Parameters Reset | |
|---|---|
| **AT#ERST** | Execution command resets the actual e-mail parameters in the NVM of the device to the default ones.<br><br>The values reset are:<br>- E-mail User Name<br>- E-mail Password<br>- E-mail Sender Address<br>- E-mail SMTP server |

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## 3.5.5.6 Easy Scan® Extension AT Commands

### *3.5.5.6.1 #CSURV - Network Survey*

| **#CSURV - Network Survey** | |
|---|---|
| **AT#CSURV [=<s>,<e>]**<br><br>**AT*CSURV [=<s>,<e>]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through channels belonging to the band selected by last **#BND** command issue, starting from channel **<s>** to channel **<e>**. If parameters are omitted, a full band scan is performed.<br><br>Parameters:<br>**<s>** - starting channel<br>**<e>** - ending channel<br><br>After issuing the command the device responds with the string:<br><br>**Network survey started…**<br><br>and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:<br><br>**(For BCCH-Carrier)**<br>**arfcn: <arfcn> bsic: <bsic> rxLev: <rxLev> ber: <ber> mcc: <mcc> mnc: <mnc> lac: <lac> cellId: <cellId> cellStatus: <cellStatus> numArfcn: <numArfcn> arfcn: [<arfcn1> ..[ <arfcn64>]] [numChannels: <numChannels> array: [<ba1> ..[<ba32>]] [pbcch: <pbcch> [nom: <nom> rac: <rac> spgc: <spgc> pat: <pat> nco: <nco> t3168: <t3168> t3192: <t3192> drxmax: <drxmax> ctrlAck: <ctrlAck> bsCVmax: <bsCVmax> alpha: <alpha> pcMeasCh: <pcMeasCh>]]] <CR><LF><CR><LF><CR><LF>**<br><br>where:<br>**<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel)<br>**<bsic>** - base station identification code<br>**<rxLev>** - receiption level (in dBm)<br>**<ber>** - bit error rate (in %)<br>**<mcc>** - mobile country code<br>**<mnc>** - mobile network code<br>**<lac>** - location area code<br>**<cellId>** - cell identifier<br>**<cellStatus>** - cell status<br>..CELL_SUITABLE - C0 is a suitable cell.<br>CELL_LOW_PRIORITY - the cell is low priority based on the received system information.<br>CELL_FORBIDDEN - the cell is forbidden.<br>CELL_BARRED - the cell is barred based on the received system |

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**#CSURV - Network Survey**

information.
CELL_LOW_LEVEL - the cell **<rxLev>** is low.
CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available…etc.
**<numArfcn>** - number of valid channels in the Cell Channel Description
**<arfcn*n*>** - arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)
**<numChannels>** - number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting:
1. if **#CSURVEXT=0** this information is displayed only for serving cell
2. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier.

**<ba*n*>** - arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting:
1. if **#CSURVEXT=0** this information is displayed only for serving cell
2. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier.
3.

*(The following informations will be printed only if GPRS is supported in the cell)*
**<pbcch> -**
0
1
**<nom>** - network operation mode
1
2
3
**<rac>** - routing area code
0..255 -
**<spgc>** - SPLIT_PG_CYCLE support
..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell
..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell
**<pat>** - priority access threshold
0 -
3..6 -
**<nco>** - network control order
0..2 -
**<t3168>** - timer 3168
**<t3192>** - timer 3192
**<drxmax>** - discontinuous reception max time (in seconds)
**<ctrlAck>** - packed control ack
**<bsCVmax> -** blocked sequenc countdown max value

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| #CSURV - Network Survey | |
|---|---|
| | **<alpha> -** alpha parameter for power control<br>**<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control<br>0 - BCCH<br>1 – PDCH<br><br>**(For non BCCH-Carrier)**<br>**arfcn: <arfcn> rxLev: <rxLev>**<br><br>where:<br>**<arfcn>** - decimal number; it is the RF channel<br>**<rxLev>** - decimal number; it is the receiption level (in dBm)<br><br>The last string received from **#CSURV** depends on the last **#CSURVF** setting:<br><br>if **#CSURVF=0** or **#CSURVF=1**<br>the output ends with the string:<br>**Network survey ended**<br><br>if **#CSURVF=2**<br>the output ends with the string:<br>**Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)**<br>where<br>**<NoARFCN>** - number of scanned frequencies<br>**<NoBCCH>** - number of found BCCh |
| **AT#CSURV?**<br><br>**AT*CSURV?** | Read command has the same behaviour as Execution command with parameters omitted. |
| Example | AT#CSURV<br><br>`Network survey started…`<br><br>`arfcn: 48 bsic: 24 rxLev: -52 ber: 0.00 mcc: 610 mnc: 1 lac: 33281 cellId: 3648 cellStatus: CELL_SUITABLE numArfcn: 2 arfcn: 30 48 numChannels: 5 array: 14 19 22 48 82`<br><br>`arfcn: 14 rxLev: 8`<br><br>`Network survey ended`<br><br>OK |
| Note | The command is executed within max. 2 minutes. |

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### 3.5.5.6.2 #CSURVC - Network Survey (Numeric Format)

| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| **AT#CSURVC [=<s>,<e>]**<br><br>**AT*CSURVC [=<s>,<e>]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through channels belonging to the band selected by last **#BND** command issue, starting from channel **<s>** to channel **<e>**. If parameters are omitted, a full band scan is performed.<br><br>Parameters:<br>**<s>** - starting channel<br>**<e>** - ending channel<br><br>After issuing the command the device responds with the string:<br><br>**Network survey started…**<br><br>and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:<br><br>**(For BCCH-Carrier)**<br>**<arfcn>,<bsic>,<rxLev>,<ber>,<mcc>,<mnc>,<lac>,<cellId>, <cellStatus>,<numArfcn>[,<arfcn1> ..[ <arfcn64>]] [,<numChannels>[,<ba1> ..[<ba32>]] [<pbcch> [<nom> <rac> <spgc> <pat> <nco> <t3168> <t3192> <drxmax> <ctrlAck> <bsCVmax> <alpha> <pcMeasCh>]]]**<br>**<CR><LF><CR><LF><CR><LF>**<br><br>where:<br>**<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel)<br>**<bsic>** - base station identification code<br>**<rxLev>** - receiption level (in dBm)<br>**<ber>** - bit error rate (in %)<br>**<mcc>** - mobile country code<br>**<mnc>** - mobile network code<br>**<lac>** - location area code<br>**<cellId>** - cell identifier<br>**<cellStatus>** - cell status<br>..0 - C0 is a suitable cell (CELL_SUITABLE).<br>1 - the cell is low priority based on the received system information (CELL_LOW_PRIORITY).<br>2 - the cell is forbidden (CELL_FORBIDDEN).<br>3 - the cell is barred based on the received system information (CELL_BARRED).<br>4 - the cell **<rxLev>** is low (CELL_LOW_LEVEL).<br>5 - none of the above e.g. exclusion timer running, no BCCH available…etc.. (CELL_OTHER).<br>**<numArfcn>** - number of valid channels in the Cell Channel Description |

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| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| | **<arfcn*n*>** - arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)<br>**<numChannels>** - number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting:<br>1. if **#CSURVEXT=0** this information is displayed only for serving cell<br>2. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier.<br>**<ba*n*>** - arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting:<br>1. if **#CSURVEXT=0** this information is displayed only for serving cell<br>2. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier.<br>*(The following informations will be printed only if GPRS is supported in the cell)*<br>**<pbcch> -**<br>0<br>1<br>**<nom>** - network operation mode<br>1<br>2<br>3<br>**<rac>** - routing area code<br>0..255 -<br>**<spgc>** - SPLIT_PG_CYCLE support<br>..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell<br>..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell<br>**<pat>** - priority access threshold<br>0 -<br>3..6 -<br>**<nco>** - network control order<br>0..2 -<br>**<t3168>** - timer 3168<br>**<t3192>** - timer 3192<br>**<drxmax>** - discontinuous reception max time (in seconds)<br>**<ctrlAck>** - packed control ack<br>**<bsCVmax> -** blocked sequenc countdown max value<br>**<alpha> -** alpha parameter for power control<br>**<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control<br>0 - BCCH<br>1 - PDCH |

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| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| | **(For non BCCH-Carrier)**<br>**<arfcn>,<rxLev>**<br><br>where:<br>**<arfcn>** - decimal number; it is the RF channel<br>**<rxLev>** - decimal number; it is the receiption level (in dBm)<br><br>The last string received from **#CSURVC** depends on the last **#CSURVF** setting:<br><br>if **#CSURVF=0** or **#CSURVF=1**<br>The output ends with the string:<br>**Network survey ended**<br><br>if **#CSURVF=2**<br>the output ends with the string:<br>**Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)**<br>where<br>**<NoARFCN**> - number of scanned frequencies<br>**<NoBCCH**> - number of found BCCh |
| **AT#CSURVC?**<br><br>**AT*CSURVC?** | Read command has the same behaviour as the Execution command with parameters omitted |
| Example | AT#CSURVC<br><br>Network survey started…<br><br>48,24,-52,0.00,610,1,33281,3648,0,2,30 48,5,14 19 22 48 82<br><br>14,8<br><br>Network survey ended<br><br>OK |
| Note | The command is executed within max. 2 minute.<br><br>The information provided by **#CSURVC** is the same as that provided by **#CSURV**. The difference is that the output of **#CSURVC** is in numeric format only. |

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### 3.5.5.6.3 #CSURVU - Network Survey Of User Defined Channels

| #CSURVU - Network Survey Of User Defined Channels | |
|---|---|
| **AT#CSURVU=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br><br>**AT*CSURVU=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through the given channels. The range of available channels depends on the last **#BND** issue.<br><br>The result format is like command **#CSURV**.<br><br>Parameters:<br>**<ch*n*>** - channel number (arfcn)<br><br>Note: the **<ch*n*>** must be in a increasing order.<br><br>Note: issuing **AT#CSURVU=<CR>** is the same as issuing the command **AT#CSURVU=0<CR>**. |
| Example | `AT#CSURVU=59,110`<br><br>`Network survey started…`<br><br>`arfcn: 59 bsic: 16 rxLev: -76 ber: 0.00 mcc: 546 mnc: 1 lac: 54717 cellId: 21093 cellStatus: CELL_SUITABLE numArfcn 2 arfcn: 36 59`<br><br>`arfcn: 110 rxLev: -107`<br><br>`Network survey ended`<br><br>`OK` |
| Note | The command is executed within max. 2 minute. |

### 3.5.5.6.4 #CSURVUC - Network Survey Of User Defined Channels (Numeric Format)

| #CSURVUC - Network Survey Of User Defined Channels (Numeric Format) | |
|---|---|
| **AT#CSURVUC=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br><br>**AT*CSURVUC=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through the given channels. The range of available channels depends on the last **#BND** issue.<br><br>The result format is like command **#CSURVC**.<br><br>Parameters:<br>**<ch*n*>** - channel number (arfcn)<br><br>Note: the **<ch*n*>** must be in a increasing order. |

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| #CSURVUC - Network Survey Of User Defined Channels (Numeric Format) | |
|---|---|
| | Note: issuing **AT#CSURVUC=<CR>** is the same as issuing the command **AT#CSURVUC=0<CR>**. |
| Example | `AT#CSURVUC=59,110`<br><br>`Network survey started…`<br><br>`59,16,-76,0.00,546,1,54717,21093,0,2,36 59`<br><br>`110,-107`<br><br>`Network survey ended`<br><br>`OK` |
| Note | The command is executed within max. 2 minute.<br><br>The information provided by **#CSURVUC** is the same as that provided by **#CSURVU**. The difference is that the output of **#CSURVUC** is in numeric format only. |

### *3.5.5.6.5 #CSURVB - BCCH Network Survey*

| #CSURVB - BCCH Network Survey | |
|---|---|
| **AT#CSURVB=<n>** | Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found.<br><br>The result format is like command **#CSURV**.<br><br>Parameter:<br>**<n>** - number of desired BCCH carriers<br>1..M |
| **AT#CSURVB=?** | Test command reports the range of values for parameter **<n>** in the format:<br><br>**(1-M)**<br><br>where **M** is the maximum number of available frequencies depending on last selected band. |

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### 3.5.5.6.6 #CSURVBC - BCCH Network Survey (Numeric Format)

| #CSURVBC - BCCH Network Survey (Numeric Format) | |
|---|---|
| **AT#CSURVBC=<n>** | Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found.<br><br>The result is given in numeric format and is like command **#CSURVC**.<br><br>Parameter:<br>**<n>** - number of desired BCCH carriers<br>1..M |
| **AT#CSURVBC=?** | Test command reports the range of values for parameter **<n>** in the format:<br><br>**(1-M)**<br><br>where **M** is the maximum number of available frequencies depending on last selected band. |

### 3.5.5.6.7 #CSURVF - Network Survey Format

| #CSURVF - Network Survey Format | |
|---|---|
| **AT#CSURVF[=[<format>]]** | Set command controls the format of the numbers output by all the Easy Scan®<br><br>Parameter:<br>**<format>** - numbers format<br>0 - Decimal<br>1 - Hexadecimal values, no text<br>2 - Hexadecimal values with text<br><br>Note: issuing **AT#CSURVF<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CSURVF=<CR>** is the same as issuing the command **AT#CSURVF=0<CR>**. |
| **AT#CSURVF?** | Read command reports the current number format, as follows:<br><br>**#CSURVF: <format>** |
| **AT#CSURVF=?** | Test command reports the supported range of values for the parameter **<format>**. |

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### 3.5.5.6.8 #CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family

| #CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family | |
|---|---|
| **AT#CSURVNLF [=<value>]** | Set command enables/disables the automatic **<CR><LF>** removing from each information text line.<br><br>Parameter:<br>**<value>**<br>0 - disables **<CR><LF>** removing; they'll be present in the information text (factory default)<br>1 - remove **<CR><LF>** from imformation text<br><br>Note: if parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT#CSURVNLF?** | Read command reports whether automatic **<CR><LF>** removing is currently enabled or not, in the format:<br><br>**<value>** |
| **AT#CSURVNLF=?** | Test command reports the range of values for parameter **<value>.** |

### 3.5.5.6.9 #CSURVEXT - Extended Network Survey

| #CSURVEXT - Extended Network Survey | |
|---|---|
| **AT#CSURVEXT [=<value>]** | Set command enables/disables extended network survey.<br><br>Parameter:<br>**<value>**<br>0 - disables extended network survey (factory default)<br>1 - enables extended network survey; all the network survey execution commands (**#CSURV**, **#CSURVC**, **#CSURVU**, **#CSURVUC**, **#CSURVB**, **#CSURVBC**) display the BAList for every valid scanned BCCh carrier<br>2 - enables extended network survey; all the network survey execution commands (**#CSURV**, **#CSURVC**, **#CSURVU**, **#CSURVUC**, **#CSURVB**, **#CSURVBC**) display the BAList for every valid scanned BCCh carrier and, if GPRS is supported in the cell, they report some GPRS informations carried by the System Information 13 of the BCCh<br><br>Note: if parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT#CSURVEXT?** | Read command reports whether extended network survey is currently enabled or not, in the format:<br><br>**<value>** |
| **AT#CSURVEXT=?** | Test command reports the range of values for parameter **<value>.** |

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## 3.5.5.7 Jammed Detect & Report AT Commands

### *3.5.5.7.1 #JDR - Jammed Detect & Report*

| **#JDR - Jammed Detect & Report** | |
|---|---|
| **AT#JDR[=[<mode>[,<MNPL>,<DCMN>]]]** | Set command allows to control the Jammed Detect & Report feature.<br><br>The MODULE can detect if a communication Jammer is active in its range and give indication to the user of this condition either on the serial line with an unsolicited code or on a dedicated GPIO by rising it.<br><br>The MODULE can also report to the network the Jammed status condition, even if normal communications are inhibited by the Jammer, by using a unique message.<br><br>Parameters:<br>**<mode>** - behaviour mode of the Jammed Detect & Report<br>0 - disables Jammed Detect & Report (factory default)<br>1 - enables the Jammed Detect; the Jammed condition is reported on pin GPIO2/JDR<br>GPIO2/JDR **LOW** - Normal Operating Condition<br>GPIO2/JDR **HIGH** - Jammed Condition.<br>2 - enables the Jammed Detect; the Jammed condition is reported with a single unsolicited result code on serial line, in the format:<br><br>**#JDR: <status>**<br>where:<br>**<status>**<br>JAMMED - Jammed condition detected<br>OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.<br>3 - enables the Jammed Detect; the MODULE will make both the actions as for **<mode>=1** and **<mode>=2**.<br>4 - enables the Jammed Detect; the Jammed condition is reported with an unsolicited code every 3s on serial line, in the format:<br><br>**#JDR: <status>**<br>where:<br>**<status>**<br>JAMMED - Jammed condition detected<br>OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.<br>5 - enables the Jammed Detect; the MODULE will make both the actions as for **<mode>=1** and **<mode>=4**.<br><br>**<MNPL>** - Maximum Noise Power Level<br>0..127 |

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| #JDR - Jammed Detect & Report | |
|---|---|
| | **<DCMN>** - Disturbed Channel Minimum Number<br>0..254<br><br>Note: issuing **AT#JDR<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#JDR=<CR>** is the same as issuing the command **AT#JDR=0<CR>**. |
| **AT#JDR?** | Read command reports the current behaviour mode, Maximum Noise Power Level and Disturbed Channel Minimum Number, in the format:<br><br>**#JDR: <mode>,<MNPL>,<DCMN>** |
| **AT#JDR=?** | Test command reports the supported range of values for the parameters **<mode>**,**<MNPL>** and **<DCMN>** |
| Example | `AT#JDR=2`<br>`OK`<br>*…jammer enters in the range…*<br>`#JDR: JAMMED`<br>*…jammer exits the range…*<br>`#JDR: OPERATIVE` |
| Note | It is suggested not to change the default setting for Maximum Noise Power Level and Disturbed Channel Minimum Number.<br><br>If the device is installed in a particular environment where the default values are not satisfactory the two parameters **<MNPL>** and **<DCMN>** permit to adapt the detection to all conditions. |

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## 3.5.5.8 Easy Script® Extension - Python[10] Interpreter, AT Commands

### *3.5.5.8.1 #WSCRIPT - Write Script*

| **#WSCRIPT - Write Script** | |
|---|---|
| **AT#WSCRIPT=<br><script_name>,<br><size><br>[,<hidden>]** | Execution command inserts a script text and save it with the name **<script_name>** in the NVM of the module supporting the Python extension.<br><br>The script text should be sent using Raw Ascii file transfer.<br>It is important to set properly the port settings. In particular:<br>**Baud rate: 115200 bps**<br>**Flow control: hardware.**<br><br>Parameters:<br>**<script_name>** - file name, string type (max 16 chars, case sensitive).<br>**<size>** - file size in bytes<br>**<hidden>** - file hidden attribute<br>0 - file content is readable with **#RSCRIPT** (default).<br>1 - file content is hidden, **#RSCRIPT** command will report empty file.<br><br>The device responds to the command with the prompt '**>>>**' and waits for the script file text for **<size>** bytes.<br><br>The operations completes when all the bytes are received.<br><br>If script writing ends successfully, the response is **OK**; otherwise an error code is reported<br><br>Note: The script name should be passed between quotes and all Executable Scripts files must have **.py** extension - Script names are Case sensitive.<br><br>Note: When sending the script be sure that the line terminator is **<CR><LF>** and that your terminal program does not change it.<br><br>Note: with the hidden attribute it is possible to protect your script from being viewed and copied, only the file name can be viewed, its content is hidden even if the file is still being run correctly. It's your care to maintain knowledge on what the script file contains. |
| Example | `AT#WSCRIPT="First.py ",54,0`<br>*>>> here receive the prompt: depending on your editor settings it's possible that the prompt overrides the above line; then type or send the script, sized 54 bytes*<br>`OK` |

[10] PYTHON is a registered trademark of the Python Software Foundation.

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| #WSCRIPT - Write Script | |
|---|---|
| | `Script has been stored.` |
| Note | This command can also be used to write any text file in the MODULE-PYTHON memory (not script files only), for example application data or settings files with a different extension than **.py**. |

### 3.5.5.8.2 #ESCRIPT - Select Active Script

| #ESCRIPT - Select Active Script | |
|---|---|
| **AT#ESCRIPT[=[<script_name>]]** | Set command selects the name of the script that will be executed by the Easy Script® interpreter at the start-up. The script will be executed at start-up only if the DTR line is found LOW during initial start-up (that is: COM is not open on a PC), otherwise the Easy Script® interpreter will not execute and the module supporting the Python extension will behave normally answering only to AT commands on the serial port.<br><br>Parameter:<br>**<script-name>** - file name, string type (max 16 chars, case sensitive).<br><br>Note: all script files must have **.py** extension.<br><br>Note: The **<script_name>** must match with a file name written with the **#WSCRIPT** in order to have it run.<br><br>Note: the command does not check whether the script **<script_name>** does exist in the NVM of the module supporting the Python extension or not. If the file **<script_name>** is not present at the start-up then the Script Interpreter will not execute.<br><br>Note: issuing **AT#ESCRIPT<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#ESCRIPT=<CR>** is the same as issuing the command **AT#ESCRIPT=""<CR>**. |
| **AT#ESCRIPT?** | Read command reports the name of the script that will be executed by the Easy Script® interpreter at the start-up. |

### 3.5.5.8.3 #RSCRIPT - Read Script

| #RSCRIPT - Read Script | |
|---|---|
| **AT#RSCRIPT=<script_name>** | Execution command reports the content of script file **<script_name>**.<br><br>Parameter:<br>**<script-name>** - file name, string type (max 16 chars, case sensitive). |

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| #RSCRIPT - Read Script | |
|---|---|
| | The device responds to the command with the prompt '**<<<**', followed by the script file text.<br><br>Note: if the file **<script_name>** was saved with the hidden attribute, then an empty file is reported with the **OK** result code.<br><br>Note: If the file **<script_name>** is not present an error code is reported. |
| Example | `AT#RSCRIPT="First.py "`<br>*hereafter receive the prompt: depending on your editor settings it's possible that the prompt overrides the above line; then the script is displayed, immediately after the prompt*<br>`<<<import MDM`<br><br>`MDM.send('AT\r',10)`<br>`Ans=MDM.receive(20)`<br>`OK` |
| Note | Executable scripts files must have **.py** extension. |

### 3.5.5.8.4 #LSCRIPT - List Script Names

| #LSCRIPT - List Script Names | |
|---|---|
| **AT#LSCRIPT** | Execution command reports the list of script files names currently saved into the NVM and the available free NVM memory in the format:<br><br>**[#LSCRIPT: <script_name1> <size1>…**<br>**[<CR><LF><CR><LF>#LSCRIPT: <script_name*n*> <size*n*>]]**<br>**<CR><LF><CR><LF>#LSCRIPT: free bytes: <free_NVM>**<br><br>where:<br>**<script-name*n*>** - file name, string type (max 16 chars, case sensitive)<br>**<size*n*>** - size of script in bytes<br>**<free_NVM>** - size of available NVM memory in bytes |
| **AT#LSCRIPT?** | Read command has the same behavior of Execution command. |
| Example | `AT#LSCRIPT`<br>`#LSCRIPT: First.py 51`<br><br>`#LSCRIPT: Second.py 178`<br><br>`#LSCRIPT: Third.py 95`<br><br>`#LSCRIPT: free bytes: 20000` |

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| #LSCRIPT - List Script Names | |
|---|---|
| | OK |

### 3.5.5.8.5 #DSCRIPT - Delete Script

| #DSCRIPT - Delete Script | |
|---|---|
| **AT#DSCRIPT= <script_name>** | Execution command deletes a script file from NVM memory.<br><br>Parameter:<br>**<script_name>** - name of the script file to delete, string type (max 16 chars, case sensitive)<br><br>Note: if the file **<script_name>** is not present an error code is reported. |
| Example | AT#DSCRIPT="Third.py"<br>OK |

### 3.5.5.8.6 #REBOOT - Reboot

| #REBOOT - Reboot | |
|---|---|
| **AT#REBOOT** | Execution command reboots immediately the unit.<br><br>It can be used to reboot the system after a remote update of the script in order to have the new one running. |
| **AT#REBOOT?** | Read command has the same behavior of Execution command. |
| Example | AT#REBOOT<br><br>…. Module Reboots … |
| Note | This command does not return result codes. |

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## 3.5.5.9 GPS AT Commands Set

### *3.5.5.9.1 $GPSP - GPS Controller Power Management*

| **$GPSP - GPS Controller Power Management** | |
|---|---|
| **AT$GPSP=<status>** | Set command allows to manage power-up or down of the GPS controller<br><br>Parameter:<br>**<status>**<br>0 - GPS controller is powered down<br>1 - GPS controller is powered up (default)<br><br>Note: for the GPS product (GE863-GPS): if the GPS controller is powered down while camera or VAUX pin is enabled they'll both also be also powered off. |
| **AT$GPSP?** | Read command reports the current value of the **<status>** parameter, in the format:<br><br>**$GPSP: <status>** |
| **AT$GPSP=?** | Test command reports the range of supported values for parameter **<status>** |
| Example | `AT$GPSP=0`<br>`OK` |
| Note | If a camera is used with the module and it is powered on, issuing **$GPSP=0** causes the GPS module to be reset but not to be powered down, because the camera power supply is in common with the GPS module. |

### *3.5.5.9.2 $GPSR - GPS Reset*

| **$GPSR - GPS Reset** | |
|---|---|
| **AT$GPSR= <reset_type>** | Execution command allows to reset the GPS controller.<br><br>Parameter:<br>**<reset_type>**<br>0 - Hardware reset: the GPS receiver is reset and restarts by using the values stored in the internal memory of the GPS receiver.<br>1 - Coldstart (No Almanac, No Ephemeris): this option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained. It is available in controlled mode only.<br>2 - Warmstart (No ephemeris): this option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Receiver Initialization Setup screen. The almanac is retained but the ephemeris is cleared. It is available in controlled mode only. |

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| $GPSR - GPS Reset | |
|---|---|
| | 3 - Hotstart (with stored Almanac and Ephemeris): the GPS receiver restarts by using the values stored in the internal memory of the GPS receiver; validated ephemeris and almanac. It is available in controlled mode only. |
| **AT$GPSR=?** | Test command reports the range of supported values for parameter **<reset_type>** |
| Example | AT$GPSR=0<br>OK |

### 3.5.5.9.3 $GPSD - GPS Device Type Set

| $GPSD - GPS Device Type Set | |
|---|---|
| **AT$GPSD= <device_type>** | Set command defines which GPS device is connected to the module. It dedicates the Serial port #1 of the module (TRACE) to receive the GPS strings from the GPS module.<br><br>Parameter:<br>**<device type>**<br>0 - none; the serial port is not connected to GPS device and available for standard use<br>1 - currently has no meaning, maintained for backward compatibility<br>2 - serial port connected to GPS serial port: controlled mode (default)<br>3 - currently has no meaning, maintained for backward compatibility<br><br>Note: the current setting is stored through **$GPSSAV** |
| **AT$GPSD?** | Read command reports the current value of **<device_type>** parameter, in the format:<br><br>**$GPSD: <device_type>** |
| **AT$GPSD=?** | Test command reports the range of supported values for parameter **<device_type>** |
| Example | AT$GPSD=0<br>OK |

### 3.5.5.9.4 $GPSSW - GPS Software Version

| $GPSSW - GPS Software Version | |
|---|---|
| **AT$GPSSW** | Execution command provides GPS Module software version in the format:<br><br>**$GPSSW: <sw version>** |
| **AT$GPSSW?** | Read command has the same meaning as the Execution command |
| **AT$GPSSW=?** | Test command returns the **OK** result code |
| Example | AT$GPSSW |

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| $GPSSW - GPS Software Version | |
|---|---|
| | `$GPSSW: GSW3.1.1_3.1.00.07-C23P1.00`<br>`OK` |

### 3.5.5.9.5 $GPSAT - GPS Antenna Type Definition

| $GPSAT - GPS Antenna Type Definition | |
|---|---|
| **AT$GPSAT=<type>** | Set command selects the GPS antenna used.<br><br>Parameter:<br>**<type>**<br>0 - GPS Antenna not power supplied by the module<br>1 - GPS Antenna power supplied by the module (default)<br><br>Note: if current **<type>** is 0, either **$GPSAV** and **$GPSAI** have no meaning.<br><br>Note: the current setting is stored through **$GPSSAV** |
| **AT$GPSAT?** | Read command returns the currently used antenna, in the format:<br><br>**$GPSAT: <type>** |
| **AT$GPSAT=?** | Test command reports the range of supported values for parameter **<type>** |
| Example | `AT$GPSAT=1`<br>`OK` |
| Note | Refer to the HW user guide for the compatible GPS antennas |

### 3.5.5.9.6 $GPSAV - GPS Antenna Supply Voltage Readout

| $GPSAV - GPS Antenna Supply Voltage Readout | |
|---|---|
| **AT$GPSAV** | Execution command returns the measured GPS antenna's supply voltage in mV |
| **AT$GPSAV?** | Read command has the same meaning as the Execution command |
| **AT$GPSAV=?** | Test command returns the **OK** result code |
| Example | `AT$GPSAV`<br>`$GPSAV:3800`<br>`OK` |
| Note | It has meaning only if current **$GPSAT** setting is not 0 |

### 3.5.5.9.7 $GPSAI - GPS Antenna Current Readout

| $GPSAI - GPS Antenna Current Readout | |
|---|---|
| **AT$GPSAI** | Execution command reports the GPS antenna's current consumption in the format: |

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| $GPSAI - GPS Antenna Current Readout | |
|---|---|
| | **$GPSAI:<value>[,<status>]**<br><br>where:<br>**<value>** - the measured current in mA<br>**<status>**<br>0 - GPS antenna OK<br>1 - GPS antenna consumption out of the limits<br><br>Note: the output **<status>** is available only if the antenna protection is activated (see **$GPSAP**) |
| **AT$GPSAI?** | Read command has the same meaning as the Execution command |
| **AT$GPSAI=?** | Test command returns the **OK** result code |
| Example | `AT$GPSAI?`<br>`$GPSAI:040,0`<br>`OK` |
| Note | It has meaning only if current **$GPSAT** setting is not 0 |

### *3.5.5.9.8 $GPSAP - GPS Antenna Protection*

| $GPSAP - GPS Antenna Protection | |
|---|---|
| **AT$GPSAP=**<br>**<set>**<br>**[,<value>]** | Set command allows to activate an automatic protection in case of high current consumption of GPS antenna. The protection disables the GPS antenna supply voltage.<br><br>Parameters:<br>**<set>**<br>0 - deactivate current antenna protection (default)<br>1 - activate current antenna protection<br><br>**<value>** - the antenna current limit value in mA<br>0..200<br><br>If parameter **<set>=0** parameter **<value>** has no meaning and can be omitted.<br><br>Note: the new setting is stored through **$GPSSAV** |
| **AT$GPSAP?** | Read command reports the current activation status of antenna automatic protection and the current antenna limit value, in the format:<br><br>**$GPSAP: <set>,<value>** |
| **AT$GPSAP=?** | Test command reports the range of supported values for parameters **<set>** and **<value>** |
| Example | `AT$GPSAP=0`<br>`OK`<br>*Note : no SW control on antenna status (HW current limitation only)* |

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| $GPSAP - GPS Antenna Protection | |
|---|---|
| | AT$GPSAP=1,25<br>OK<br>*activate current antenna protection with related current limit*<br><br>AT$GPSAP?<br>$GPSAP:1,50<br>OK<br>*Antenna protection activated with 50mA limit* |
| Note | The module is already provided of an Hardware protection for the high current consumption that is automatically activated if the consumption exceeds 50mA |

### 3.5.5.9.9 $GPSS - GPS NMEA Serial Port Speed

| $GPSS - GPS Serial Port Speed | |
|---|---|
| **AT$GPSS=<speed>** | Set command allows to select the speed of the NMEA serial port.<br><br>Parameter:<br>**<speed>**<br>4800 - (default)<br>9600<br>19200<br>38400<br>57600<br><br>Note: the new setting is stored through **$GPSSAV** |
| **AT$GPSS?** | Read command returns the current serial ports speed in the format:<br><br>**$GPSS: <speed>** |
| **AT$GPSAP=?** | Test command returns the available range for **<speed>** |

### 3.5.5.9.10 $GPSNMUN - Unsolicited NMEA Data Configuration

| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| **AT$GPSNMUN= <enable> [,<GGA>,<GLL>, <GSA>,<GSV>, <RMC>,<VTG >]** | Set command permits to activate an Unsolicited streaming of GPS data (in NMEA format) through the standard GSM serial port and defines which NMEA sentences will be available<br><br>Parameters:<br>**<enable>**<br>0 - NMEA data stream de-activated (default) |

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| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| | 1 - NMEA data stream activated with the following unsolicited response syntax:<br>**$GPSNMUN:<CR><NMEA SENTENCE><CR>**<br>2 - NMEA data stream activated with the following unsolicited response syntax:<br>**<NMEA SENTENCE><CR>**<br>3 - dedicated NMEA data stream; it is not possible to send AT commands; with the escape sequence '+++' the user can return to command mode<br><br>**<GGA>** - Global Positioning System Fix Data<br>0 - disable (default)<br>1 - enable<br>**<GLL>** - Geographical Position - Latitude/Longitude<br>0 - disable (default)<br>1 - enable<br>**<GSA>** - GPS DOP and Active Satellites<br>0 - disable (default)<br>1 - enable<br>**<GSV>** - GPS Satellites in View<br>0 - disable (default)<br>1 - enable<br>**<RMC>** - recommended Minimum Specific GPS Data<br>0 - disable (default)<br>1 - enable<br>**<VTG>** - Course Over Ground and Ground Speed<br>0 - disable (default)<br>1 - enable |
| **AT$GPSNMUN?** | Read command returns whether the unsolicited GPS NMEA data streaming is currently enabled or not, along with the NMEA sentences availability status, in the format:<br><br>**$GPSNMUN:<enable>,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG >** |
| **AT$GPSNMUN=?** | Test command returns the supported range of values for parameters **<enable>, <GGA>, <GLL>, <GSA>, <GSV>, <RMC>, <VTG>** |
| Example | `AT$GPSNMUN=1,0,0,1,0,0,0`<br>`OK`<br>*These sets the GSA as available sentence in the unsolicited message*<br><br>`AT$GPSNMUN=0`<br>`OK`<br>*Turn-off the unsolicited mode*<br><br>`AT$GPSNMUN?`<br>`$GPSNMUN: 1,0,0,1,0,0,0`<br>`OK`<br>*Give the current frame selected (GSA)* |

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| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| | The unsolicited message will be:<br>$GPSNMUN:<br>$GPGSA,A,3,23,20,24,07,13,04,02,,,,,,2.4,1.6,1.8*3C |
| Reference | NMEA 01803 Specifications |
| Note | *The command is available in "Controlled Mode" only*<br><br>*The available NMEA Sentences are depending on the GPS receiver used*<br><br>*In GE863-GPS and GM862-GPS the fields PDOP and VDOP are not available*<br>*Use NMEA serial port instead if full DOP info are needed* |

### 3.5.5.9.11 $GPSACP - Get Acquired Position

| $GPSACP - Get Acquired Position | |
|---|---|
| **AT$GPSACP** | Execution command returns information about the last GPS position in the format:<br><br>**$GPSACP: <UTC>,<latitude>,<longitude>,<hdop>,<altitude>, <fix>,<cog>,<spkm>,<spkn>,<date>,<nsat>**<br><br>where:<br>**<UTC>** - UTC time (hhmmss.sss) referred to GGA sentence<br>**<latitude>** - format is ddmm.mmmm N/S (referred to GGA sentence)<br>where:<br>dd - degrees<br>00..90<br>mm.mmmm - minutes<br>00.0000..59.9999<br>N/S: North / South<br>**<longitude>** - format is dddmm.mmmm E/W (referred to GGA sentence)<br>where:<br>ddd - degrees<br>000..180<br>mm.mmmm - minutes<br>00.0000..59.9999<br>E/W: East / West<br>**<hdop>** - x.x - Horizontal Diluition of Precision (referred to GGA sentence)<br>**<altitude>** - xxxx.x Altitude - mean-sea-level (geoid) in meters (referred to GGA sentence)<br>**<fix>** - referred to GSA sentence<br>1 - Invalid Fix<br>2 - 2D fix<br>3 - 3D fix |

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| $GPSACP - Get Acquired Position | |
|---|---|
| | **<cog>** - ddd.mm - Course over Ground (degrees, True) (referred to VTG sentence)<br>where:<br>ddd - degrees<br>000..360<br>mm - minutes<br>00..59<br>**<spkm>** - xxxx.x Speed over ground (Km/hr) (referred to VTG sentence)<br>**<spkn>** - xxxx.x- Speed over ground (knots) (referred to VTG sentence)<br>**<date>** - ddmmyy Date of Fix (referred to RMC sentence)<br>where:<br>dd - day<br>01..31<br>mm - month<br>01..12<br>yy - year<br>00..99 - 2000 to 2099<br>**<nsat>** - nn - Total number of satellites in view (referred to GSV sentence) |
| **AT$GPSACP?** | Read command has the same meaning as the Execution command |
| **AT$GPSACP=?** | Test command returns the **OK** result code |
| Example | `AT$GPSACP`<br>`$GPSACP:080220.479,4542.82691N,01344.26820E,259.07,3,2.1,0.1,0.0,0.0,270705,09`<br><br>`OK` |

### 3.5.5.9.12 $GPSCON - Direct Access to GPS Module

| $GPSCON - Direct Access to GPS Module | |
|---|---|
| **AT$GPSCON** | Execution command allows to set the GSM baseband in transparent mode in order to have a direct access to the serial port of the GPS module. The GSM module will transfer directly the received data to the GPS module, without checking or elaborating them.<br><br>Note: the new setting is stored through **$GPSSAV**<br><br>Note: the command is usable only in “controlled mode”.<br><br>Note: in case of an incoming call from GSM, this will be visible on the RING pin of serial port.<br><br>Note: the escape sequence is “+++”<br><br>Note: the Serial Port Speed can be maximum 38400 bps |
| **AT$GPSCON=?** | Test command returns the **OK** result code |

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### 3.5.5.9.13 $GPSPRG - Set The GPS Module In Programming Mode

| $GPSPRG - Set The GPS Module In Programming Mode | |
|---|---|
| **AT$GPSPRG** | Execution command allows to switch on the GPS part in BOOT mode and set the GSM processor in Transparent Mode, in order to permit the re-programming of th GPS flash memory.<br><br>Note: the escape sequence is “+++”<br><br>Note: it is possible to issue **$GPSPRG** only if the Serial Port Speed is fixed 38400 bps |
| **AT$GPSCON?** | Read command has the same effect as Execution command. |
| **AT$GPSCON=?** | Test command returns the **OK** result code |

### 3.5.5.9.14 $GPSPS - Set The GPS Module In Power Saving Mode

| $GPSPS - Set The GPS Module In Power Saving Mode | |
|---|---|
| **AT$GPSPS=<br><mode><br>[,<PTF_Period>]** | Set command allows to set the GPS module in Power saving mode.<br><br>Parameters:<br>**<mode>** - the GPS receiver can operate in three modes<br>0 - full power mode, power saving disabled (default); it is the standard operating mode; power is supplied to the receiver continuously and the GPS receiver continues to operate without an interrupt.<br>1 - tricklepower mode; the power to the SiRF chipset is cycled periodically, so that it operates only a fraction of the time; power is applied only when a position fix is scheduled.<br>2 - push-to-fix mode; the GPS receiver is generally off, but turns on frequently enough to collect ephemeris data to maintain the GPS1 real-time clock calibration so that, upon user request, a position fix can be provided quickly after power-up.<br>**<PTF_Period>** - push-to-fix period, numeric value in secs; when mode is push-to-fix, the receiver turns on periodically according to this parameter; default value is 1800 sec. |
| **AT$GPSPS?** | Read command returns the current power saving mode and push-to-fix period, in the format:<br><br>**$GPSPS: <mode>,<PTF_Period>** |
| **AT$GPSPS=?** | Test command returns the available range for **<mode>** and **<PTF_Period>** |
| Note | Available in “controlled mode” only |

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### 3.5.5.9.15 $GPSWK - Wake Up GPS From Power Saving Mode

| **$GPSWK - Wake Up GPS From Power Saving Mode** | |
|---|---|
| **AT$GPSWK** | Execution command allows to wake up the GPS module if set in sleeping mode due to power saving.<br><br>Note: if the GPS module is in tricklepower mode, it will start up, make the fix and then continue to work in power saving mode.<br><br>Note: if the GPS module is in push-to-fix mode, issuing **$GPSWK** pemits to wake up it before the push to fix period; after the new fix the GPS module will return in push-to-fix mode with the same parameters. |
| **AT$GPSWK=?** | Test command returns the **OK** result code |
| Note | Available in “controlled mode” only |

### 3.5.5.9.16 $GPSSAV - Save GPS Parameters Configuration

| **$GPSSAV - Save GPS Parameters Configuration** | |
|---|---|
| **AT$GPSSAV** | Execution command saves the current configuration in the non volatile EEPROM memory of the module. |
| **AT$GPSSAV=?** | Test command returns the **OK** result code |
| Example | AT$GPSSAV<br>OK |
| Note | The module must be restarted to use the new configuration |

### 3.5.5.9.17 $GPSRST - Restore To Default GPS Parameters

| **$GPSRST - Restore To Default GPS Parameters** | |
|---|---|
| **AT$GPSRST** | Execution command restores the GPS parameters to “Factory Default” configuration and stores them in the non volatile EEPROM memory of the module. |
| **AT$GPSRST=?** | Test command returns the **OK** result code |
| Example | AT$GPSRST<br>OK |
| Note | The module must be restarted to use the new configuration |

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# 3.6 SELINT 1

## 3.6.1 Hayes Compliant AT Commands

### 3.6.1.1 Generic Modem Control

#### *3.6.1.1.1 &F - Set To Factory-Defined Configuration*

| **&F - Set To Factory-Defined Configuration** | |
|---|---|
| **AT&F[<value>]** | Execution command sets the configuration parameters to default values specified by manufacturer; it takes in consideration hardware configuration switches and other manufacturer-defined criteria.<br><br>Parameter:<br>**<value>**:<br>0 - just the factory profile base section parameters are considered.<br>1 - either the factory profile base section and the extended section are considered (full factory profile).<br><br>Note: if parameter **<value>** is omitted, the command has the same behaviour as **AT&F0** |
| Reference | V25ter. |

#### *3.6.1.1.2 Z - Soft Reset*

| **Z - Soft Reset** | |
|---|---|
| **ATZ[<n>]** | Execution command loads the base section of the specified user profile and the extended section of the default factory profile.<br><br>Parameter:<br>**<n>**<br>0..1 - user profile number<br><br>Note: any call in progress will be terminated.<br><br>Note: if parameter **<n>** is omitted, the command has the same behaviour as **ATZ0**. |
| Reference | V25ter. |

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### 3.6.1.1.3 +FCLASS - Select Active Service Class

| **+FCLASS - Select Active Service Class** | |
|---|---|
| **AT+FCLASS=<n>** | Set command sets the wireless module in specified connection mode (data, fax, voice), hence all the calls done afterwards will be data or voice.<br><br>Parameter:<br>**<n>**<br>0 - data<br>1 - fax class 1<br>8 - voice |
| **AT+FCLASS?** | Read command returns the current configuration value of the parameter **<n>**. |
| **AT+FCLASS=?** | Test command returns all supported values of the parameters **<n>**. |
| Reference | GSM 07.07 |

### 3.6.1.1.4 &Y - Designate A Default Reset Basic Profile

| **&Y - Designate A Default Reset Basic Profile** | |
|---|---|
| **AT&Y[<n>]** | Execution command defines the basic profiles which will be loaded on startup.<br><br>Parameter:<br>**<n>**<br>0..1 - profile (default is 0): the wireless module is able to store 2 complete configurations (see command **&W**).<br><br>Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&Y** will be loaded on every startup.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&Y0** |

### 3.6.1.1.5 &P - Designate A Default Reset Full Profile

| **&P - Designate A Default Reset Full Profile** | |
|---|---|
| **AT&P[<n>]** | Execution command defines which full profile will be loaded on startup.<br><br>Parameter:<br>**<n>**<br>0..1 – profile number: the wireless module is able to store 2 full configurations (see command **&W**). |

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| | |
|---|---|
| | Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&P** will be loaded on every startup.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&P0** |
| Reference | Telit Specifications |

### *3.6.1.1.6 &W - Store Current Configuration*

| **&W - Store Current Configuration** | |
|---|---|
| **AT&W[<n>]** | Execution command stores on profile **<n>** the complete configuration of the device.<br><br>Parameter:<br>**<n>**<br>0..1 - profile<br><br>Note: if parameter is omitted, the command has the same behaviour of **AT&W0**. |

### *3.6.1.1.7 &Z - Store Telephone Number In The Module Internal Phonebook*

| **&Z - Store Telephone Number In The Wireless Module Internal Phonebook** | |
|---|---|
| **AT&Z<n>=<nr>** | Execution command stores in the record **<n>** the telephone number **<nr>**. The records cannot be overwritten, they must be cleared before rewriting.<br><br>Parameters:<br>**<n>** - phonebook record<br>**<nr>** - telephone number (string type)<br><br>Note: the wireless module has a built in non volatile memory in which 10 telephone numbers of a maximum 24 digits can be stored<br><br>Note: to delete the record **<n>** the command **AT&Z<n>=<CR>** must be issued.<br><br>Note: the records in the module memory can be viewed with the command **AT&N**, while the telephone number stored in the record n can be dialed by giving the command **ATDS=<n>**. |

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#### 3.6.1.1.8 &N - Display Internal Phonebook Stored Numbers

| **&N - Display Internal Phonebook Stored Numbers** | |
|---|---|
| **AT&N[<n>]** | Execution command returns the telephone number stored at the **<n>** position in the internal memory.<br><br>Parameter:<br>**<n>** - phonebook record number<br><br>Note: if parameter **<n>** is omitted then all the internal records are shown. |

#### 3.6.1.1.9 +GMI - Manufacturer Identification

| **+GMI - Manufacturer Identification** | |
|---|---|
| **AT+GMI** | Execution command returns the manufacturer identification.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |
| Reference | V.25ter |

#### 3.6.1.1.10 +GMM - Model Identification

| **+GMM - Model Identification** | |
|---|---|
| **AT+GMM** | Execution command returns the model identification. |
| Reference | V.25ter |

#### 3.6.1.1.11 +GMR - Revision Identification

| **+GMR - Revision Identification** | |
|---|---|
| **AT+GMR** | Execution command returns the software revision identification. |
| Reference | V.25ter |

#### 3.6.1.1.12 +GCAP - Capabilities List

| **+GCAP - Capabilities List** | |
|---|---|
| **AT+GCAP** | Execution command returns the equipment supported command set list.<br>Where:<br>**+CGSM**: GSM ETSI command set<br>**+FCLASS**: Fax command set<br>**+DS**: Data Service common modem command set<br>**+MS**: Mobile Specific command set |
| Reference | V.25ter |

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### 3.6.1.1.13 +GSN - Serial Number

| **+GSN - Serial Number** | |
|---|---|
| **AT+GSN** | Execution command returns the device board serial number.<br><br>Note: The number returned is not the IMSI, it is only the board number |
| Reference | V.25ter |

### 3.6.1.1.14 &V - Display Current Configuration & Profile

| **&V - Display Current Configuration & Profile** | |
|---|---|
| **AT&V** | Execution command returns some of the base configuration parameters settings.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |

### 3.6.1.1.15 &V0 - Display Current Configuration & Profile

| **&V0 - Display Current Configuration & Profile** | |
|---|---|
| **AT&V0** | Execution command returns all the configuration parameters settings.<br><br>Note: this command is the same as **&V**, it is included only for backwards compatibility.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |

### 3.6.1.1.16 &V1 - Display S Registers Values

| **&V1 - Display S Registers Values** | |
|---|---|
| **AT&V1** | Execution command returns the value of the **S** registers in decimal and hexadecimal value in the format:<br><br>**REG DEC HEX**<br>**<reg0><dec> <hex>**<br>**<reg1><dec> <hex>**<br>...<br>where<br>**<reg*n*>** - **S** register number<br>000..005<br>007<br>012<br>025 |

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| | |
|---|---|
| | 038<br>**<dec>** - current value in decimal notation<br>**<hex>** - current value in hexadecimal notation |

### *3.6.1.1.17 &V3 - Display S Registers Values*

| **&V3 - Display S Registers Values** | |
|---|---|
| **AT&V3** | Execution command returns the value of the **S** registers in decimal and hexadecimal value in the format:<br><br>**REG DEC HEX**<br>**<reg0><dec> <hex>**<br>**<reg1><dec> <hex>**<br>...<br>where<br>**<reg*n*>** - **S** register number<br>000..005<br>007<br>012<br>025<br>030<br>038<br>**<dec>** - current value in decimal notation<br>**<hex>** - current value in hexadecimal notation |

### *3.6.1.1.18 &V2 - Display Last Connection Statistics*

| **&V2 - Display Last Connection Statistics** | |
|---|---|
| **AT&V2** | Execution command returns the last connection statistics & connection failure reason. |

### *3.6.1.1.19 \V - Single Line Connect Message*

| **\V - Single Line Connect Message** | |
|---|---|
| **AT\V<n>** | Execution command set single line connect message.<br><br>Parameter:<br>**<n>**<br>0 - off<br>1 - on |

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### 3.6.1.1.20 +GCI - Country Of Installation

| **+GCI - Country Of Installation** | |
|---|---|
| **AT+GCI=<code>** | Set command selects the installation country code according to ITU-T.35 Annex A.<br><br>Parameter:<br>**<code>**<br>59 - it currently supports only the Italy country code |
| **AT+GCI?** | Read command reports the currently selected country code. |
| **AT+GCI=?** | Test command reports the supported country codes. |
| Reference | V25ter. |

### 3.6.1.1.21 %L - Line Signal Level

| **%L - Line Signal Level** | |
|---|---|
| **AT%L** | It has no effect and is included only for backward compatibility with landline modems |

### 3.6.1.1.22 %Q - Line Quality

| **%Q - Line Quality** | |
|---|---|
| **AT%Q** | It has no effect and is included only for backward compatibility with landline modems |

### 3.6.1.1.23 L - Speaker Loudness

| **L - Speaker Loudness** | |
|---|---|
| **ATL<n>** | It has no effect and is included only for backward compatibility with landline modems |

### 3.6.1.1.24 M - Speaker Mode

| **M - Speaker Mode** | |
|---|---|
| **ATM<n>** | It has no effect and is included only for backward compatibility with landline modems |

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## 3.6.1.2 DTE - Modem Interface Control

### *3.6.1.2.1 E - Command Echo*

| **E - Command Echo** | |
|---|---|
| **ATE[<n>]** | Set command enables/disables the command echo.<br><br>Parameter:<br>**<n>**<br>0 - disables command echo<br>1 - enables command echo (factory default) , hence command sent to the device are echoed back to the **DTE** before the response is given.<br><br>Note: if parameter is omitted, the command has the same behaviour of **ATE0** |
| Reference | V25ter |

### *3.6.1.2.2 Q - Quiet Result Codes*

| **Q - Quiet Result Codes** | |
|---|---|
| **ATQ[<n>]** | Set command enables or disables the result codes.<br><br>Parameter:<br>**<n>**<br>0 - enables result codes (factory default)<br>1 - every result code is replaced with a **<CR>**<br>2 - disables result codes<br><br>Note: After issuing either **ATQ1** or **ATQ2** every information text transmitted in response to commands is not affected<br><br>Note: if parameter is omitted, the command has the same behaviour as **ATQ0** |
| Example | *After issuing ATQ1*<br><br>AT+CGACT=?<br>**+CGACT: (0-1) *a <cr> ends the response***<br><br>After issuing ATQ2<br><br>AT+CGACT=?<br>**+CGACT: (0-1) nothing is appended to the response** |
| Reference | V25ter |

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### 3.6.1.2.3 V - Response Format

| V - Response Format | |
|---|---|
| **ATV[<n>]** | Set command determines the contents of the header and trailer transmitted with result codes and information responses. It also determines if result codes are transmitted in a numeric form or an alphanumeric form (see [§3.2.3 Information Responses And Result Codes] for the table of result codes).<br><br>Parameter:<br><n><br>0 - limited headers and trailers and numeric format of result codes<br><br>information responses: **<text><CR><LF>**<br>result codes: **<numeric code><CR>**<br><br>1 - full headers and trailers and verbose format of result codes (factory default)<br><br>information responses: **<CR><LF>** **<text><CR><LF>**<br>result codes: **<CR><LF>** **<numeric code><CR><LF>**<br><br>Note: the **<text>** portion of information responses is not affected by this setting.<br><br>Note: if parameter is omitted, the command has the same behaviour of ATV0 |
| Reference | V25ter |

### 3.6.1.2.4 X - Extended Result Codes

| X - Extended Result Codes | |
|---|---|
| **ATX[<n>]** | Set command selects the result code messages subset used by the modem to inform the **DTE** of the result of the commands.<br><br>Parameter:<br>**<n>**<br>0 - send only **OK**, **CONNECT**, **RING**, **NO CARRIER**, **ERROR**, **NO ANSWER** results. Busy tones reporting is disabled.<br>1..4 - reports all messages (factory default is 1). |

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| | |
|---|---|
| | Note: If parameter is omitted, the command has the same behaviour as **ATX0** |
| Note | For complete control on **CONNECT** response message see also **+DR** command. |
| Reference | V25ter |

### 3.6.1.2.5 I - Identification Information

| **I - Identification Information** | |
|---|---|
| **ATI[<n>]** | Execution command returns one or more lines of information text followed by a result code.<br><br>Parameter:<br>**<n>**<br>0 - numerical identifier.<br>1 - module checksum<br>2 - checksum check result<br>3 - manufacturer<br>4 - product name<br>5 - DOB version<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting.<br><br>Note: if parameter is omitted, the command has the same behaviour as **ATI0** |
| Reference | V25ter |

### 3.6.1.2.6 &C - Data Carrier Detect (DCD) Control

| **&C - Data Carrier Detect (DCD) Control** | |
|---|---|
| **AT&C[<n>]** | Set command controls the RS232 **DCD** output behaviour.<br><br>Parameter:<br>**<n>**<br>0 - **DCD** remains high always.<br>1 - **DCD** follows the Carrier detect status: if carrier is detected **DCD** is high, otherwise **DCD** is low. (factory default)<br>2 - **DCD** off while disconnecting<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&C0** |
| Reference | V25ter |

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### 3.6.1.2.7 &D - Data Terminal Ready (DTR) Control

| **&D - Data Terminal Ready (DTR) Control** | |
|---|---|
| **AT&D[<n>]** | Set command controls the Module behaviour to the RS232 **DTR** transitions.<br><br>Parameter:<br>**<n>**<br>0 - **DTR** transitions are ignored. (factory default)<br>1 - when the MODULE is connected, the **high** to **low** transition of **DTR** pin sets the device in command mode, the current connection is NOT closed.<br>2 - when the MODULE is connected , the **high** to **low** transition of **DTR** pin sets the device in command mode and the current connection is closed.<br>3 - **C108/1** operation is enabled<br>4 - **C108/1** operation is disabled<br><br>Note: if **AT&D2** has been issued and the **DTR** has been tied **low**, autoanswering is inhibited and it is possible to answer only issuing command **ATA**.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&D0** |
| Reference | V25ter |

### 3.6.1.2.8 \Q - Standard Flow Control

| **\Q - Standard Flow Control** | |
|---|---|
| **AT\Q[<n>]** | Set command controls the RS232 flow control behaviour.<br><br>Parameter:<br>**<n>**<br>0 - no flow control<br>1 - software bi-directional with filtering (**XON/XOFF**)<br>2 - hardware mono-directional flow control (only **CTS** active)<br>3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default)<br>4 - software flow control mono-directional **(XON/XOFF)**<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT\Q0**<br><br>Note: **\Q's** settings are functionally a subset of **&K's** ones. |
| Reference | V25ter |

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### 3.6.1.2.9 &K - Flow Control

| **&K - Flow Control** | |
|---|---|
| **AT&K[<n>]** | Set command controls the RS232 flow control behaviour.<br><br>Parameter:<br>**<n>**<br>0 - no flow control<br>1 - hardware mono-directional flow control (only **CTS** active)<br>2 - software mono-directional flow control (**XON/XOFF**)<br>3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default)<br>4 - software bi-directional with filtering (**XON/XOFF**)<br>5 - pass through: software bi-directional without filtering (**XON/XOFF**)<br>6 - both hardware bi-directional flow control (both **RTS/CTS** active) and software bi-directional flow control (**XON/XOFF**) with filtering<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&K0**<br><br>Note: **&K** has no Read Command. To verify the current setting of **&K**, simply check the settings of the active profile with **AT&V**. |

### 3.6.1.2.10 &S - Data Set Ready (DSR) Control

| **&S - Data Set Ready (DSR) Control** | |
|---|---|
| **AT&S[<n>]** | Set command controls the RS232 **DSR** pin behaviour.<br><br>Parameter:<br>**<n>**<br>0 - always **ON**<br>1 - follows the GSM traffic channel indication.<br>2 - **ON** when connected<br>3 - **ON** when device is ready to receive commands (factory default).<br><br>Note: if option 1 is selected then **DSR** is tied up when the device receives from the network the GSM traffic channel indication.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&S0** |

### 3.6.1.2.11 \R - Ring (RI) Control

| **\R - Ring (RI) Control** | |
|---|---|
| **AT\R[<n>]** | Set command controls the **RING** output pin behaviour. |

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| | |
|---|---|
| | Parameter:<br>**<n>**<br>0 - RING on during ringing and further connection<br>1 - RING on during ringing (factory default)<br>2 - RING follows the ring signal<br><br>Note: to check the ring option status use the **&V** command.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT\R0** |

### *3.6.1.2.12 +IPR - Fixed DTE Interface Rate*

| **+IPR - Fixed DTE Interface Rate** | |
|---|---|
| **AT+IPR=<rate>** | Set command specifies the **DTE** speed at which the device accepts commands during command mode operations; it may be used to fix the **DTE-DCE** interface speed.<br><br>Parameter:<br>**<rate>**<br>0<br>..300<br>1200<br>2400<br>4800<br>9600<br>19200<br>38400<br>57600<br>115200<br><br>If **<rate>** is or set to 0, then automatic speed detection is enabled and also character format (see **+ICF**) is set to auto-detect. (default)<br>If **<rate>** is specified and not 0, **DTE-DCE** speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled. |
| **AT+IPR?** | Read command returns the current value of **+IPR** parameter. |
| **AT+IPR=?** | Test command returns the supported serial port speed list. |
| Reference | V25ter |

### *3.6.1.2.13 +IFC - DTE-Modem Local Flow Control*

| **+IFC - DTE-Modem Local Flow Control** | |
|---|---|
| **AT+IFC=<by_te>,** | Set command selects the flow control behaviour of the serial port in both |

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| | |
|---|---|
| **<by_ta>** | directions: from **DTE** to **modem** (**<by_ta>** option) and from **modem** to **DTE** (**<by_te>**)<br><br>Parameter:<br>**<by_te>** - flow control option for the data received by **DTE**<br>0 - flow control None<br>1 - **XON/XOFF** filtered<br>2 - **C105 (RTS)** (factory default)<br>3 - **XON/XOFF** not filtered<br><br>**<by_ta>** - flow control option for the data sent by **modem**<br>0 - flow control None<br>1 - **XON/XOFF**<br>2 - **C106 (CTS)** (factory default)<br><br>Note: This command is equivalent to **&K** command. |
| **AT+IFC?** | Read command returns active flow control settings. |
| **AT+IFC=?** | Test command returns all supported values of the parameters **<by_te>** and **<by_ta>**. |
| Reference | V25ter |

### *3.6.1.2.14 +ILRR - DTE-Modem Local Rate Reporting*

| **+ILRR - DTE-Modem Local Rate Reporting** | |
|---|---|
| **AT+ILRR=<n>** | Set command controls whether or not the **+ILRR:<rate>** information text is transmitted from the **modem** to the **DTE**.<br>Parameter:<br>**<n>**<br>0 - local port speed rate reporting disabled (factory default)<br>1 - local port speed rate reporting enabled<br><br>Note: this information if enabled is sent upon connection. |
| **AT+ILRR?** | Read command returns active setting of **<n>**. |
| **AT+ILRR=?** | Test command returns all supported values of the parameter **<n>**. |
| Reference | V25ter |

### *3.6.1.2.15 +ICF - DTE-Modem Character Framing*

| **+ICF - DTE-Modem Character Framing** | |
|---|---|
| **AT+ICF=<format> [,<parity>]** | Set command defines the asynchronous character framing to be used when autobauding is disabled.<br><br>Parameters:<br>**<format>** - determines the number of bits in the data bits, the presence of a |

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| | |
|---|---|
| | parity bit, and the number of stop bits in the start-stop frame.<br>0 - autodetection<br>1 - 8 Data, 2 Stop<br>2 - 8 Data, 1 Parity, 1 Stop<br>3 - 8 Data, 1 Stop<br>4 - 7 Data, 2 Stop<br>5 - 7 Data, 1 Parity, 1 Stop<br><br>**<parity>** - determines how the parity bit is generated and checked, if present<br>0 - Odd<br>1 - Even |
| **AT+ICF?** | Read command returns current settings for subparameters **<format>** and **<parity>**. |
| **AT+ICF=?** | Test command returns the ranges of values for the parameters **<format>** and **<parity>** |
| Reference | V25ter |
| Example | `AT+ICF = 0 - auto detect`<br>`AT+ICF = 1 - 8N2`<br>`AT+ICF = 2,0 - 8O1`<br>`AT+ICF = 2,1 - 8E1`<br>`AT+ICF = 3 - 8N1 (default)`<br>`AT+ICF = 5,0 - 7O1`<br>`AT+ICF = 5,1 - 7E1` |

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## 3.6.1.3 Call Control

### *3.6.1.3.1 D - Dial*

| **D - Dial** | |
|---|---|
| **ATD<number>[;]** | Execution command starts a call to the phone number given as parameter. If ";" is present, a VOICE call to the given number is performed, regardless of the current value of the connection mode set by **+FCLASS** command.<br><br>Parameter:<br>**<number>** - phone number to be dialed<br><br>Note: type of call (data, fax or voice) depends on last **+FCLASS** setting.<br><br>Note: the numbers accepted are 0-9 and *,#,"A", "B", "C", "D","+".<br><br>Note: for backwards compatibility with landline modems modifiers "T", "P", "R", ",", "W", "!", "@" are accepted but have no effect. |
| **ATD><str>[;]** | Issues a call to phone number which corresponding alphanumeric field is **<str>**; all available memories will be searched for the correct entry.<br><br>If ";" is present a VOICE call is performed.<br><br>Parameter:<br>**<str>** - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks.<br><br>Note: used character set should be the one selected with either command Select TE character set **+CSCS** or **@CSCS**. |
| **ATD><mem><n>[;]** | Issues a call to phone number in phonebook memory storage **<mem>**, entry location **<n>** (available memories may be queried with **AT+CPBS=?**).<br>If "**;**" is present a **voice** call is performed.<br><br>Parameters:<br>**<mem>** - phonebook memory storage; it must not be enclosed in quotation marks.<br>SM - SIM phonebook<br>FD - SIM fixed dialling-phonebook<br>LD - SIM last-dialling-phonebook<br>MC - device missed (unanswered received) calls list<br>RC - ME received calls list<br><br>**<n>** - entry location; it should be in the range of locations available in the memory used. |

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| D - Dial | |
|---|---|
| **ATD><n>[;]** | Issues a call to phone number in entry location **<n>** of the active phonebook memory storage (see **+CPBS**).<br>If "**;**" is present a **voice** call is performed.<br><br>Parameter:<br>**<n>** - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage. |
| **ATDL** | Issues a call to the last number dialed. |
| **ATDS=<nr>[;]** | Issues a call to the number stored in the MODULE internal phonebook position number **<nr>**.<br>If ";" is present a VOICE call is performed.<br><br>Parameter:<br>**<nr>** - internal phonebook position to be called (See commands **&N** and **&Z**) |
| **ATD<number>I[;]**<br>**ATD<number>i[;]** | Issues a call overwriting the CLIR supplementary service subscription default value for this call<br>If ";" is present a VOICE call is performed.<br><br>**I** - invocation, restrict CLI presentation<br>**i** - suppression, allow CLI presentation |
| **ATD<number>G[;]**<br>**ATD<number>g[;]** | Issues a call checking the CUG supplementary service information for the current call. Refer to **+CCUG** command.<br>If ";" is present a VOICE call is performed. |
| **ATD*<gprs_sc>[*<addr>][*[<L2P>][*[<cid>]]]]#** | This command is specific of GPRS functionality and causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.<br><br>Parameters:<br>**<gprs_sc>** - GPRS Service Code, a digit string (value 99) which identifies a request to use the GPRS<br><br>**<addr>** - string that identifies the called party in the address space applicable to the PDP.<br><br>**<L2P>** - 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:<br>1 - PPP<br>Other values are reserved and will result in an **ERROR** response to the Set command.<br><br>**<cid>** - a digit which specifies a particular PDP context definition (see **+CGDCONT** command). |
| Example | *To dial a number in SIM phonebook entry 6:* |

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| D - Dial | |
|---|---|
| | ATD>SM6<br>OK<br><br>*To have a voice call to the 6-th entry of active phonebook:*<br>ATD>6;<br>OK<br><br>*To call the entry with alphanumeric field* "Name":<br>ATD>"Name";<br>OK |
| Reference | V25ter. |

### 3.6.1.3.2 T - Tone Dial

| T - Tone Dial | |
|---|---|
| **ATT** | Set command has no effect is included only for backward compatibility with landline modems. |
| Reference | V25ter. |

### 3.6.1.3.3 P - Pulse Dial

| P - Pulse Dial | |
|---|---|
| **ATP** | Set command has no effect is included only for backward compatibility with landline modems. |
| Reference | V25ter. |

### 3.6.1.3.4 A - Answer

| A – Answer | |
|---|---|
| **ATA** | Execution command is used to answer to an incoming call if automatic answer is disabled.<br><br>Note: This command MUST be the last in the command line and must be followed immediately by a **<CR>** character. |
| Reference | V25ter. |

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### 3.6.1.3.5 H - Disconnect

| H – Disconnect | |
|---|---|
| **ATH** | Execution command is used to close the current conversation (voice, data or fax).<br><br>Note: this command can be issued only in command mode; when a data conversation is active the device is in on-line mode (commands are not sensed and characters are sent to the other party), hence escape sequence (see register **S2**) is required before issuing this command, otherwise if **&D1** option is active, **DTR** pin has to be tied low to return in command mode. |
| Reference | V25ter. |

### 3.6.1.3.6 O - Return To On Line Mode

| O - Return To On Line Mode | |
|---|---|
| **ATO** | Execution command is used to return to on-line mode from command mode. If there's no active connection it returns **ERROR**.<br><br>Note: After issuing this command, if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see register **S2**) or tying low **DTR** pin if **&D1** option is active. |
| Reference | V25ter. |

### 3.6.1.3.7 &G - Guard Tone

| &G - Guard Tone | |
|---|---|
| **AT&G** | Set command has no effect is included only for backward compatibility with landline modems. |

### 3.6.1.3.8 &Q - Sync/Async Mode

| &Q - Sync/Async Mode | |
|---|---|
| **AT&Q** | Set command has no effect is included only for backward compatibility with landline modems. |

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## 3.6.1.4 Modulation Control

### *3.6.1.4.1 +MS - Modulation Selection*

| **+MS - Modulation Selection** | |
|---|---|
| **AT+MS=<br><carrier>[,<br><automode>[,<br><min_rate>[,<br><max_rate>]]]** | Set command has no effect is included only for backward compatibility with landline modems.<br><br>Parameter:<br>**<carrier>** - a string which specifies the preferred modem carrier to use in originating or answering a connection<br>V21<br>V22<br>V22B<br>V23C<br>V32<br>V34<br><br>**<automode>** - it enables/disables automatic modulation negotiation.<br>0 - disabled<br>1 - enabled. It has effect only if it is defined for the associated modulation.<br>**<min_rate>** - it specifies the lowest value at which the **DCE** may establish a connection.<br>0 - unspecified<br>**<max_rate>** - it specifies the highest value at which the **DCE** may establish a connection.<br>0 - unspecified<br>300..14400 - rate in bps<br><br>Note: to change modulation requested use **+CBST** command. |
| **AT+MS?** | Read command returns the current value of **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters. |
| **AT+MS=?** | Test command returns all supported values of the **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters. |

### *3.6.1.4.2 %E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward*

| **%E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward** | |
|---|---|
| **AT%E<n>** | Execution command has no effect and is included only for backward compatibility with landline modems. |

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## 3.6.1.5 Compression Control

### *3.6.1.5.1 +DS - Data Compression*

| **+DS - Data Compression** | |
|---|---|
| **AT+DS=<n>** | Set command sets the V42 compression parameter.<br><br>Parameter:<br>**<n>**<br>0 - no compression, it is currently the only supported value |
| **AT+DS?** | Read command returns current value of the data compression parameter. |
| **AT+DS=?** | Test command returns all supported values of the parameter **<n>** |
| Reference | V25ter |

### *3.6.1.5.2 +DR - Data Compression Reporting*

| **+DR - Data Compression Reporting** | |
|---|---|
| **AT+DR=<n>** | Set command enables/disables the data compression reporting upon connection.<br><br>Parameter:<br>**<n>**<br>0 - data compression reporting disabled;<br>1 - data compression reporting enabled upon connection.<br><br>Note: if enabled, the following intermediate result code is transmitted before the final result code:<br><br>**+DR: <compression>**<br>(the only supported value for **<compression>** is “NONE”) |
| **AT+DR?** | Read command returns current value of **<n>**. |
| **AT+DR=?** | Test command returns all supported values of the parameter **<n>** |
| Reference | V25ter |

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## 3.6.1.6Break Control

### *3.6.1.6.1 \B - Transmit Break To Remote*

| **\B - Transmit Break To Remote** | |
|---|---|
| **AT\B** | Execution command has no effect and is included only for backward compatibility with landline modems |

### *3.6.1.6.2 \K - Break Handling*

| **\K - Break Handling** | |
|---|---|
| **AT\K[<n>]** | Execution command has no effect and is included only for backward compatibility with landline modems<br><br>Parameter:<br>**<n>**<br>0..5 |

### *3.6.1.6.3 \N - Operating Mode*

| **\N - Operating Mode** | |
|---|---|
| **AT\N** | Execution command has no effect and is included only for backward compatibility with landline modems |

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## 3.6.1.7S Parameters

Basic commands that begin with the letter "**S**" are known as "**S-Parameters**". The number following the "**S**" indicates the "parameter number" being referenced. If the number is not recognized as a valid parameter number, an **ERROR** result code is issued.

If no value is given for the subparameter of an **S-Parameter**, an **ERROR** result code will be issued and the stored value left unchanged.

Note: what follows is a special way to select and set an **S-parameter**:

3. **ATS*n*<CR>** selects ***n*** as current parameter number. If the value of ***n*** is in the range (0, 2, 3, 4, 5, 7, 12, 25, 30, 38), this command establishes **S*n*** as last selected parameter. Every value out of this range and less than 256 can be used but has no meaning and is maintained only for backward compatibility with landline modems.
4. **AT=<value><CR>** or **ATS=<value><CR>** set the contents of the selected **S-parameter**

Example:

| | |
|---|---|
| **ATS7<CR>** | establishes **S7** as last selected parameter. |
| **AT=40<CR>** | sets the content of **S7** to 40 |
| **ATS=15<CR>** | sets the content of **S7** to 15. |

### *3.6.1.7.1 S0 - Number Of Rings To Auto Answer*

| **S0 - Number Of Rings To Auto Answer** | |
|---|---|
| **ATS0[=<n>]** | Set command sets the number of rings required before device automatically answers an incoming call.<br><br>Parameter:<br>**<n>** - number of rings<br>0 - auto answer disabled (factory default)<br>1..255 - number of rings required before automatic answer. |
| **ATS0?** | Read command returns the current value of **S0** parameter. |
| **ATS0=?** | Test command returns the range for **<n>** without command echo and parenthesis. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

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### 3.6.1.7.2 S1 - Ring Counter

| S1 - Ring Counter | |
|---|---|
| **ATS1** | **S1** is incremented each time the device detects the ring signal of an incoming call. **S1** is cleared as soon as no ring occur.<br><br>Note: the form **ATS1** has no effect. |
| **ATS1?** | Read command returns the value of **S1** ring counter. |
| **ATS1=?** | Test command returns the range of values for **S1** ring counter without command echo and parenthesis. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.6.1.7.3 S2 - Escape Character

| S2 - Escape Character | |
|---|---|
| **ATS2[=<char>]** | Set command sets the ASCII character to be used as escape character.<br><br>Parameter:<br>**<char>** - escape character decimal ASCII<br>0..255 - factory default value is 43 (+).<br><br>Note: the escape sequence consists of three escape characters preceded and followed by ***n*** ms of idle (see **S12** to set ***n***). |
| **ATS2?** | Read command returns the current value of **S2** parameter. |
| **ATS2=?** | Test command returns the range for **<char>** without command echo and parenthesis |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.6.1.7.4 S3 - Command Line Termination Character

| S3 - Command Line Termination Character | |
|---|---|
| **ATS3[=<char>]** | Set command sets the value of the character either recognized by the device as command line terminator and generated by the device as part of the header, trailer, and terminator for result codes and information text, along with **S4** parameter.<br><br>Parameter:<br>**<char>** - command line termination character (decimal ASCII)<br>0..127 - factory default value is 13 (ASCII **CR**)<br><br>Note: the “previous” value of **S3** is used to determine the command line termination character for entering the command line containing the **S3** |

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| | |
|---|---|
| | setting command. However the result code issued shall use the “new” value of **S3** (as set during the processing of the command line). |
| **ATS3?** | Read command returns the current value of **S3** parameter. |
| **ATS3=?** | Test command returns the range for **<char>** without command echo and parenthesis. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### *3.6.1.7.5 S4 - Response Formatting Character*

| **S4 - Response Formatting Character** | |
|---|---|
| **ATS4[=<char>]** | Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the **S3** parameter.<br><br>Parameter:<br>**<char>** - response formatting character (decimal ASCII)<br>0..127 - factory default value is 10 (ASCII **LF**)<br><br>Note: if the value of **S4** is changed in a command line the result code issued in response of that command line will use the new value of **S4**. |
| **ATS4?** | Read command returns the current value of **S4** parameter. |
| **ATS4=?** | Test command returns the range for **<char>** without command echo and parenthesis |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### *3.6.1.7.6 S5 - Command Line Editing Character*

| **S5 - Command Line Editing Character** | |
|---|---|
| **ATS5[=<char>]** | Set command sets the value of the character recognized by the device as a request to delete from the command line the immediately preceding character.<br><br>Parameter:<br>**<char>** - command line editing character (decimal ASCII)<br>0..127 - factory default value is 8 (ASCII **BS**). |
| **ATS5?** | Read command returns the current value of **S5** parameter. |
| **ATS5=?** | Test command returns the range for **<char>** without command echo and parenthesis. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

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| | |
|---|---|
| Reference | V25ter |

### 3.6.1.7.7 S7 - Connection Completion Time-Out

| **S7 - Connection Completion Time-Out** | |
|---|---|
| **ATS7[=<tout>]** | Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by A command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device.<br><br>Parameter:<br>**<tout>** - number of seconds<br>1..255 - factory default value is 60. |
| **ATS7?** | Read command returns the current value of **S7** parameter. |
| **ATS7=?** | Test command returns the range for **<tout>** without command echo and parenthesis. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### 3.6.1.7.8 S12 - Escape Prompt Delay

| **S12 - Escape Prompt Delay** | |
|---|---|
| **ATS12[=<time>]** | Set command sets:<br><br>• the minimum period, before receipt of the first character of the three escape character sequence, during which no other character has to be detected in order to accept it as valid first character.<br>• the maximum period allowed between receipt of first, or second, character of the three escape character sequence and receipt of the next.<br>• the minimum period, after receipt of the last character of the three escape character sequence, during which no other character has to be detected in order to accept the escape sequence as a valid one.<br><br>Parameter:<br>**<time>** - expressed in fiftieth of a second<br>20..255 - factory default value is 50.<br><br>Note: after **CONNECT** result code it is possible to accept the first character of the three escape character sequence without having to wait for a minimum period to be passed. |
| **ATS12?** | Read command returns the current value of **S12** parameter. |
| **ATS12=?** | Test command returns the range for **<time>** without command echo and |

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| | |
|---|---|
| | parenthesis. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.6.1.7.9 S25 - Delay To DTR Off

| **S25 - Delay To DTR Off** | |
|---|---|
| **ATS25[=<time>]** | Set command defines the amount of time, in hundredths of second, that the device will ignore the **DTR** for taking the action specified by command **&D**.<br><br>Parameter:<br>**<time>** - expressed in hundredths of a second<br>0..255 - factory default value is 5.<br><br>Note: the delay is effective only if its value is greater than 5. |
| **ATS25?** | Read command returns the current value of **S25** parameter. |
| **ATS25=?** | Test command returns the range for **<time>** without command echo and parenthesis.<br>Note: the output depends on the choice made through **#SELINT** command. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.6.1.7.10 S30 - Disconnect Inactivity Timer

| **S30 - Disconnect Inactivity Timer** | |
|---|---|
| **ATS30[=<tout>]** | Set command defines the inactivity timeout in minutes. The device disconnects if no characters are exchanged for a time period of at least **<tout>** minutes.<br><br>Parameter:<br>**<tout>** - expressed in minutes<br>0 - disabled, disconnection due to inactivity is disabled (factory default).<br>1..127 - inactivity timeout value. |
| **ATS30?** | Read command returns the current value of **S30** parameter. |
| **ATS30=?** | Test command returns the range for **<tout>** without command echo and parenthesis.<br><br>Note: the output depends on the choice made through **#SELINT** command. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

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### 3.6.1.7.11 S38 - Delay Before Forced Hang Up

| S38 -Delay Before Forced Hang Up | |
|---|---|
| **ATS38[=<delay>]** | Set command sets the delay, in seconds, between the device's receipt of **H** command (or **ON**-to-**OFF** transition of **DTR** if device is programmed to follow the signal) and the disconnect operation.<br><br>Parameter:<br>**<delay>** - expressed in seconds<br>0..254 - the device will wait **<delay>** seconds for the remote device to acknowledge all data in the device buffer before disconnecting (factory default value is 20).<br>255 - the device doesn't time-out and continues to deliver data in the buffer until the connection is lost or the data is delivered.<br><br>Note: **<delay>** parameter can be used to ensure that data in device buffer is sent before device disconnects. |
| **ATS38?** | Read command returns the current value of **S38** parameter. |
| **ATS38=?** | Test command returns the range of supported values for **<delay>** without command echo and parenthesis. |
| Note | For either Read and Test command the format of the numbers in output is always 3 digits, left-filled with 0s |

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# 3.6.2 ETSI GSM 07.07 AT Commands

## 3.6.2.1 General

### *3.6.2.1.1 +CGMI - Request Manufacturer Identification*

| **+CGMI - Request Manufacturer Identification** | |
|---|---|
| **AT+CGMI** | Execution command returns the device manufacturer identification code without command echo. The output depends on the choice made through **#SELINT** command. |
| **AT+CGMI?** | Read command has the same behaviour as Execution command |
| Reference | GSM 07.07 |

### *3.6.2.1.2 +CGMM - Request Model Identification*

| **+CGMM - Request Model Identification** | |
|---|---|
| **AT+CGMM** | Execution command returns the device model identification code without command echo. |
| Reference | GSM 07.07 |

### *3.6.2.1.3 +CGMR - Request Revision Identification*

| **+CGMR - Request Revision Identification** | |
|---|---|
| **AT+CGMR** | Execution command returns device software revision number without command echo. |
| **AT+CGMR?** | Read command has the same behaviour as Execution command |
| Reference | GSM 07.07 |

### *3.6.2.1.4 +CGSN - Request Product Serial Number Identification*

| **+CGSN - Request Product Serial Number Identification** | |
|---|---|
| **AT+CGSN** | Execution command returns the product serial number, identified as the IMEI of the mobile, without command echo. |
| **AT+CGSN?** | Read command has the same behaviour as Execution command |
| Reference | GSM 07.07 |

### *3.6.2.1.5 +CSCS - Select TE Character Set*

| **+CSCS - Select TE Character Set** | |
|---|---|
| **AT+CSCS** | Set command sets the current character set used by the device. |

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| | |
|---|---|
| **[=<chset>]** | Parameter:<br>**<chset>** - character set<br>"IRA" - ITU-T.50<br>"8859-1" - ISO 8859 Latin 1<br>"PCCP437" - PC character set Code Page 437.<br>"UCS2" - 16-bit universal multiple-octet coded character set (ISO/IEC10646)<br><br>Note: If parameter is omitted then the behaviour of Set command is the same as Read command. |
| **AT+CSCS?** | Read command returns the current value of the active character set. |
| **AT+CSCS=?** | Test command returns the supported values of the parameter **<chset>**.<br>For compatibility with previous versions, Test command returns<br><br>**+CSCS: ("IRA")**<br><br>An enhanced version of Test command has been defined: **AT+CSCS=??**, that provides the complete range of values for **<chset>**. |
| **AT+CSCS=??** | Enhanced test command returns the supported values of the parameter **<chset>** |
| Reference | GSM 07.07 |

### *3.6.2.1.6 +CIMI - Request International Mobile Subscriber Identity (IMSI)*

| **+CIMI - Request International Mobile Subscriber Identify (IMSI)** | |
|---|---|
| **AT+CIMI** | Execution command returns the value of the Internal Mobile Subscriber Identity stored in the SIM without command echo.<br><br>Note: a SIM card must be present in the SIM card housing, otherwise the command returns **ERROR**. |
| **AT+CIMI?** | Read command has the same behaviour as Execution command |
| Reference | GSM 07.07 |

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## 3.6.2.2 Call Control

### *3.6.2.2.1 +CHUP - Hang Up Call*

| **+CHUP - Hang Up Call** | |
|---|---|
| **AT+CHUP** | Execution command cancels all active and held calls, also if a multi-party session is running. |
| **AT+CHUP=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

### *3.6.2.2.2 +CBST - Select Bearer Service Type*

| **+CBST - Select Bearer Service Type** | |
|---|---|
| **AT+CBST [=<speed> [,<name> [,<ce>]]]** | Set command sets the bearer service **<name>** with data rate **<speed>**, and the connection element **<ce>** to be used when data calls are originated. Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls (refer **+CSNS**).<br><br>Parameters:<br>The default values of the subparameters are manufacturer specific since they depend on the purpose of the device and data services provided by it. Not all combinations of these subparameters are supported. The supported values are:<br><br>**<speed>**<br>0 - autobauding (automatic selection of the speed, factory default)<br>1 - 300 bps (V.21)<br>2 - 1200 bps (V.22)<br>3 - 1200/75 bps (V.23)<br>4 - 2400 bps (V.22bis)<br>6 - 4800 bps (V.32)<br>7 - 9600 bps (V.32)<br>14 - 14400 bps (V.34)<br>65 - 300 bps (V.110)<br>66 - 1200 bps (V.110)<br>68 - 2400 bps (V.110 or X.31 flag stuffing)<br>70 - 4800 bps (V.110 or X.31 flag stuffing)<br>71 - 9600 bps (V.110 or X.31 flag stuffing)<br>75 - 14400 bps (V110 or X.31 flag stuffing)<br><br>**<name>**<br>0 - data circuit asynchronous (factory default)<br><br>**<ce>**<br>0 - transparent<br>1 - non transparent (default) |

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| +CBST - Select Bearer Service Type | |
|---|---|
| | Note: the settings<br>**AT+CBST=0,0,0**<br>**AT+CBST=14,0,0**<br>**AT+CBST=75,0,0**<br>are not supported.<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command. |
| **AT+CBST?** | Read command returns current value of the parameters **<speed>**, **<name>** and **<ce>** |
| **AT+CBST=?** | Test command returns the supported range of values for the parameters. |
| Reference | GSM 07.07 |

### *3.6.2.2.3 +CRLP - Radio Link Protocol*

| +CRLP - Radio Link Protocol | |
|---|---|
| **AT+CRLP=<iws>[,<mws>[,<T1>[,<N2>[,<ver>]]]]** | Set command sets Radio Link Protocol (RLP) parameters used when non-transparent data calls are originated<br><br>Parameters:<br>**<iws>** - IWF window Dimension<br>1..61 - factory default value is 61<br><br>**<mws>** - MS window Dimension<br>1..61 - default value is 61<br><br>**<T1>** - acknowledge timer (10 ms units).<br>39..255 - default value is 78<br><br>**<N2>** - retransmission attempts<br>1..255 - default value is 6<br><br>**<ver>** - protocol version<br>0 |
| **AT+CRLP?** | Read command returns the current value of the RLP protocol parameters. |
| **AT+CRLP=?** | Test command returns supported range of values of the RLP protocol parameters. |
| Reference | GSM 07.07 |

### *3.6.2.2.4 +CR - Service Reporting Control*

| +CR - Service Reporting Control | |
|---|---|
| **AT+CR=<mode>** | Set command controls whether or not intermediate result code |

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| **+CR - Service Reporting Control** | |
|---|---|
| | **+CR: <serv>**<br><br>is returned from the **TA** to the **TE**, where<br>**<serv>**<br>ASYNC - asynchronous transparent<br>SYNC - synchronous transparent<br>REL ASYNC - asynchronous non-transparent<br>REL SYNC - synchronous non-transparent<br><br>If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the **TA** has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code **CONNECT** is transmitted.<br><br>Parameter:<br>**<mode>**<br>0 - disables intermediate result code report (factory default)<br>1 - enables intermediate result code report.<br><br>This command replaces V.25ter [14] command Modulation Reporting Control **+MR**, which is not appropriate for use with a GSM terminal. |
| **AT+CR?** | Read command returns current intermediate report setting |
| **AT+CR=?** | Test command returns the supported range of values of parameter **<mode>**. |
| Reference | GSM 07.07 |

### *3.6.2.2.5 +CEER - Extended Error Report*

| **+CEER - Extended Error Report** | |
|---|---|
| **AT+CEER** | Execution command returns one or more lines of information text **<report>** in the format:<br><br>**+CEER: <report>**<br><br>This report regards some error condition that may occur:<br>- the failure in the last unsuccessful call setup (originating or answering)<br>- the last call release<br>- the last unsuccessful GPRS attach or unsuccessful PDP context activation,<br>- the last GPRS detach or PDP context deactivation.<br><br>Note: if none of this condition has occurred since power up then No Error condition is reported |

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| +CEER - Extended Error Report | |
|---|---|
| **AT+CEER?** | Read command reports a information text regarding some error condition that may occur |
| **AT+CEER=?** | Test command returns **OK** result code. |
| Reference | GSM 07.07 |

### *3.6.2.2.6 +CRC - Cellular Result Codes*

| +CRC - Cellular Result Codes | |
|---|---|
| **AT+CRC=<mode>** | Set command controls whether or not the extended format of incoming call indication is used.<br><br>Parameter:<br>**<mode>**<br>0 - disables extended format reporting (factory default)<br>1 - enables extended format reporting<br><br>When enabled, an incoming call is indicated to the **TE** with unsolicited result code:<br><br>**+CRING:<type>**<br><br>instead of the normal **RING**.<br><br>where<br>**<type>** - call type:<br>DATA<br>FAX - facsimile (TS 62)<br>VOICE - normal voice (TS 11) |
| **AT+CRC?** | Read command returns current value of the parameter **<mode>**. |
| **AT+CRC=?** | Test command returns supported values of the parameter **<mode>**. |
| Reference | GSM 07.07 |

### *3.6.2.2.7 +CSNS - Single Numbering Scheme*

| +CSNS - Single Numbering Scheme | |
|---|---|
| **AT+CSNS= <mode>** | Set command selects the bearer or teleservice to be used when mobile terminated single numbering scheme call is established. Parameter values set with **+CBST** command shall be used when **<mode>** equals to a data service.<br><br>Parameter:<br>**<mode>**<br>0 - voice (factory default) |

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| | |
|---|---|
| | 2 - fax (TS 62)<br>4 - data<br><br>Note: if **+CBST** parameter is set to a value that is not applicable to single numbering calls, ME/TA shall map the value to the closest valid one. E.g. if user has set **<speed>=71**, **<name>=0** and **<ce>=1** (non-trasparent asynchronous 9600 bps V.110 ISDN connection) for mobile originated calls, ME/TA shall map the values into non-trasparent asynchronous 9600 bps V.32 modem connection when single numbering scheme call is answered. |
| **AT+CSNS?** | Read command returns current value of the parameter **<mode>**. |
| **AT+CSNS=?** | Test command returns supported values of the parameter **<mode>**. |
| Reference | GSM 07.07 |

### *3.6.2.2.8 +CVHU - Voice Hang Up Control*

| **+CVHU - Voice Hang Up Control** | |
|---|---|
| **AT+CVHU[= <mode>]** | Set command selects whether **ATH** or "**drop DTR**" shall cause a voice connection to be disconnected or not.<br><br>Parameter:<br>**<mode>**<br>0 - "**Drop DTR**" ignored but **OK** result code given. **ATH** disconnects.<br>1 - "**Drop DTR**" and **ATH** ignored but **OK** result code given.<br>2 - "**Drop DTR**" behaviour according to **&D** setting. **ATH** disconnects (factory default).<br><br>Note: if parameter **<mode>** is omitted the behaviour of Set command is the same as Read command. |
| **AT+CVHU?** | Read command reports the current value of the **<mode>** parameter,<br>**+CVHU: <mode>** |
| **AT+CVHU=?** | Test command reports the range of supported values for parameter **<mode>** |

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## 3.6.2.3 Network Service Handling

### *3.6.2.3.1 +CNUM - Subscriber Number*

| **+CNUM - Subscriber Number** | |
|---|---|
| **AT+CNUM** | Execution command returns the MSISDN related to the subscriber (the phone number of the device that is stored in the SIM card) in the format:<br><br>**+CNUM: <number>,<type>**<br><br>where<br>**<number>** - string containing the phone number in the format **<type>**<br>**<type>** - type of number:<br>129 - national numbering scheme.<br>145 - international numbering scheme (contains the character "+"). |
| Reference | GSM 07.07 |

### *3.6.2.3.2 +COPN - Read Operator Names*

| **+COPN - Read Operator Names** | |
|---|---|
| **AT+COPN** | Execution command returns the list of operator names from the **ME** in the format:<br><br>**+COPN: <numeric1>,<alpha1>[<CR><LF><CR><LF>**<br>**+COPN: <numeric2>,<alpha2>[…]]**<br><br>where:<br>**<numeric*n*>** - string type, operator in numeric format (see **+COPS**)<br>**<alpha*n*>** - string type, operator in long alphanumeric format (see **+COPS**)<br><br>Note: each operator code **<numeric*n*>** that has an alphanumeric equivalent **<alpha*n*>** in the ME memory is returned |
| Reference | GSM 07.07 |

### *3.6.2.3.3 +CREG - Network Registration Report*

| **+CREG - Network Registration Report** | |
|---|---|
| **AT+CREG[=[<mode>]]** | Set command enables/disables network registration reports depending on the parameter **<mode>**.<br><br>Parameter:<br>**<mode>**<br>0 - disable network registration unsolicited result code (factory default)<br>1 - enable network registration unsolicited result code |

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| **+CREG - Network Registration Report** | |
|---|---|
| | 2 - enable network registration unsolicited result code with network Cell identification data<br><br>If **<mode>=1**, network registration result code reports:<br><br>**+CREG: <stat>**<br><br>where<br>**<stat>**<br>0 - not registered, ME is not currently searching a new operator to register to<br>1 - registered, home network<br>2 - not registered, but ME is currently searching a new operator to register to<br>3 - registration denied<br>4 -unknown<br>5 - registered, roaming<br><br>If **<mode>=2**, network registration result code reports:<br><br>**+CREG: <stat>[,<Lac>,<Ci>]**<br><br>where:<br>**<Lac>** - Local Area Code for the currently registered on cell<br>**<Ci>** - Cell Id for the currently registered on cell<br><br>Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell.<br><br>Note: issuing **AT+CREG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CREG=<CR>** is the same as issuing the command **AT+CREG=0<CR>**. |
| **AT+CREG?** | Read command reports the **<mode>** and **<stat>** parameter values in the format:<br><br>**+CREG: <mode>,<stat>[,<Lac>,<Ci>]**<br><br>Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell. |
| **AT+CREG=?** | Test command returns the range of supported **<mode>** |
| Example | `AT`<br>`OK`<br>`at+creg?`<br>`+CREG: 0,2` *(the MODULE is in network searching state)*<br><br>`OK`<br>`at+creg?` |

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| **+CREG - Network Registration Report** | |
|---|---|
| | `+CREG: 0,2`<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,2`<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,2`<br>`OK`<br>`at+creg?`<br>`+CREG: 0,1` *(the MODULE is registered )*<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,1`<br><br>`OK` |
| Reference | GSM 07.07 |

### *3.6.2.3.4 +COPS - Operator Selection*

| **+COPS - Operator Selection** | |
|---|---|
| **AT+COPS[=<br>[<mode><br>[,<format><br>[,<oper>]]]]** | Set command forces an attempt to select and register the GSM network operator.<br>**<mode>** parameter defines whether the operator selection is done automatically or it is forced by this command to operator **<oper>**.<br>The operator **<oper>** shall be given in format **<format>**.<br><br>The behaviour of **+COPS** command depends on the last **#COPSMODE** setting.<br><br>**(#COPSMODE=0)**<br>Parameters:<br>**<mode>**<br>0 - automatic choice (the parameter **<oper>** will be ignored) (factory default)<br>1 - manual choice unlocked (network is kept as long as available, then it can be changed with some other suited networks to guarantee the service)<br>2 - deregister from GSM network; the MODULE is kept unregistered until a **+COPS** with **<mode>=0, 1, 4** or **5** is issued<br>3 - set only **<format>** parameter (the parameter **<oper>** will be ignored)<br>4 - manual/automatic **(<oper>** field shall be present); if manual selection fails, automatic mode **(<mode>=0**) is entered |

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| +COPS - Operator Selection | |
|---|---|
| | 5 - manual choice locked (network is kept fixed, if the chosen network is not available, then the mobile has no service)<br><br>**<format>**<br>0 - alphanumeric long form (max length 16 digits)<br>1 - alphanumeric short form<br>2 - Numeric 5 digits [country code (3) + network code (2)]<br><br>**<oper>**: network operator in format defined by **<format>** parameter.<br><br>**(#COPSMODE=1)**<br>Parameters:<br>**<mode>**<br>0 - automatic choice (the parameter **<oper>** will be ignored) (default)<br>1 - manual choice **(<oper>** field shall be present)<br>2 - deregister from GSM network; the MODULE is kept unregistered until a **+COPS** with **<mode>=0, 1** or **4** is issued<br>3 - set only **<format>** parameter (the parameter **<oper>** will be ignored)<br>4 - manual/automatic **(<oper>** field shall be present); if manual selection fails, automatic mode **(<mode>=0**) is entered<br><br>**<format>**<br>0 - alphanumeric long form (max length 16 digits)<br>2 - numeric 5 digits [country code (3) + network code (2)]<br><br>**<oper>**: network operator in format defined by **<format>** parameter.<br><br>Note: **<mode>** parameter setting is stored in NVM and available at next reboot, if it is not **3** (i.e.: set only **<format>** parameter).<br><br>Note: if **<mode>=1 or 4** (or **5** if **#COPSMODE=0**), the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted)<br><br>Note: **<format>** parameter setting is never stored in NVM<br><br>Note: issuing **AT+COPS<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+COPS=<CR>** is the same as issuing the command **AT+COPS=0<CR>**. |
| **AT+COPS?** | Read command returns current value of **<mode>,<format>** and **<oper>** in format **<format>**; if no operator is selected, **<format>** and **<oper>** are omitted |

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| **+COPS - Operator Selection** | |
|---|---|
| | **+COPS: <mode>[, <format>, <oper>]** |
| **AT+COPS=?** | Test command returns a list of quadruplets, each representing an operator present in the network.<br><br>The behaviour of Test command depends on the last **#COPSMODE** setting.<br><br>**(#COPSMODE=0)**<br>The command outputs as many rows as the number of quadruplets, each of them in the format:<br><br>**+COPS: (<stat> ,<oper (in <format>=0)>,"",**<br>**<oper (in <format>=2)>)**<br><br>where<br>**<stat>** - operator availability<br>0 - unknown<br>1 - available<br>2 - current<br>3 - forbidden<br><br>**(#COPSMODE=1)**<br>The quadruplets in the list are separated by commas:<br><br>**+COPS: [list of supported (<stat> ,<oper (in <format>=0)>,,**<br>**<oper (in <format>=2)> )s][,,(list of supported <mode>s),**<br>**(list of supported<format>s)]**<br><br>where<br>**<stat>** - operator availability<br>0 - unknown<br>1 - available<br>2 - current<br>3 - forbidden<br><br>Note: since with this command a network scan is done, this command may require some seconds before the output is given.<br><br>Note: The value of parameter **<oper>** (in **<format>=0**) is the same as the recent GM862 family products. |
| Reference | GSM 07.07 |

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### 3.6.2.3.5 +CLCK - Facility Lock/ Unlock

| **+CLCK - Facility Lock/Unlock** | |
|---|---|
| **AT+CLCK=<br><fac>,<mode><br>[,<passwd><br>[,<class>]]** | Execution command is used to lock or unlock a **ME** o a network facility.<br><br>Parameters:<br>**<fac>** - facility<br>"SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued)<br>"AO"- BAOC (Barr All Outgoing Calls)<br>"OI" - BOIC (Barr Outgoing International Calls)<br>"OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country)<br>"AI" - BAIC (Barr All Incoming Calls)<br>"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country)<br>"AB" - All Barring services (applicable only for **<mode>=0**)<br>"AG" - All outGoing barring services (applicable only for **<mode>=0**)<br>"AC" - All inComing barring services (applicable only for **<mode>=0**)<br>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**)<br>"PN" - network Personalisation<br>"PU" - network subset Personalisation<br><br>**<mode>** - defines the operation to be done on the facility<br>0 - unlock facility<br>1 - lock facility<br>2 - query status<br><br>**<passwd>** - shall be the same as password specified for the facility from the **DTE** user interface or with command Change Password **+CPWD**<br><br>**<class>** - represents the class of information of the facility as sum of bits (default is 7)<br>1- voice (telephony)<br>2 - data (refers to all bearer services)<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>Note: when **<mode>=2** and command successful, it returns:<br><br>**+CLCK: <status>** |

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| **+CLCK - Facility Lock/Unlock** | |
|---|---|
| | where<br>**<status>** - current status of the facility<br>0 - not active<br>1 - active |
| **AT+CLCK=?** | Test command reports all the facility supported by the device. |
| Reference | GSM 07.07 |
| Note | The improving command @**CLCK** has been defined. |

### *3.6.2.3.6 @CLCK - Facility Lock/ Unlock*

| **@CLCK - Facility Lock/Unlock** | |
|---|---|
| **AT@CLCK=<br><fac>,<mode><br>[,<passwd><br>[,<class>]]** | Execution command is used to lock or unlock a **ME** o a network facility.<br><br>Parameters:<br>**<fac>** - facility<br>"SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued)<br>"AO"- BAOC (Barr All Outgoing Calls)<br>"OI" - BOIC (Barr Outgoing International Calls)<br>"OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country)<br>"AI" - BAIC (Barr All Incoming Calls)<br>"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country)<br>"AB" - All Barring services (applicable only for **<mode>=0**)<br>"AG" - All outGoing barring services (applicable only for **<mode>=0**)<br>"AC" - All inComing barring services (applicable only for **<mode>=0**)<br>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**)<br>"PN" - network Personalisation<br>"PU" - network subset Personalisation<br><br>**<mode>** - defines the operation to be done on the facility<br>0 - unlock facility<br>1 - lock facility<br>2 - query status<br><br>**<passwd>** - shall be the same as password specified for the facility from the **DTE** user interface or with command Change Password **+CPWD**<br><br>**<class>** - represents the class of information of the facility as sum of bits (default is 7) |

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| @CLCK - Facility Lock/Unlock | |
|---|---|
| | 1- voice (telephony)<br>2 - data (refers to all bearer services)<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>Note: when **<mode>=2** and command successful, it returns:<br>**@CLCK: <status>,<class1>**<br>**[<CR><LF>@CLCK: <status>,<class2>[...]]**<br><br>where<br>**<status>** - the current status of the facility<br>0 - not active<br>1 - active<br>**<class*n*>** - class of information of the facility |
| **AT@CLCK=?** | Test command reports all the facilities supported by the device. |
| Reference | GSM 07.07 |
| Example | *Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:*<br><br>`AT@CLCK =”A0”,2`<br>`@CLCK: <status>,1`<br>`@CLCK: <status>,2`<br>`@CLCK: <status>,4`<br><br>`OK` |

### *3.6.2.3.7 +CPWD - Change Facility Password*

| +CPWD - Change Facility Password | |
|---|---|
| **AT+CPWD=<fac>, <oldpwd>, <newpwd>** | Execution command changes the password for the facility lock function defined by command Facility Lock **+CLCK**.<br><br>Parameters:<br>**<fac>** - facility<br>“SC” - SIM (PIN request)<br>“AB” - All barring services<br>“P2” - SIM PIN2<br><br>**<oldpwd>** - string type, it shall be the same as password specified for the facility from the ME user interface or with command **+CPWD**. |

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| | |
|---|---|
| | **<newpwd>** - string type, it is the new password<br><br>Note: parameter **<oldpwd>** is the old password while **<newpwd>** is the new one. |
| **AT+CPWD=?** | Test command returns a list of pairs **(<fac>,<pwdlength>)** which presents the available facilities and the maximum length of their password (**<pwdlength>**) |
| Reference | GSM 07.07 |

### *3.6.2.3.8 +CLIP - Calling Line Identification Presentation*

| **+CLIP - Calling Line Identification Presentation** | |
|---|---|
| **AT+CLIP[=[<n>]]** | Set command enables/disables the presentation of the CLI (Calling Line Identity) at the **TE**. This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call.<br><br>Parameters:<br>**<n>**<br>0 - disables CLI indication (factory default)<br>1 - enables CLI indication<br><br>If enabled the device reports after each **RING** the response:<br><br>**+CLIP: <number>,<type>,<subaddress>,<satype>,<alpha>, <CLI_validity>**<br><br>where:<br>**<number>** - calling line number<br>**<type>** - type of address octet in integer format<br>145 - international numbering scheme (contains the character "+")<br>129 - national numbering scheme<br>**<subaddress>** - string type subaddress of format specified by **<satype>**<br>**<satype>** - type of subaddress octet in integer format<br>**<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected either with command Select **TE** character set **+CSCS** or **@CSCS**.<br>**<CLI_validity>**<br>0 - CLI valid<br>1 - CLI has been withheld by the originator.<br>2 - CLI is not available due to interworking problems or limitation or originating network. |

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| **+CLIP - Calling Line Identification Presentation** | |
|---|---|
| | Note: issuing **AT+CLIP<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CLIP=<CR>** is the same as issuing the command **AT+CLIP=0<CR>**. |
| **AT+CLIP?** | Read command returns the presentation status of the CLI in the format:<br><br>**+CLIP: <n>,<m>**<br><br>where:<br>**<n>**<br>0 - CLI presentation disabled<br>1 - CLI presentation enabled<br><br>**<m>** - status of the CLIP service on the GSM network<br>0 - CLIP not provisioned<br>1 - CLIP provisioned<br>2 - unknown (e.g. no network is present )<br><br>Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it. |
| **AT+CLIP=?** | Test command returns the supported values of the parameter **<n>** |
| Reference | GSM 07.07 |
| Note | The command changes only the report behaviour of the device, it does not change CLI supplementary service setting on the network. |

### *3.6.2.3.9 +CLIR - Calling Line Identification Restriction*

| **+CLIR - Calling Line Identification Restriction** | |
|---|---|
| **AT+CLIR[=[<n>]]** | Set command overrides the CLIR subscription when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command.<br>This command refers to CLIR-service (GSM 02.81) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.<br><br>Parameter:<br>**<n>** - facility status on the Mobile<br>0 - CLIR facility according to CLIR service network status<br>1 - CLIR facility active (CLI not sent)<br>2 - CLIR facility not active (CLI sent)<br><br>Note: issuing **AT+CLIR<CR>** is the same as issuing the Read command. |

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| +CLIR - Calling Line Identification Restriction | |
|---|---|
| | Note: issuing **AT+CLIR=<CR>** is the same as issuing the command **AT+CLIR=0<CR>**. |
| **AT+CLIR?** | Read command gives the default adjustment for all outgoing calls (**<n>**) and also triggers an interrogation of the provision status of the CLIR service (**<m>**), where<br><br>**<n>** - facility status on the Mobile<br>0 - CLIR facility according to CLIR service network status<br>1 - CLIR facility active (CLI not sent)<br>2 - CLIR facility not active (CLI sent)<br><br>**<m>** - facility status on the Network<br>0 - CLIR service not provisioned<br>1 - CLIR service provisioned permanently<br>2 - unknown (e.g. no network present, etc.)<br>3 - CLI temporary mode presentation restricted<br>4 - CLI temporary mode presentation allowed |
| **AT+CLIR=?** | Test command reports the supported values of parameter **<n>**. |
| Reference | GSM 07.07 |
| Note | This command sets the default behaviour of the device in outgoing calls. |

### *3.6.2.3.10 +CCFC - Call Forwarding Number And Conditions*

| +CCFC - Call Forwarding Number And Condition | |
|---|---|
| **AT+CCFC= <reason>, <cmd>[,<number>[, <type>[,<class> [,,,<time>]]]** | Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.<br><br>Parameters:<br>**<reason>**<br>0 - unconditional<br>1 - mobile busy<br>2 - no reply<br>3 - not reachable<br>4 - all calls (not with query command)<br>5 - all conditional calls (not with query command)<br><br>**<cmd>**<br>0 - disable<br>1 - enable<br>2 - query status<br>3 - registration<br>4 - erasure |

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| **+CCFC - Call Forwarding Number And Condition** | |
|---|---|
| | **<number>** - phone number of forwarding address in format specified by **<type>** parameter<br>**<type>** - type of address byte in integer format :<br>145 - international numbering scheme (contains the character "+")<br>129 - national numbering scheme<br><br>**<class>** - sum of integers each representing a class of information which the command refers to; default 7 ( voice + data + fax )<br>1 - voice (telephony)<br>2 - data<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>**<time>** - time in *seconds* to wait before call is forwarded; it is valid only when **<reason>** "no reply" is enabled (**<cmd>**=1) or queried (**<cmd>**=2)<br>1..30 - automatically rounded to a multiple of 5 seconds (default is 20)<br><br>Note: when **<cmd>=2** and command successful, it returns:<br><br>**+CCFC: <status>,<class1>[,<number>,<type>[,,,<time>]][<CR><LF>**<br>**+CCFC: <status>,<class2>[,<number>,<type>[,,,<time>]][ … ]]**<br><br>where:<br>**<status>** - current status of the network service<br>0 - not active<br>1 - active<br>**<class*n*>** - same as **<class>**<br>**<time>** - it is returned only when **<reason>**=2 (“no reply”) and **<cmd>**=2.<br><br>The other parameters are as seen before. |
| **AT+CCFC=?** | Test command reports supported values for the parameter **<reason>**. |
| Reference | GSM 07.07 |
| Note | When querying the status of a network service **(<cmd>=2**) the response line for 'not active' case **(<status>=0**) should be returned only if service is not active for any **<class>**. |

### *3.6.2.3.11 +CCWA - Call Waiting*

| **+CCWA - Call Waiting** | |
|---|---|
| **AT+CCWA[=** | Set command allows the control of the call waiting supplementary service. |

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| **+CCWA - Call Waiting** | |
|---|---|
| **[<n>[,<cmd>[,<class>]]]]** | Activation, deactivation, and status query are supported.<br><br>Parameters:<br>**<n>** - enables/disables the presentation of an unsolicited result code:<br>0 - disable<br>1 - enable<br>**<cmd>** - enables/disables or queries the service at network level:<br>0 - disable<br>1 - enable<br>2 - query status<br>**<class>** - is a sum of integers each representing a class of information which the command refers to; default is 7 (voice + data + fax)<br>1 - voice (telephony)<br>2 - data<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>Note: the response to the query command is in the format:<br><br>**+CCWA: <status>,<class1>[<CR><LF>**<br>**+CCWA: <status>,<class2>[ … ]]**<br><br>where<br>**<status>** represents the status of the service:<br>0 - inactive<br>1 - active<br>**<class*n*>** - same as **<class>**<br><br>Note: the unsolicited result code enabled by parameter **<n>** is in the format:<br><br>**+CCWA: <number>,<type>,<class>,<alpha>,<cli_validity>**<br><br>where<br>**<number>** - string type phone number of calling address in format specified by **<type>**<br>**<type>** - type of address in integer format<br>**<class>** - see before<br>**<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with either **+CSCS** or **@CSCS**. |

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| +CCWA - Call Waiting | |
|---|---|
| | **<cli_validity>**<br>0 - CLI valid<br>1 - CLI has been withheld by the originator<br>2 - CLI is not available due to interworking problems or limitations of originating network<br><br>Note: if parameter **<cmd>** is omitted then network is not interrogated.<br><br>Note: in the query command the class parameter must not be issued.<br><br>Note: the difference between call waiting report disabling (**AT+CCWA = 0,1,7**) and call waiting service disabling (**AT+CCWA = 0,0,7**) is that in the first case the call waiting indication is sent to the device by network but this last one does not report it to the **DTE**; instead in the second case the call waiting indication is not generated by the network. Hence the device results busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party.<br><br>Note: The command **AT+CCWA=1,0** has no effect a non sense and must not be issued.<br><br>Note: issuing **AT+CCWA<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CCWA=<CR>** is the same as issuing the command **AT+CCWA=0<CR>**. |
| **AT+CCWA?** | Read command reports the current value of the parameter **<n>**. |
| **AT+CCWA=?** | Test command reports the supported values for the parameter **<n>**. |
| Reference | GSM 07.07 |

### *3.6.2.3.12 +CHLD - Call Holding Services*

| +CHLD - Call Holding Services | |
|---|---|
| **AT+CHLD=<n>** | Execution command controls the network call hold service. With this service it is possible to disconnect temporarily a call and keep it suspended while it is retained by the network, contemporary it is possible to connect another party or make a multiparty connection.<br><br>Parameter:<br>**<n>**<br>0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call.<br>1 - releases all active calls (if any exist), and accepts the other (held or waiting) call<br>1X - releases a specific active call X<br>2 - places all active calls (if any exist) on hold and accepts the other (held |

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| | |
|---|---|
| | or waiting) call.<br>2X - places all active calls on hold except call X with which communication shall be supported<br>3 - adds an held call to the conversation<br><br>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number.<br><br>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation. |
| **AT+CHLD=?** | Test command returns the list of supported **<n>s**.<br><br>**+CHLD: (0,1,2,3)**<br><br>Note: consider what has been written about the Set command relating the actions on a specific call (X). |
| Reference | GSM 07.07 |
| Note | ONLY for VOICE calls |

### *3.6.2.3.13 +CUSD - Unstructured Supplementary Service Data*

| **+CUSD - Unstructured Supplementary Service Data** | |
|---|---|
| **AT+CUSD[=[<n>[,<str>[,<dcs>]]]]** | Set command allows control of the Unstructured Supplementary Service Data (USSD [GSM 02.90]).<br><br>Parameters:<br>**<n>** - is used to disable/enable the presentation of an unsolicited result code.<br>0 - disable the result code presentation in the **DTA**<br>1 - enable the result code presentation in the **DTA**<br><br>**<str>** - USSD-string (when **<str>** parameter is not given, network is not interrogated)<br>- If **<dcs>** indicates that GSM338 default alphabet is used **ME/TA** converts GSM alphabet into current TE character set (see **+CSCS**).<br>- If **<dcs>** indicates that 8-bit data coding scheme is used: **ME/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).<br><br>**<dcs>** - GSM 3.38 Cell Broadcast Data Coding Scheme in integer format (default is 0).<br><br>Note: the unsolicited result code enabled by parameter **<n>** is in the |

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| +CUSD - Unstructured Supplementary Service Data | |
|---|---|
| | format:<br><br>**+CUSD: <m>[,<str>,<dcs>]** to the **TE**<br><br>where:<br><br>**<m>**:<br>0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation).<br>1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)<br>2 - USSD terminated by the network<br>3 - other local client has responded<br>4 - operation not supported<br>5 - network time out<br><br>Note: in case of successful mobile initiated operation, **DTA** waits the USSD response from the network and sends it to the **DTE** before the final result code. This will block the AT command interface for the period of the operation.<br><br>Note: issuing **AT+CUSD<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CUSD=<CR>** is the same as issuing the command **AT+CUSD=0<CR>**. |
| **AT+CUSD?** | Read command reports the current value of the parameter **<n>** |
| **AT+CUSD=?** | Test command reports the supported values for the parameter **<n>** |
| Reference | GSM 07.07 |
| Note | Only mobile initiated operations are supported |

### *3.6.2.3.14 +CAOC - Advice Of Charge*

| +CAOC - Advice Of Charge | |
|---|---|
| **AT+CAOC[=[<mode>]]** | Set command refers to the Advice of Charge supplementary services, that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information.<br><br>Parameter:<br>**<mode>**<br>0 - query CCM value<br>1 - disables unsolicited CCM reporting<br>2 - enables unsolicited CCM reporting |

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| **+CAOC - Advice Of Charge** | |
|---|---|
| | Note: the unsolicited result code enabled by parameter **<mode>** is in the format:<br><br>**+CCCM: <ccm>**<br><br>where:<br>**<ccm>** - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. "00001E" indicates decimal value 30)<br><br>Note: the unsolicited result code **+CCCM** is sent when the CCM value changes, but not more than every 10 seconds.<br><br>Note: issuing **AT+CAOC<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CAOC=<CR>** is the same as issuing the command **AT+CAOC=0<CR>**. |
| **AT+CAOC?** | Read command reports the value of parameter **<mode>** in the format:<br><br>**+CAOC: <mode>** |
| **AT+CAOC=?** | Test command reports the supported values for **<mode>** parameter.<br><br>Note: the representation format doesn't match the v.25ter§5.7.3 "Information text formats for test commands". The output is:<br><br>**+CAOC: 0, 1, 2** |
| Reference | GSM 07.07 |
| Note | **+CAOC** command returns an estimate of the cost of the current call only, produced by the MS and based on the informations provided by either AoCI and AOCC supplementary services; it is not stored in the SIM. |

### *3.6.2.3.15 +CLCC - List Current Calls*

| **+CLCC - List Current Calls** | |
|---|---|
| **AT+CLCC** | Execution command returns the list of current calls and their characteristics in the format:<br><br>**[+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type> [<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>[…]]]**<br><br>where:<br>**<id*n*>** - call identification number<br><br>**<dir>** - call direction |

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| +CLCC - List Current Calls | |
|---|---|
| | 0 - mobile originated call<br>1 - mobile terminated call<br><br>**<stat>** - state of the call<br>0 - active<br>1 - held<br>2 - dialling (**MO** call)<br>3 - alerting (**MO** call)<br>4 - incoming (**MT** call)<br>5 - waiting (**MT** call)<br><br>**<mode>** - call type<br>0 - voice<br>1 - data<br>2 - fax<br>9 - unknown<br><br>**<mpty>** - multiparty call flag<br>0 - call is not one of multiparty (conference) call parties<br><br>**<number>** - phone number in format specified by **<type>**<br><br>**<type>** - type of phone number byte in integer format<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+")<br><br>Note: If no call is active then only **OK** message is sent. This command is useful in conjunction with command **+CHLD** to know the various call status for call holding. |
| Reference | GSM 07.07 |

### *3.6.2.3.16 +CSSN - SS Notification*

| +CSSN - SS Notification | |
|---|---|
| **AT+CSSN[=[<n>[,<m>]]]** | It refers to supplementary service related network initiated notifications.<br>Set command enables/disables the presentation of notification result codes from **TA** to **TE**.<br><br>Parameters:<br>**<n>** - sets the **+CSSI** result code presentation status<br>0 - disable<br>1 - enable<br><br>**<m>** - sets the **+CSSU** result code presentation status<br>0 - disable |

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| **+CSSN - SS Notification** | |
|---|---|
| | 1 - enable<br><br>When **<n>=1** and a supplementary service notification is received after a mobile originated call setup, an unsolicited code:<br><br>**+CSSI: <code1>**<br><br>is sent to **TE** before any other **MO** call setup result codes, where:<br>**<code1>**:<br>1 - some of the conditional call forwardings are active<br>2 - call has been forwarded<br>3 - call is waiting<br>5 - outgoing calls are barred<br>6 - incoming calls are barred<br><br>When **<m>=1** and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code<br><br>**+CSSU: <code2>**<br><br>is sent to **TE**, where:<br>**<code2>**:<br>0 - this is a forwarded call (**MT** call setup)<br>2 - call has been put on hold (during a voice call)<br>3 - call has been retrieved (during a voice call)<br><br>Note: issuing **AT+CSSN<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSSN=<CR>** is the same as issuing the command **AT+CSSN=0<CR>**. |
| **AT+CSSN?** | Read command reports the current value of the parameters. |
| **AT+CSSN=?** | Test command reports the supported range of values for parameters **<n>**, **<m>**. |
| Reference | GSM 07.07 |

### *3.6.2.3.17 +CCUG - Closed User Group Supplementary Service Control*

| **+CCUG - Closed User Group Supplementary Service Control** | |
|---|---|
| **AT+CCUG[=[<n>[,<index>[,<info>]]]]** | Set command allows control of the Closed User Group supplementary service [GSM 02.85].<br><br>Parameters:<br>**<n>** |

| | |
|---|---|
| | 0 - disable CUG temporary mode (factory default).<br>1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing calls.<br><br>**<index>**<br>0..9 - CUG index<br>10 - no index (preferential CUG taken from subscriber data) (default)<br><br>**<info>**<br>0 - no information (default)<br>1 - suppress Outgoing Access (OA)<br>2 - suppress preferential CUG<br>3 - suppress OA and preferential CUG<br><br>Note: issuing **AT+CCUG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CCUG=<CR>** is the same as issuing the command **AT+CCUG=0<CR>**. |
| **AT+CCUG?** | Read command reports the current value of the parameters |
| **AT+CCUG=?** | Test command reports the supported range of values for the parameters **<n>**, **<index>**, **<info>** |
| Reference | GSM 07.07 |

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## 3.6.2.4 Mobile Equipment Control

### *3.6.2.4.1 +CPAS - Phone Activity Status*

| **+CPAS - Phone Activity Status** | |
|---|---|
| **AT+CPAS** | Execution command reports the device status in the form:<br><br>**+CPAS: <pas>**<br><br>Where:<br>**<pas>** - phone activity status<br>0 - ready (device allows commands from **TA/TE**)<br>1 - unavailable (device does not allow commands from **TA/TE**)<br>2 - unknown (device is not guaranteed to respond to instructions)<br>3 - ringing (device is ready for commands from **TA/TE**, but the ringer is active)<br>4 - call in progress (device is ready for commands from **TA/TE**, but a call is in progress) |
| **AT+CPAS?** | Read command has the same effect as Execution command. |
| **AT+CPAS=?** | Test command reports the supported range of values for **<pas>**.<br><br>Note: although **+CPAS** is an execution command, ETSI 07.07 requires the Test command to be defined. |
| Reference | GSM 07.07 |

### *3.6.2.4.2 +CFUN - Set Phone Functionality*

| **+CFUN - Set Phone Functionality** | |
|---|---|
| **AT+CFUN=<fun>** | Set command selects the level of functionality in the **ME**.<br><br>Parameter:<br>**<fun>** - is the power saving function mode<br>0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set **<fun>** level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event stops power saving and takes the ME back to full functionality level **<fun>=1**.<br>1 - mobile full functionality with power saving disabled (factory default)<br>2 - disabled TX<br>4 - disabled both TX and RX<br>5 - mobile full functionality with power saving enabled<br><br>Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity. |

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| | |
|---|---|
| | Note: to place the telephone in power saving mode, set the **<fun>** parameter at value = 5 and the line **DTR** (RS232) must be set to **OFF**. Once in power saving, the **CTS** line switch to the **OFF** status to signal that the telephone is really in power saving condition.<br>During the power saving condition, before sending any AT command on the serial line, the **DTR** must be enabled and it must be waited for the **CTS** (RS232) line to go in **ON** status.<br>Until the **DTR** line is **ON**, the telephone will not return back in the power saving condition.<br><br>Note: the power saving function does not affect the network behavior of the MODULE, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call arrives during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code |
| **AT+CFUN?** | Read command reports the current level of functionality. |
| **AT+CFUN=?** | Test command returns the list of supported values for **<fun>**<br><br>For compatibility with previous versions, Test command returns<br>**+CFUN: (1, 5)**<br><br>An enhanced version of Test command has been defined: **AT+CFUN=??**, that provides the complete range of values for **<fun>**. |
| **AT+CFUN=??** | Enhanced test command returns the list of supported values for **<fun>** |
| Reference | GSM 07.07 |

### *3.6.2.4.3 +CPIN - Enter PIN*

| **+CPIN - Enter PIN** | |
|---|---|
| **AT+CPIN[=<pin> [,<newpin>]]** | Set command sends to the device a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).<br>If the PIN required is SIM PUK or SIM PUK2, the **<newpin>** is required. This second pin, **<newpin>**,will replace the old pin in the SIM.<br>The command may be used to change the SIM PIN by sending it with both parameters **<pin>** and **<newpin>** when PIN request is pending; if no PIN request is pending the command will return an error code and to change the PIN the command **+CPWD** must be used instead.<br><br>Parameters:<br>**<pin>** - string type value<br>**<newpin>** - string type value.<br><br>To check the status of the PIN request use the command **AT+CPIN?**<br><br>Note: If all parameters are omitted then the behaviour of Set command is |

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| **+CPIN - Enter PIN** | |
|---|---|
| | the same as Read command. |
| **AT+CPIN?** | Read command reports the PIN/PUK/PUK2 request status of the device in the form:<br><br>**+CPIN:<code>**<br>where:<br>**<code>** - PIN/PUK/PUK2 request status code<br>READY - ME is not pending for any password<br>SIM PIN - ME is waiting SIM PIN to be given<br>SIM PUK - ME is waiting SIM PUK to be given<br>PH-SIM PIN - ME is waiting phone-to-SIM card password to be given<br>PH-FSIM PIN - ME is waiting phone-to-very first SIM card password to be given<br>PH-FSIM PUK - ME is waiting phone-to-very first SIM card unblocking password to be given<br>SIM PIN2 - ME is waiting SIM PIN2 to be given; this **<code>** is returned only when the last executed command resulted in PIN2 authentication failure (i.e. **+CME ERROR: 17**)<br>SIM PUK2 - ME is waiting SIM PUK2 to be given; this **<code>** is returned only when the last executed command resulted in PUK2 authentication failure (i.e. **+CME ERROR: 18**)<br>PH-NET PIN - ME is waiting network personalization password to be given<br>PH-NET PUK - ME is waiting network personalization unblocking password to be given<br>PH-NETSUB PIN - ME is waiting network subset personalization password to be given<br>PH-NETSUB PIN - ME is waiting network subset personalization unblocking password to be given<br>PH-SP PIN - ME is waiting service provider personalization password to be given<br>PH-SP PUK - ME is waiting service provider personalization unblocking password to be given<br>PH-CORP PIN - ME is waiting corporate personalization password to be given<br>PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given<br><br>Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use either the **AT+CLCK=SC,<mode>, <pin>** command or the **AT@CLCK=SC,<mode>, <pin>** command. |
| Example | `AT+CMEE=1`<br>`OK`<br>`AT+CPIN?`<br>`+CME ERROR: 10` *`error: you have to insert the SIM`*<br>`AT+CPIN?` |

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| +CPIN - Enter PIN | |
|---|---|
| | `+CPIN: READY` *you inserted the SIM and device is not waiting for PIN to be given*<br><br>`OK` |
| Note | What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK |

| | | | |
|---|---|---|---|
| **A** | **#SRP** | **#CAMOFF** | **+IPR** |
| **D** | **#CAP** | **#CAMEN** | **+ICF** |
| **H** | **#CODEC** | **#TPHOTO** | **+IFC** |
| **O** | **#CBC** | **#RPHOTO** | **+CMUX** |
| **E** | **#I2S1** | **#SELCAM** | **+CNMI** |
| **I** | **#STM** | **#CAMQUA** | **+CPAS** |
| **L** | **#SHFEC** | **#CMODE** | **+CCLK** |
| **M** | **#SHFSD** | **#CAMRES** | **+CALA** |
| **P** | **#HFMICG** | **#CAMTXT** | **+CRSM** |
| **Q** | **#HSMICG** | **#CAMZOOM** | **+CLIP** |
| **S** | **#GPIO** | **#CAMCOL** | **+DR** |
| **T** | **#SGPO** | **#OBJL** | **+DS** |
| **V** | **#GGPI** | **#OBJR** | **+MS** |
| **X** | **#ADC** | **#COPSMODE** | **+GCAP** |
| **Z** | **#QTEMP** | **#DIALMODE** | **+GCI** |
| **&C** | **#DAC** | **#SEMAIL** | **+ILRR** |
| **&D** | **#RSEN** | **#EMAILD** | **+CALM** |
| **&F** | **#RTCSTAT** | **#EUSER** | **+CHUP** |
| **&K** | **#ACAL** | **#EPASSW** | **+FCLASS** |
| **&N** | **#PCT** | **#ESMTP** | **+FMI** |
| **&P** | **#WAKE** | **#EADDR** | **+FMM** |
| **&S** | **#SHDN** | **#EMAILMSG** | **+FMR** |
| **&V** | **#JDR** | **#ESAV** | **+FTS** |
| **&W** | **#CSURV** | **#ERST** | **+FRS** |
| **&Y** | **#CSURVC** | **#QSS** | **+FTM** |
| **&Z** | **#CSURVU** | **#SSCTRACE** | **+FRM** |
| **%E** | **#CSURVUC** | **+CFUN** | **+FRH** |
| **%L** | **#CSURVF** | **+CGMI** | **+FTH** |
| **%Q** | **#CSURVNLF** | **+CGMM** | **+FLO** |
| **\K** | **#CSURVB** | **+CGMR** | **+FPR** |
| **\Q** | **#CSURVBC** | **+GMI** | **+FDD** |
| **\R** | **#PASSW** | **+GMM** | **+CSNS** |
| **\V** | **#PKTSZ** | **+GMR** | **+CRLP** |
| **#BND** | **#SKTSAV** | **+CGSN** | **+CR** |
| **#AUTOBND** | **#SKTSET** | **+GSN** | **+CREG** |
| **#CGMI** | **#SKTOP** | **+CRC** | **+CGREG** |
| **#CGMM** | **#SKTTO** | **+CMEE** | **+COPS** |
| **#CGMR** | **#USERID** | **+CPIN** | **+CBC** |

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| +CPIN - Enter PIN | |
|---|---|
| | <table><tr><td>#CGSN</td><td>#DSTO</td><td>+CSQ</td><td>+CIND</td></tr><tr><td>#MONI</td><td>#SKTCT</td><td>+CSDH</td><td>+CMER</td></tr><tr><td>#SERVINFO</td><td>#SKTRST</td><td>+CRSL</td><td></td></tr><tr><td>#SELINT</td><td>#FTPPUTPH</td><td>+CLVL</td><td></td></tr><tr><td>#SRS</td><td>#CAMON</td><td>+CMUT</td><td></td></tr></table><br>All the above commands, but the ones in the grayed cells, can be issued even if the SIM card is not inserted yet.<br><br>All the above commands, but **+CSDH** and **+CNMI**, can be issued even if ME is waiting for phone-To-SIM card password to be given |
| Reference | GSM 07.07 |

### *3.6.2.4.4 +CSQ - Signal Quality*

| +CSQ - Signal Quality | |
|---|---|
| **AT+CSQ** | Execution command reports received signal quality indicators in the form:<br><br>**+CSQ: <rssi>,<ber>**<br>where<br>**<rssi>** - received signal strength indication<br>0 - (-113) dBm or less<br>1 - (-111) dBm<br>2..30 - (-109)dBm..(-53)dBm / 2 dBm per step<br>31 - (-51)dBm or greater<br>99 - not known or not detectable<br><br>**<ber>** - bit error rate (in percent)<br>0 - less than 0.2%<br>1 - 0.2% to 0.4%<br>2 - 0.4% to 0.8%<br>3 - 0.8% to 1.6%<br>4 - 1.6% to 3.2%<br>5 - 3.2% to 6.4%<br>6 - 6.4% to 12.8%<br>7 - more than 12.8%<br>99 - not known or not detectable<br><br>Note: this command should be used instead of the **%Q** and **%L** commands, since GSM relevant parameters are the radio link ones and no line is present, hence **%Q %L** and have no meaning. |
| **AT+CSQ?** | Read command has the same effect as Execution command. |
| **AT+CSQ=?** | Test command returns the supported range of values of the parameters **<rssi>** and **<ber>**. |

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| **+CSQ - Signal Quality** | |
|---|---|
| | Note: although **+CSQ** is an execution command without parameters, ETSI 07.07 requires the Test command to be defined. |
| Reference | GSM 07.07 |

### *3.6.2.4.5 +CIND - Indicator Control*

| **+CIND - Indicator Control** | |
|---|---|
| **AT+CIND[=[<state>[,<state>[,…]]]]** | Set command is used to control the registration state of ME indicators, in order to automatically send the **+CIEV** URC, whenever the value of the associated indicator changes. The supported indicators (**<descr>**) and their order appear from test command **AT+CIND=?**<br><br>Parameter:<br>**<state>** - registration state<br>0 - the indicator is deregistered; there's no unsolicited result code (**+CIEV** URC) automatically sent by the ME to the application, whenever the value of the associated indicator changes; the value, can be directly queried with **+CIND?**<br>1 - the indicator is registered: an unsolicited result code (**+CIEV** URC) is automatically sent by the ME to the application, whenever the value of the associated indicator changes; it is still possible to query the value through **+CIND?** (default)<br><br>Note: issuing **AT+CIND<CR>** causes the read command to be executed<br><br>Note: issuing **AT+CIND=<CR>** causes all the indicators to be registered, as the command **AT+CIND=1,1,1,1,1,1,1,1,1** was issued. |
| **AT+CIND?** | Read command returns the current value of ME indicators, in the format:<br><br>**+CIND: <ind>[,<ind>[,…]]**<br><br>Note: the order of the values **<ind>s** is the same as that in which the associated indicators appear from test command **AT+CIND=?** |
| **AT+CIND=?** | Test command returns pairs, where string value **<descr>** is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format:<br><br>**+CIND: (<descr>, (list of supported <ind>s))[,(<descr>, (list of supported <ind>s))[,…]]**<br><br>where:<br>**<descr>** - indicator names as follows (along with their **<ind>** ranges)<br>"battchg" - battery charge level<br>**<ind>** - battery charge level indicator range |

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| | |
|---|---|
| | 0..5<br>99 - not measurable<br><br>“signal” - signal quality<br>**<ind>** - signal quality indicator range<br>0..7<br>99 - not measurable<br><br>“service” - service availability<br>**<ind>** - service availability indicator range<br>0 - not registered to any network<br>1 - registered to home network<br><br>“sounder” - sounder activity<br>**<ind>** - sounder activity indicator range<br>0 - there’s no any sound activity<br>1 - there’s some sound activity<br><br>“message” - message received<br>**<ind>** - message received indicator range<br>0 - there is no unread short message at memory location “SM”<br>1 - unread short message at memory location “SM”<br><br>“call” - call in progress<br>**<ind>** - call in progress indicator range<br>0 - there’s no calls in progress<br>1 - at least a call has been established<br><br>“roam” - roaming<br>**<ind>** - roaming indicator range<br>0 - registered to home network or not registered<br>1 - registered to other network<br><br>“smsfull” - a short message memory storage in the MT has become full (1), or memory locations are available (0)<br>**<ind>** - short message memory storage indicator range<br>0 - memory locations are available<br>1 - a short message memory storage in the MT has become full.<br><br>“rssi” - received signal (field) strength<br>**<ind>** - received signal strength level indicator range<br>0 - signal strength ≤ 112 dBm<br>1..4 - signal strength in 15 dBm steps<br>5 - signal strength ≥ 51 dBm<br>99 - not measurable |
| Example | *Next command causes all the indicators to be registered*<br>`AT+CIND=1,1,1,1,1,1,1,1,1` |

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| | |
|---|---|
| | *Next command causes all the indicators to be de-registered*<br>AT+CIND=0,0,0,0,0,0,0,0,0<br>*Next command to query the current value of all indicators*<br>AT+CIND?<br>CIND: 4,0,1,0,0,0,0,0,2<br><br>OK |
| Note | See command **+CMER** |
| Reference | GSM 07.07 |

### 3.6.2.4.6 +CMER - Mobile Equipment Event Reporting

| **+CMER - Mobile Equipment Event Reporting** | |
|---|---|
| **AT+CMER[=<br>[<mode><br>[,<keyp><br>[,<disp><br>[,<ind><br>[,<bfr>]]]]]]** | Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (n.b.: sending of URCs in the case of key pressings or display changes are currently not implemented).<br><br>Parameters:<br>**<mode>** - controls the processing of unsolicited result codes<br>0 - discard **+CIEV** Unsolicited Result Codes.<br>1 - discard **+CIEV** Unsolicited Result Codes when TA-TE link is reserved (e.g. on-line data mode); otherwise forward them directly to the TE.<br>2 - buffer **+CIEV** Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE.<br>3 - forward **+CIEV** Unsolicited Result Codes directly to the TE; when TA is in on-line data mode each **+CIEV** URC is replaced with a **Break** (100 ms), and is stored in a buffer; onche the ME goes into command mode (after **+++** was entered), all URCs stored in the buffer will be output.<br><br>**<keyp>** - keypad event reporting<br>0 - no keypad event reporting<br><br>**<disp>** - display event reporting<br>0 - no display event reporting<br><br>**<ind>** - indicator event reporting<br>0 - no indicator event reporting<br>2 - indicator event reporting<br><br>**<bfr>** - TA buffer clearing<br>0 - TA buffer of unsolicited result codes is cleared when <mode> 1..3 is entered |

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| **+CMER - Mobile Equipment Event Reporting** | |
|---|---|
| | Note: issuing **AT+CMER<CR>** causes the read command to be executed<br><br>Note: issuing **AT+CMER=<CR>** causes the command **AT+CMER=0,0,0,0,0** to be issued. |
| **AT+CMER?** | Read command returns the current setting of parameters, in the format:<br><br>**+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>** |
| **AT+CMER=?** | Test command returns the range of supported values for parameters **<mode>, <keyp>, <disp>, <ind>, <bfr>**, in the format:<br><br>**+CMER: (list of supported <mode>s),(list of supported <keyp>s), (list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)** |
| Reference | GSM 07.07 |

### *3.6.2.4.7 +CPBS - Select Phonebook Memory Storage*

| **+CPBS - Select Phonebook Memory Storage** | |
|---|---|
| **AT+CPBS [=<storage>]** | Set command selects phonebook memory storage **<storage>**, which will be used by other phonebook commands.<br><br>Parameter:<br>**<storage>**<br>"SM" - SIM phonebook<br>"FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM)<br>"LD" - SIM last-dialling-phonebook (**+CPBW** and **+CPBF** are not applicable for this storage)<br>"MC" - device missed (unanswered received) calls list **(+CPBW** and **+CPBF** are not applicable for this storage)<br>"RC" - **ME** received calls list (**+CPBW** and **+CPBF** are not applicable for this storage)<br><br>Note: If parameter is omitted then Set command has the same behaviour as Read command. |
| **AT+CPBS?** | Read command returns the actual values of the parameter **<storage>**, the number of occupied records **<used>** and the maximum index number **<total>**, in the format:<br><br>**+CPBS: <storage>,<used>,<total>**<br><br>Note: For **<storage>="MC"**: if there are more than one missed calls from the same number the read command will return only the last call |
| **AT+CPBS=?** | Test command returns the supported range of values for the parameters **<storage>**. |

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| | |
|---|---|
| | Note: the presentation format of the Test command output is the set of available values for **<storage>**, each of them enclosed in parenthesis:<br><br>**+CPBS: ("SM"),("FD"),("LD"),("MC"),("RC")** |
| Reference | GSM 07.07 |

### *3.6.2.4.8 +CPBR - Read Phonebook Entries*

| **+CPBR - Read Phonebook Entries** | |
|---|---|
| **AT+CPBR=<br><index1><br>[,<index2>]** | Execution command returns phonebook entries in location number range **<index1>**..**<index2>** from the current phonebook memory storage selected with **+CPBS**. If **<index2>** is omitted, only location **<index1>** is returned.<br><br>Parameters:<br>**<index1>** - integer type value in the range of location numbers of phonebook memory<br>**<index2>** - integer type value in the range of location numbers of phonebook memory<br><br>The response format is:<br>**+CPBR: <index>,<number>,<type>,<text>**<br><br>where:<br>**<index>** - the current position number of the PB index (to see the range of values use **+CPBR=?**)<br>**<number>** - the phone number stored in the format **<type>**<br>**<type>** - type of phone number byte in integer format<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+")<br>**<text>** - the alphanumeric text associated to the number; used character set should be the one selected with either command **+CSCS** or **@CSCS**.<br><br>Note: if “MC” is the current selected phonebook memory storage, all the missed calls coming from the same number will be saved as one missed call and **+CPBR** will show just one line of information.<br><br>Note: If all queried locations are empty (but available), no information text lines will be returned, while if listing fails in an **ME** error, **+CME ERROR: <err>** is returned. |
| **AT+CPBR=?** | Test command returns the supported range of values of the parameters in the form:<br><br>**+CPBR: (<minIndex> - <maxIndex>),<nlength>,<tlength>** |

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| | |
|---|---|
| | where:<br>**<minIndex>** - the minimum **<index>** number, integer type<br>**<maxIndex>** - the maximum **<index>** number, integer type<br>**<nlength>** - maximum **<number>** field length, integer type<br>**<tlength>** - maximum **<name>** field length, integer type |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |
| Reference | GSM 07.07 |

### *3.6.2.4.9 +CPBF - Find Phonebook Entries*

| **+CPBF - Find Phonebook Entries** | |
|---|---|
| **AT+CPBF=<br><findtext>** | Execution command issues a search for the phonebook records that have the **<findtext>** sub-string at the start of the **<text>** field<br><br>Parameter:<br>**<findtext>** - string type, it is NOT case sensitive; used character set should be the one selected with either command **+CSCS** or **@CSCS**.<br><br>The command returns a report in the form:<br><br>**+CPBF: <index1>,<number>,<type>,<text>[[…]<CR><LF>**<br>**+CPBF: <index*n*>,<number>,<type>,<text>]**<br><br>where **<index*n*>**, **<number>**, **<type>**, and **<text>** have the same meaning as in the command **+CPBR** report.<br><br>Note: if no PB records satisfy the search criteria then an **ERROR** message is reported. |
| **AT+CPBF=?** | Test command reports the maximum lengths of fields **<number>** and **<name>** in the PB entry in the form:<br><br>**+CPBF: [<max_number_length>],[<max_text_length>]** |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |
| Reference | GSM 07.07 |

### *3.6.2.4.10 +CPBW - Write Phonebook Entry*

| **+CPBW - Write Phonebook Entry** | |
|---|---|
| **AT+CPBW=<br>[<index>]<br>[,<number>** | Execution command stores at the position **<index>** a phonebook record defined by **<number>**, **<type>** and **<text>** parameters |

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| | |
|---|---|
| **[,<type>**<br>**[,<text>]]]** | Parameters:<br>**<index>** - record position<br>**<number>** - string type, phone number in the format **<type>**<br>**<type>** - the type of number<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+")<br>**<text>** - the text associated to the number, string type; used character set should be the one selected with either command **+CSCS** or **@CSCS**.<br><br>Note: If record number **<index>** already exists, it will be overwritten.<br><br>Note: if only **<index>** is given, the record number **<index>** is deleted.<br><br>Note: if **<index>** is omitted, the number **<number>** is stored in the first free phonebook location.<br><br>Note: omission of all the subparameters causes an **ERROR** result code. |
| **AT+CPBW=?** | Test command returns location range supported by the current storage as a compound value, the maximum length of **<number>** field supported number format of the storage and maximum length of **<name>** field. The format is:<br><br>**+CPBW: (list of supported <index>s),[<nlength>],**<br>**(list of supported <type>s),[<tlength>]**<br><br>where:<br>**<nlength>** - integer type value indicating the maximum length of field **<number>**<br>**<tlength>** - integer type value indicating the maximum length of field **<text>** |
| Reference | GSM 07.07 |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |

### *3.6.2.4.11 +CCLK - Clock Management*

| **+CCLK - Clock Management** | |
|---|---|
| **AT+CCLK**<br>**[=<time>]** | Set command sets the real-time clock of the ME.<br><br>Parameter:<br>**<time>** - current time as quoted string in the format :<br>"yy/MM/dd,hh:mm:ss±zz"<br>yy - year (two last digits are mandatory), range is 00..99<br>MM - month (two last digits are mandatory), range is 01..12 |

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| | |
|---|---|
| | dd - day (two last digits are mandatory), range is 01..31 (if the month MM has less than 31 days, the clock will be set for the next month)<br>hh - hour (two last digits are mandatory), range is 00..23<br>mm - minute (two last digits are mandatory), range is 00..59<br>ss - seconds (two last digits are mandatory), range is 00..59<br>±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48<br><br>Note: If the parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT+CCLK?** | Read command returns the current setting of the real-time clock, in the format **<time>**.<br><br>Note: the three last characters of **<time>** are not returned by **+CCLK?** because the **ME** doesn't support time zone information. |
| **AT+CCLK=?** | Test command returns the **OK** result code. |
| Example | `AT+CCLK="02/09/07,22:30:00+00"`<br>`OK`<br>`AT+CCLK?`<br>`+CCLK: 02/09/07,22:30:25`<br><br>`OK` |
| Reference | GSM 07.07 |

### *3.6.2.4.12 +CALA - Alarm Management*

| **+CALA - Alarm Management** | |
|---|---|
| **AT+CALA[= <time>[,<n> [,<type>[,<text>]]]]** | Set command stores in the internal Real Time Clock the current alarm time and settings defined by the parameters **<time>**, **<n>**, **<type>**, and **<text>**. When the RTC time reaches the alarm time then the alarm starts, the behaviour of the MODULE depends upon the setting **<type>** and if the device was already **ON** at the moment when the alarm time had come.<br><br>Parameter:<br>**<time>** - current alarm time as quoted string in the same format as defined for **+CCLK** command: "yy/MM/dd,hh:mm:ss±zz"<br><br>**<n>** - index of the alarm<br>0 - The only value supported is 0.<br><br>**<type>** - alarm behaviour type<br>0 - reserved for other equipment use.<br>1 - the MODULE simply wakes up fully operative as if the **ON/OFF** button had been pressed. If the device is already **ON** at the alarm time, then it does nothing. |

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| **+CALA - Alarm Management** | |
|---|---|
| | 2 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s:<br>**+CALA: <text>**<br>where **<text>** is the **+CALA** optional parameter previously set.<br><br>The device keeps on sending the unsolicited code every 3s until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. (default)<br>3 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see command **#SRP**)<br>The device keeps on playing the alarm tone until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down.<br>4 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin **GPIO6** high, provided its **<direction>** has been set to alarm output, and keeps it in this state until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down.<br>5 - the MODULE will make both the actions as for **<type>=2** and **<type>=3**.<br>6 - the MODULE will make both the actions as for **<type>=2** and **<type>=4**.<br>7 - the MODULE will make both the actions as for **<type>=3** and **<type>=4**.<br>**<text>** - unsolicited alarm code text string. It has meaning only if **<type>** is equal to 2 or 5 or 6.<br><br>Note: The "alarm mode" is indicated by hardware pin **CTS** to the **ON** status and **DSR** to the **OFF** status, while the "power saving" status is indicated by a **CTS** - **OFF** and **DSR** - **OFF** status. The normal operating status is indicated by **DSR** - **ON**.<br>During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state.<br><br>Note: If the parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT+CALA?** | Read command reports the current alarm time stored in the internal Real |

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| **+CALA - Alarm Management** | |
|---|---|
| | Time Clock, if present, in the format:<br>**+CALA: <time>,<n>,<type>[,<text>]**<br><br>Note: if no alarm is present a **<CR><LF>** is issued. |
| **AT+CALA=?** | Test command reports the list of supported **<n>s**, the list of supported **<type>s**, and **<text>** maximum length |
| Example | `AT+CALA="02/09/07,23:30:00+00"`<br>`OK` |
| Reference | GSM 07.07 |

### *3.6.2.4.13 +CRSM - Restricted SIM Access*

| **+CRSM - Restricted SIM Access** | |
|---|---|
| **AT+CRSM=<br><command><br>[,<fileid><br>[,<P1>,<P2>,<P3><br>[,<data>]]]** | Execution command transmits to the **ME** the SIM **<command>** and its required parameters. **ME** handles internally all **SIM-ME** interface locking and file selection routines. As response to the command, **ME** sends the actual SIM information parameters and response data.<br><br>Parameters:<br>**<command>** - command passed on by the **ME** to the SIM<br>176 - READ BINARY<br>178 - READ RECORD<br>192 - GET RESPONSE<br>214 - UPDATE BINARY<br>220 - UPDATE RECORD<br>242 - STATUS<br><br>**<fileid>** - identifier of an elementary datafile on SIM. Mandatory for every command except STATUS.<br><br>**<P1>**,**<P2>**,**<P3>** - parameter passed on by the **ME** to the SIM; they are mandatory for every command except GET RESPONSE and STATUS<br>0..255<br><br>**<data>** - information to be read/written to the SIM (hexadecimal character format).<br><br>The response of the command is in the format:<br><br>**+CRSM: <sw1>,<sw2>[,<response>]**<br><br>where:<br>**<sw1>**,**<sw2>** - information from the SIM about the execution of the actual |

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| +CRSM - Restricted SIM Access | |
|---|---|
| | command either on successful or on failed execution.<br>**<response>** - on a successful completion of the command previously issued it gives the requested data (hexadecimal character format). It's not returned after a successful UPDATE BINARY or UPDATE RECORD command.<br><br>Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files.<br><br>Note: use only decimal numbers for parameters **<command>**, **<fileid>**, **<P1>**, **<P2>** and **<P3>**. |
| **AT+CRSM=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07, GSM 11.11 |

### *3.6.2.4.14 +CALM - Alert Sound Mode*

| +CALM - Alert Sound Mode | |
|---|---|
| **AT+CALM[=<mode>]** | Set command is used to select the general alert sound mode of the device.<br><br>Parameter:<br>**<mode>**<br>0 - normal mode<br>1 - silent mode; no sound will be generated by the device, except for alarm sound<br>2 - stealth mode; no sound will be generated by the device<br><br>Note: if silent mode is selected then incoming calls will not produce alerting sounds but only the unsolicited messages **RING** or **+CRING**.<br><br>Note: If parameter is omitted then the behaviour of Set command is the same as Read command. |
| **AT+CALM?** | Read command returns the current value of parameter **<mode>**. |
| **AT+CALM=?** | Test command returns the supported values for the parameter **<mode>** as compound value.<br><br>For compatibility with previous versions, Test command returns<br>**+CALM: (0,1)**<br><br>An enhanced version of Test command has been defined: **AT+CALM=??**, that provides the complete range of values for **<mode>**. |
| **AT+CALM=??** | Enhanced test command returns the complete range of values for the parameter **<mode>** as compound value: |

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| | |
|---|---|
| | **+CALM: (0-2)** |
| Reference | GSM 07.07 |

### 3.6.2.4.15 +CRSL - Ringer Sound Level

| **+CRSL - Ringer Sound Level** | |
|---|---|
| **AT+CRSL[= <level>]** | Set command is used to select the incoming call ringer sound level of the device.<br><br>Parameter:<br>**<level>** - ringer sound level<br>0 - Off<br>1 - low<br>2 - middle<br>3 - high<br>4 - progressive<br><br>Note: if parameter is omitted then the behaviour of Set command is the same as Read command |
| **AT+CRSL?** | Read command reports the current **<level>** setting of the call ringer in the format:<br><br>**+CRSL: <level>** |
| **AT+CRSL=?** | Test command reports **<level>** supported values as compound value, in the format:<br><br>**+CRSL: (0-4)**<br><br>Note: an enhanced version of Test command has been defined: **AT+CRSL=??**. |
| **AT+CRSL=??** | Enhanced Test command returns the complete range of supported values for the parameter **<mode>**:<br><br>**+CRSL: (0-4)** |
| Reference | GSM 07.07 |

### 3.6.2.4.16 +CLVL - Loudspeaker Volume Level

| **+CLVL - Loudspeaker Volume Level** | |
|---|---|
| **AT+CLVL[= <level>]** | Set command is used to select the volume of the internal loudspeaker audio output of the device.<br><br>Parameter:<br>**<level>** - loudspeaker volume |

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| | |
|---|---|
| | 0..*max* - the value of *max* can be read by issuing the Test command **AT+CLVL=?**<br><br>Note: If the parameter is omitted the behavior of Set command is the same as Read command. |
| **AT+CLVL?** | Read command reports the current **<level>** setting of the loudspeaker volume in the format:<br><br>**+CLVL: <level>** |
| **AT+CLVL=?** | Test command reports **<level>** supported values range in the format:<br><br>**+CLVL: (0-*max*)** |
| Reference | GSM 07.07 |

### *3.6.2.4.17 +CMUT - Microphone Mute Control*

| **+CMUT - Microphone Mute Control** | |
|---|---|
| **AT+CMUT[=[<n>]]** | Set command enables/disables the muting of the microphone audio line during a voice call.<br><br>Parameter:<br>**<n>**<br>0 - mute off, microphone active (factory default)<br>1 - mute on, microphone muted.<br><br>Note: this command mutes/activates both microphone audio paths, internal mic and external mic.<br><br>Note: issuing **AT+CMUT<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CMUT=<CR>** is the same as issuing the command **AT+CMUT=0<CR>**. |
| **AT+CMUT?** | Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format:<br><br>**+CMUT: <n>** |
| **AT+CMUT=?** | Test command reports the supported values for **<n>** parameter. |
| Reference | GSM 07.07 |

### *3.6.2.4.18 +CACM - Accumulated Call Meter*

| **+CACM - Accumulated Call Meter** | |
|---|---|
| **AT+CACM[=<pwd>]** | Set command resets the Advice of Charge related Accumulated Call Meter stored in SIM (ACM): it contains the total number of home units for both the |

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| | |
|---|---|
| | current and preceding calls.<br><br>Parameter:<br>**<pwd>** - to access this command PIN2 password is required<br><br>Note: If the parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT+CACM?** | Read command reports the current value of the SIM ACM in the format:<br><br>**+CACM: <acm>**<br><br>where:<br>**<acm>** - accumulated call meter in home units, string type: three bytes of the ACM value in hexadecimal format (e.g. "00001E" indicates decimal value 30)<br><br>Note: the value **<acm>** is in units whose price and currency is defined with command **+CPUC** |
| Reference | GSM 07.07 |

### *3.6.2.4.19 +CAMM - Accumulated Call Meter Maximum*

| **+CAMM - Accumulated Call Meter Maximum** | |
|---|---|
| **AT+CAMM[= <acmmax>, <pwd>]** | Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches **<acmmax>** value further calls are prohibited.<br><br>Parameter:<br>**<acmmax>** - ACMmax value, integer type: it is the maximum number of home units allowed to be consumed by the subscriber.<br>**<pwd>** - PIN2 password<br><br>Note: The **<acmmax>=0** value disables the feature.<br><br>Note: if the parameters are omitted the behaviour of Set command is the same as Read command. |
| **AT+CAMM?** | Read command reports the ACMmax value stored in SIM in the format:<br><br>**+CAMM : <acmm>**<br><br>where:<br>**<acmm>** - ACMmax value in home units, string type: three bytes of the ACMmax value in hexadecimal format (e.g. "00001E" indicates decimal value 30) |
| Reference | GSM 07.07 |

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### 3.6.2.4.20 +CPUC - Price Per Unit And Currency Table

| **+CPUC - Price Per Unit And Currency Table** | |
|---|---|
| **AT+CPUC[= <currency>, <ppu>,<pwd>]** | Set command sets the values of Advice of Charge related Price per Unit and Currency Table stored in SIM (PUCT). The PUCT information can be used to convert the home units (as used in commands **+CAOC**, **+CACM** and **+CAMM**) into currency units.<br><br>Parameters:<br>**<currency>** - string type; three-character currency code (e.g. LIT, USD, DEM etc..); used character set should be the one selected with either command **+CSCS** or **@CSCS**.<br>**<ppu>** - price per unit, string type (dot is used as decimal separator) e.g. "1989.27"<br>**<pwd>** - SIM PIN2 is usually required to set the values<br><br>Note: if the parameters are omitted the behavior of Set command is the same as Read command. |
| **AT+CPUC?** | Read command reports the current values of **<currency>** and **<ppu>** parameters in the format:<br><br>**+CACM : <currency>,<ppu>** |
| Reference | GSM 07.07 |

### 3.6.2.4.21 +CCID - Read ICCID (Integrated Circuit Card Identification)

| **+CCID - Read ICCID (Integrated Circuit Card Identification)** | |
|---|---|
| **AT+CCID** | Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM) |
| **AT+ CCID?** | Read command has the same effect as Execution command. |
| **AT+CCID=?** | Test command reports **OK**. |

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## 3.6.2.5 Mobile Equipment Errors

### *3.6.2.5.1 +CMEE - Report Mobile Equipment Error*

| **+CMEE - Report Mobile Equipment Error** | |
|---|---|
| **AT+CMEE[=[<n>]]** | Set command enables/disables the report of result code:<br><br>**+CME ERROR: <err>**<br><br>as an indication of an error relating to the **+Cxxx** commands issued. When enabled, device related errors cause the **+CME ERROR: <err>** final result code instead of the default **ERROR** final result code. **ERROR** is anyway returned normally when the error message is related to syntax, invalid parameters, or **DTE** functionality.<br><br>Parameter:<br>**<n>** - enable flag<br>0 - disable **+CME ERROR:<err>** reports, use only **ERROR** report.<br>1 - enable **+CME ERROR:<err>** reports, with **<err>** in numeric format<br>2 - enable **+CME ERROR: <err>** reports, with **<err>** in verbose format<br><br>Note: issuing **AT+CMEE<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CMEE=<CR>** is the same as issuing the command **AT+CMEE=0<CR>**. |
| **AT+CMEE?** | Read command returns the current value of subparameter **<n>**<br><br>**+CMEE: <n>** |
| **AT+CMEE=?** | Test command returns the range of values for subparameter **<n>** in the format:<br><br>**+CMEE: 0, 1, 2**<br><br>Note: the representation format of the Test command output is not included in parenthesis. |
| Note | **+CMEE** has no effect on the final result code **+CMS** |
| Reference | GSM 07.07 |

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## 3.6.2.6 Voice Control

### *3.6.2.6.1 +VTS - DTMF Tones Transmission*

| **+VTS - DTMF Tones Transmission** | |
|---|---|
| **AT+VTS= <dtmfstring> [,duration]** | Execution command allows the transmission of DTMF tones.<br><br>Parameters:<br>**<dtmfstring>** - string of **<dtmf>s,** i.e. ASCII characters in the set **(0-9), #,*,(A-D)**; the string can be at most 255 **<dtmf>s** long; it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through **+VTD** command.<br>**<duration>** - duration of a tone in 1/100 sec..; this parameter can be specified only if the length of first parameter is just one ASCII character<br>0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current **+VTD** setting is.<br>1..255 - a single DTMF tone will be transmitted for a time **<duration>** (in 10 ms multiples), no matter what the current **+VTD** setting is.<br><br>Note: this commands operates in voice mode only (see **+FCLASS**). |
| **AT+VTS=?** | For compatibility with previous versions, Test command returns<br>**+VTS: (),(),()**<br>An enhanced version of Test command has been defined: **AT+VTS=??**, that provides the correct range of values for **<DTMF>**. |
| **AT+VTS=??** | Test command provides the list of supported **<dtmf>s** and the list of supported **<duration>s** in the format:<br>**(list of supported <dtmf>s)[,(list of supported <duration>s)]** |
| Reference | GSM 07.07 and TIA IS-101 |

### *3.6.2.6.2 +VTD - Tone Duration*

| **+VTD - Tone Duration** | |
|---|---|
| **AT+VTD[= <duration>]** | Set command sets the length of tones transmitted with **+VTS** command.<br><br>Parameter:<br>**<duration>** - duration of a tone<br>0 - the duration of every single tone is dependent on the network (factory default)<br>1..255 - duration of every single tone in 1/10 sec.<br>Note: If parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT+VTD?** | Read command reports the current Tone Duration, in the format:<br>**<duration>** |
| **AT+VTD=?** | Test command provides the list of supported <duration>s in the format:<br>(list of supported <duration>s) |
| **Reference** | GSM 07.07 and TIA IS-101 |

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## 3.6.2.7 Commands For GPRS

### *3.6.2.7.1 +CGCLASS - GPRS Mobile Station Class*

| **+CGCLASS - GPRS Mobile Station Class** | |
|---|---|
| **AT+CGCLASS [=<class>]** | Set command sets the GPRS class according to **<class>** parameter.<br><br>Parameter:<br>**<class>** - GPRS class<br>"B" - GSM/GPRS (factory default)<br>"CG" - class C in GPRS only mode (GPRS only)<br>"CC" - class C in circuit switched only mode (GSM only)<br><br>Note: the setting is saved in NVM (and available on following reboot).<br><br>Note: if parameter **<class>** is omitted, then the behaviour of Set command is the same as Read command. |
| **AT+CGCLASS?** | Read command returns the current value of the GPRS class in the format:<br><br>**+CGLASS: <class>** |
| **AT+CGCLASS=?** | Test command reports the range for the parameter **<class>** |

### *3.6.2.7.2 +CGATT - GPRS Attach Or Detach*

| **+CGATT - GPRS Attach Or Detach** | |
|---|---|
| **AT+CGATT[= <state>]** | Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter **<state>**.<br><br>Parameter:<br>**<state>** - state of GPRS attachment<br>0 - detached<br>1 - attached<br><br>Note: If the parameter is omitted the behaviour of Execution command is the same as Read command. |
| **AT+CGATT?** | Read command returns the current GPRS service state. |
| **AT+CGATT=?** | Test command requests information on the supported GPRS service states. |
| Example | `AT+CGATT?`<br>`+CGATT: 0`<br><br>`OK`<br>`AT+CGATT=?`<br>`+CGATT: (0,1)`<br><br>`OK` |

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| +CGATT - GPRS Attach Or Detach | |
|---|---|
| | AT+CGATT=1<br>OK |
| Reference | GSM 07.07 |

### 3.6.2.7.3 +CGREG - GPRS Network Registration Status

| +CGREG - GPRS Network Registration Status | |
|---|---|
| **AT+CGREG[=[<n>]]** | Set command controls the presentation of an unsolicited result code **+CGREG**: (see format below).<br><br>Parameter:<br>**<n>** - result code presentation mode<br>0 - disable network registration unsolicited result code<br>1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code:<br><br>**+CGREG: <stat>**<br><br>where:<br>**<stat>** - registration status<br>0 - not registered, terminal is not currently searching a new operator to register to<br>1 - registered, home network<br>2 - not registered, but terminal is currently searching a new operator to register to<br>3 - registration denied<br>4 - unknown<br>5 - registered, roaming<br>2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code:<br><br>**+CGREG: <stat>[,<lac>,<ci>]**<br><br>where:<br>**<stat>** - registration status (see above for values)<br>**<lac>** - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)<br>**<ci>** - cell ID in hexadecimal format<br><br>Note: issuing **AT+CGREG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CGREG=<CR>** is the same as issuing the command |

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| **+CGREG - GPRS Network Registration Status** | |
|---|---|
| | **AT+CGREG=0<CR>**. |
| **AT+CGREG?** | Read command returns the status of result code presentation mode **<n>** and the integer **<stat>** which shows whether the network has currently indicated the registration of the terminal in the format:<br><br>**+CGREG:<n>,<stat>**. |
| **AT+CGREG=?** | Test command returns supported values for parameter **<n>** |
| Reference | GSM 07.07 |

### *3.6.2.7.4 +CGDCONT - Define PDP Context*

| **+CGDCONT - Define PDP Context** | |
|---|---|
| **AT+CGDCONT[=<br>[<cid><br>[,<PDP_type><br>[,<APN><br>[,<PDP_addr><br>[,<d_comp><br>[,<h_comp><br>[,<pd1><br>[,…[,pdN]]]]]]]]]]** | Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, **<cid>**<br><br>Parameters:<br>**<cid>** - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition.<br>1..*max* - where the value of *max* is returned by the Test command<br>**<PDP_type>** - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol<br>"IP" - Internet Protocol<br>"PPP" - Point to Point Protocol<br>**<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.<br>**<PDP_addr>** - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the **+CGPADDR** command.<br>**<d_comp>** - numeric parameter that controls PDP data compression<br>0 - off (default if value is omitted)<br>1 - on<br>**<h_comp>** - numeric parameter that controls PDP header compression<br>0 - off (default if value is omitted)<br>1 - on<br>**<pd1>**, …, **<pdN>** - zero to N string parameters whose meanings are specific to the **<PDP_type>**<br><br>Note: a special form of the Set command, **+CGDCONT=<cid>**, causes the values for context number **<cid>** to become undefined.<br><br>Note: issuing **AT+CGDCONT<CR>** is the same as issuing the Read command. |

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| **+CGDCONT - Define PDP Context** | |
|---|---|
| | Note: issuing **AT+CGDCONT=<CR>** returns the **OK** result code. |
| **AT+CGDCONT?** | Read command returns the current settings for each defined context in the format:<br><br>**+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>, <h_comp>[,<pd1>[,…[,pdN]]]<CR><LF>[<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp> [,<pd1>[,…[,pdN]]]<CR><LF>[…]]** |
| **AT+CGDCONT=?** | Test command returns values supported as a compound value |
| Example | `AT+CGDCONT=1,"IP","APN","10.10.10.10",0,0`<br>`OK`<br>`AT+CGDCONT?`<br>`+CGDCONT: 1,"IP","APN","10.10.10.10",0,0`<br><br>`OK`<br>`AT+CGDCONT=?`<br>`+CGDCONT: (1-5),"IP",,,(0-1),(0-1)`<br><br>`OK` |
| Reference | GSM 07.07 |

### *3.6.2.7.5 +CGQMIN - Quality Of Service Profile (Minimum Acceptable)*

| **+CGQMIN - Quality Of Service Profile (Minimum Acceptable)** | |
|---|---|
| **AT+CGQMIN[=<br>[<cid><br>[,<precedence><br>[,<delay><br>[,<reliability><br>[,<peak><br>[,<mean>]]]]]]]** | Set command allows to specify a minimum acceptable profile which is checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message.<br><br>Parameters:<br>**<cid>** - PDP context identification (see **+CGDCONT** command).<br>**<precedence>** - precedence class<br>**<delay>** - delay class<br>**<reliability>** - reliability class<br>**<peak>** - peak throughput class<br>**<mean>** - mean throughput class<br><br>If a value is omitted for a particular class then this class is not checked.<br><br>Note: a special form of the Set command, **+CGQMIN=<cid>** causes the requested profile for context number **<cid>** to become undefined.<br><br>Note: issuing **AT+CGQMIN<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CGQMIN=<CR>** returns the **OK** result code. |

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| +CGQMIN - Quality Of Service Profile (Minimum Acceptable) | |
|---|---|
| **AT+CGQMIN?** | Read command returns the current settings for each defined context in the format:<br><br>**+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean><CR><LF>[<CR><LF>+CGQMIN: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean><CR><LF>[…]]**<br><br>If no PDP context has been defined, it has no effect and **OK** result code is returned. |
| **AT+CGQMIN=?** | Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:<br><br>**+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)**<br><br>Note: only the "IP" PDP_Type is currently supported. |
| Example | `AT+CGQMIN=1,0,0,3,0,0`<br>`OK`<br>`AT+CGQMIN?`<br>`+CGQMIN: 1,0,0,5,0,0`<br><br>`OK`<br>`AT+CGQMIN=?`<br>`+CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-19,31)`<br><br>`OK` |
| Reference | GSM 07.07; GSM 03.60 |

### *3.6.2.7.6 +CGQREQ - Quality Of Service Profile (Requested)*

| +CGQREQ - Quality Of Service Profile (Requested) | |
|---|---|
| **AT+CGQREQ[=<br>[<cid><br>[,<precedence><br>[,<delay><br>[,<reliability><br>[,<peak><br>[,<mean>]]]]]]]** | Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, **<cid>**.<br><br>Parameters:<br>**<cid>** - PDP context identification (see **+CGDCONT** command).<br>**<precedence>** - precedence class<br>**<delay>** - delay class<br>**<reliability>** - reliability class<br>**<peak>** - peak throughput class<br>**<mean>** - mean throughput class |

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| +CGQREQ - Quality Of Service Profile (Requested) | |
|---|---|
| | If a value is omitted for a particular class then this class is not checked.<br><br>Note: a special form of the Set command, **+CGQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined.<br><br>Note: issuing **AT+CGQREQ<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CGQREQ=<CR>** returns the **OK** result code. |
| **AT+CGQREQ?** | Read command returns the current settings for each defined context in the format:<br><br>**+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean><CR><LF>[<CR><LF>+CGQREQ: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean><CR><LF>[…]]**<br><br>If no PDP context has been defined, it has no effect and **OK** result code is returned. |
| **AT+CGQREQ=?** | Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:<br><br>**+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)**<br><br>Note: only the "IP" PDP_Type is currently supported. |
| Example | AT+CGQREQ?<br>+CGQREQ: 1,0,0,3,0,0<br><br>OK<br>AT+CGQREQ=1,0,0,3,0,0<br>OK<br>AT+CGQREQ=?<br>+CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-19,31)<br><br>OK |
| Reference | GSM 07.07; GSM 03.60 |

### *3.6.2.7.7 +CGACT - PDP Context Activate Or Deactivate*

| +CGACT - PDP Context Activate Or Deactivate | |
|---|---|
| **AT+CGACT[= [<state>[,<cid> [,<cid>[,…]]]]]** | Execution command is used to activate or deactivate the specified PDP context(s)<br><br>Parameters: |

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| | |
|---|---|
| | **<state>** - indicates the state of PDP context activation<br>0 - deactivated<br>1 - activated<br><br>**<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command)<br><br>Note: if no **<cid>**s are specified the activation/deactivation form of the command activates/deactivates all defined contexts.<br><br>Note: issuing **AT+CGACT<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CGACT=<CR>** returns the **OK** result code. |
| **AT+CGACT?** | Read command returns the current activation state for all the defined PDP contexts in the format:<br><br>**+CGACT: <cid>,<state><CR><LF>[<CR><LF>+CGACT: <cid>,<state><CR><LF>[…]]** |
| **AT+CGACT=?** | Test command reports information on the supported PDP context activation states parameters in the format:<br><br>**+CGACT: (0-1)** |
| Example | `AT+CGACT?`<br>`+CGACT: 1,1`<br><br>`OK`<br>`AT+CGACT=1,1`<br>`OK` |
| Reference | GSM 07.07 |

### *3.6.2.7.8 +CGPADDR - Show PDP Address*

| **+CGPADDR - Show PDP Address** | |
|---|---|
| **AT+CGPADDR= [<cid>[,<cid> [,…]]]** | Execution command returns a list of PDP addresses for the specified context identifiers in the format:<br><br>**+CGPADDR: <cid>,<PDP_addr><CR><LF>[<CR><LF> +CGPADDR: <cid>,<PDP_addr><CR><LF>[…]]**<br><br>Parameters:<br>**<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). If no **<cid>** is specified, the addresses for all defined contexts are returned.<br>**<PDP_addr>** - a string that identifies the terminal 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 |

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| +CGPADDR - Show PDP Address | |
|---|---|
| | **+CGDCONT** command 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_addr>** is omitted if none is available |
| **AT+CGPADDR=?** | Test command returns a list of defined **<cid>**s. |
| Example | AT#GPRS=1<br>+IP: xxx.yyy.zzz.www<br><br>OK<br>AT+CGPADDR=1<br>+CGPADDR: 1,"xxx.yyy.zzz.www"<br><br>OK<br>AT+CGPADDR=?<br>+CGPADDR: (1)<br><br>OK |
| Reference | GSM 07.07 |

### *3.6.2.7.9 +CGDATA - Enter Data State*

| +CGDATA - Enter Data State | |
|---|---|
| **AT+CGDATA= [<L2P>,[<cid> [,<cid>[,…]]]]** | Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types.<br><br>Parameters:<br>**<L2P>** - string parameter that indicates the layer 2 protocol to be used<br>"PPP" - PPP Point-to-point protocol<br>**<cid>** - numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command).<br><br>Note: if parameter **<L2P>** is omitted, the layer 2 protocol is unspecified |
| **AT+CGDATA=?** | Test command reports information on the supported layer 2 protocols.<br><br>Note: the representation format of the Test command output is not included in parenthesis |
| Example | AT+CGDATA=?<br>+CGDATA: "PPP"<br><br>OK<br>AT+CGDATA="PPP",1<br>OK |
| Reference | GSM 07.07 |

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## 3.6.2.8 Commands For Battery Charger

### *3.6.2.8.1 +CBC - Battery Charge*

| **+CBC - Battery Charge** | |
|---|---|
| **AT+CBC** | Execution command returns the current Battery Charge status in the format:<br><br>**+CBC: <bcs>,<bcl>**<br><br>where:<br>**<bcs>** - battery charge status<br>0 - **ME** is powered by the battery<br>1 - **ME** has a battery connected, and charger pin is being powered<br>2 - **ME** does not have a battery connected<br>3 - Recognized power fault, calls inhibited<br>**<bcl>** - battery charge level<br>0 - battery is exhausted, or ME does not have a battery connected<br>25 - battery charge remained is estimated to be 25%<br>50 - battery charge remained is estimated to be 50%<br>75 - battery charge remained is estimated to be 75%<br>100 - battery is fully charged.<br><br>Note: **<bcs>=1** indicates that the battery charger supply is inserted and the battery is being recharged if necessary with it. Supply for **ME** operations is taken anyway from VBATT pins.<br><br>Note: without battery/power connected on VBATT pins or during a power fault the unit is not working, therefore values **<bcs>=2** and **<bcs>=3** will never appear. |
| **AT+CBC?** | Read command has the same effect as Execution command. |
| **AT+CBC=?** | Test command returns the complete range of values for **<bcs>** and **<bcl>**, in the format:<br><br>**+CBC: (0-3),(0-100)**<br><br>Note: an enhanced version of Test command has been defined: **AT+CBC=??**.<br>Note: although **+CBC** is an execution command, ETSI 07.07 requires the Test command to be defined. |
| **AT+CBC=??** | Enhanced test command returns the complete range of values for **<bcs>** and **<bcl>**:<br><br>**+CBC: (0-3),(0-100)** |
| Example | `AT+CBC`<br>`+CBC: 0,75`<br><br>`OK` |

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| **+CBC - Battery Charge** | |
|---|---|
| Note | The **ME** does not make differences between being powered by a battery or by a power supply on the VBATT pins, so it is not possible to distinguish between these two cases. |
| Reference | GSM 07.07 |

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# 3.6.3 ETSI GSM 07.05 AT Commands for SMS and CBS

## 3.6.3.1 General Configuration

### *3.6.3.1.1 +CSMS - Select Message Service*

| **+CSMS - Select Message Service** | |
|---|---|
| **AT+CSMS [=<service>]** | Set command selects messaging service **<service>**. It returns the types of messages supported by the **ME**:<br><br>Parameter:<br>**<service>**<br>0 - The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 version 4.7.0 (factory default)<br>1 - The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2+.<br><br>Set command returns current service setting along with the types of messages supported by the ME:<br><br>**+CSMS: <service>,<mt>,<mo>,<bm>**<br><br>where:<br>**<mt>** - mobile terminated messages support<br>0 - type not supported<br>1 - type supported<br>**<mo>** - mobile originated messages support<br>0 - type not supported<br>1 - type supported<br>**<bm>** - broadcast type messages support<br>0 - type not supported<br>1 - type supported<br><br>Note: If parameter is omitted then the behavior of Set command is the same as Read command. |
| **AT+CSMS?** | Read command reports current service setting along with supported message types in the format:<br><br>**+CSMS: <service>,<mt>,<mo>,<cb>**<br><br>where:<br>**<service>** - messaging service (see above)<br>**<mt>** - mobile terminated messages support (see above)<br>**<mo>** - mobile originated messages support (see above)<br>**<bm>** - broadcast type messages support (see above) |
| **AT+CSMS=?** | Test command reports a list of all services supported by the device. the |

| **+CSMS - Select Message Service** | |
|---|---|
| | supported value of the parameter **<service>**. |
| Reference | GSM 07.05; GSM 03.40; GSM 03.41 |

### *3.6.3.1.2 +CPMS - Preferred Message Storage*

| **+CPMS - Preferred Message Storage** | |
|---|---|
| **AT+CPMS[= <memr> [,<memw> [,<mems>]]]** | Set command selects memory storages **<memr>**, **<memw>** and **<mems>** to be used for reading, writing, sending and storing SMs.<br><br>Parameters:<br>**<memr>** - memory from which messages are read and deleted<br>"SM" - SIM SMS memory storage<br>"ME" - **ME** internal storage (read only, no delete)<br><br>**<memw>** - memory to which writing and sending operations are made<br>"SM" - SIM SMS memory storage<br><br>**<mems>** - memory to which received SMs are preferred to be stored<br>"SM" - SIM SMS memory storage<br><br>The command returns the memory storage status in the format:<br><br>**+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals>**<br><br>where<br>**<usedr>** - number of SMs stored into **<memr>**<br>**<totalr>** - max number of SMs that **<memr>** can contain<br>**<usedw>** - number of SMs stored into **<memw>**<br>**<totalw>** max number of SMs that **<memw>** can contain<br>**<useds>** - number of SMs stored into **<mems>**<br>**<totals>** - max number of SMS that **<mems>** can contain<br><br>Note: The only supported memory storage for writing and sending SMs is the SIM internal memory "SM", so **<memw>=<mems>="SM"**.<br><br>Note: the received class 0 SMS are stored in the "ME" memory regardless the **<mems>** setting and they are automatically deleted at power off.<br><br>Note: If all parameters are omitted the behavior of Set command is the same as Read command. |
| **AT+CPMS?** | Read command reports the message storage status in the format:<br><br>**+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>, <mems>,<useds>,<totals>** |

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| +CPMS - Preferred Message Storage | |
|---|---|
| | where **<memr>**, **<memw>** and **<mems>** are the selected storage memories for reading, writing and storing respectively. |
| **AT+CPMS=?** | Test command reports the supported values for parameters **<memr>**, **<memw>** and **<mems>** |
| Example | AT+CPMS?<br>+CPMS: "SM",5,10,"SM",5,10,"SM",5,10<br><br>OK *you have 5 out of 10 SMS SIM positions occupied* |
| Reference | GSM 07.05 |

### *3.6.3.1.3 +CMGF - Message Format*

| +CMGF - Message Format | |
|---|---|
| **AT+CMGF[= [<mode>]]** | Set command selects the format of messages used with send, list, read and write commands.<br><br>Parameter:<br>**<mode>**<br>0 - PDU mode, as defined in GSM 3.40 and GSM 3.41 (factory default)<br>1 - text mode<br><br>Note: issuing **AT+CMGF<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CMGF=<CR>** is the same as issuing the command **AT+CMGF=0<CR>**. |
| **AT+CMGF?** | Read command reports the current value of the parameter **<mode>**. |
| **AT+CMGF=?** | Test command reports the supported value of **<mode>** parameter. |
| Reference | GSM 07.05 |

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## 3.6.3.2 Message Configuration

### *3.6.3.2.1 +CSCA - Service Center Address*

| **+CSCA - Service Center Address** | |
|---|---|
| **AT+CSCA[=<br>[<number><br>[,<type>]]]** | Set command sets the Service Center Address to be used for mobile originated SMS transmissions.<br><br>Parameter:<br>**<number>** - SC phone number in the format defined by **<type>**<br>**<type>** - the type of number<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+")<br><br>Note: to use the SM service, is mandatory to set a Service Center Address at which service requests will be directed.<br><br>Note: in Text mode, this setting is used by send and write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the **<pdu>** parameter equals zero.<br><br>Note: issuing **AT+CSCA<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSCA=<CR>** causes an **OK** result code to be issued. |
| **AT+CSCA?** | Read command reports the current value of the SCA in the format:<br><br>**+CSCA: <number>,<type>**<br><br>Note: if SCA is not present the device reports an error message. |
| **AT+ CSCA=?** | Test command returns the **OK** result code. |
| Reference | GSM 07.05 |

### *3.6.3.2.2 +CSMP - Set Text Mode Parameters*

| **+CSMP - Set Text Mode Parameters** | |
|---|---|
| **AT+CSMP[=<br>[<fo><br>[,<vp><br>[,<pid><br>[,<dcs>]]]]]** | Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used **(+CMGF=1**)<br><br>Parameters:<br>**<fo>** - depending on the command or result code:<br>first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.<br>**<vp>** - depending on SMS-SUBMIT **<fo>** setting: |

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| **+CSMP - Set Text Mode Parameters** | |
|---|---|
| | GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format<br>**<pid>** - GSM 03.40 TP-Protocol-Identifier in integer format.<br>**<dcs>** - depending on the command or result code:<br>GSM 03.38 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme<br><br>Note: issuing **AT+CSMP<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSMP=<CR>** is the same as issuing the command **AT+CSMP=0<CR>**. |
| **AT+CSMP?** | Read command reports the current setting in the format:<br><br>**+CSMP: < fo>,<vp>,<pid>,<dcs>** |
| **AT+CSMP=?** | Test command reports the supported range of values for **<fo>**, **<vp>**, **<pid>** and **<dcs>** parameters. |
| Example | *Set the parameters for an outgoing message with 24 hours of validity period and default properties:*<br><br>`AT+CSMP=17,167,0,0`<br>`OK` |
| Reference | GSM 07.05; GSM 03.40; GSM 03.38 |

### *3.6.3.2.3 +CSDH - Show Text Mode Parameters*

| **+CSDH - Show Text Mode Parameters** | |
|---|---|
| **AT+CSDH[=[<show>]]** | Set command controls whether detailed header information is shown in text mode **(+CMGF=1**) result codes.<br><br>Parameter:<br>**<show>**<br>0 - do not show header values defined in commands +CSCA and +CSMP (**<sca>**, **<tosca>**, **<fo>**, **<vp>**, **<pid>** and **<dcs>**) nor **<length>**, **<toda>** or **<tooa>** in **+CMT**, **+CMGL**, **+CMGR** result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in **+CMGR** result code do not show **<pid>**, **<mn>**, **<da>**, **<toda>**, **<length>** or **<cdata>**<br>1 - show the values in result codes<br><br>Note: issuing **AT+CSDH<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSDH=<CR>** is the same as issuing the command **AT+CSDH=0<CR>**. |
| **AT+CSDH?** | Read command reports the current setting in the format: |

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| **+CSDH - Show Text Mode Parameters** | |
|---|---|
| | **+CSDH: <show>** |
| **AT+CSDH=?** | Test command reports the supported range of values for parameter **<show>** |
| Reference | GSM 07.05 |

### *3.6.3.2.4 +CSCB - Select Cell Broadcast Message Types*

| **+CSCB -Select Cell Broadcast Message Types** | |
|---|---|
| **AT+CSCB[=<br>[<mode><br>[,<mids><br>[,<dcss>]]]]** | Set command selects which types of Cell Broadcast Messages are to be received by the device.<br><br>Parameter:<br>**<mode>**<br>0 - the message types defined by **<mids>** and **<dcss>** are accepted (factory default)<br>1 - the message types defined by **<mids>** and **<dcss>** are rejected<br><br>**<mids>** - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string (“”).<br><br>**<dcss>** - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (“”).<br><br>Note: issuing **AT+CSCB<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CSCB=<CR>** is the same as issuing the command **AT+CSCB=0<CR>**. |
| **AT+CSCB?** | Read command reports the current value of parameters **<mode>**, **<mids>** and **<dcss>**. |
| **AT+CSCB=?** | Test command returns the range of values for parameter **<mode>**. |
| Example | `AT+CSCB?`<br>`+CSCB: 1,"","`<br><br>`OK` *(all CBMs are accepted, none is rejected)*<br>`AT+CSCB=0,"0,1,300-315,450","0-3"`<br>`OK` |
| Reference | GSM 07.05, GSM 03.41, GSM 03.38. |

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### 3.6.3.2.5 +CSAS - Save Settings

| **+CSAS - Save Settings** | |
|---|---|
| **AT+CSAS [=<profile>]** | Execution command saves settings which have been made by the **+CSCA** **+CSMP** and **+CSCB** commands in local non volatile memory.<br><br>Parameter:<br>**<profile>**<br>0 - it saves the settings to NVM (factory default).<br>1..n - SIM profile number; the value of n depends on the SIM and its max is 3.<br><br>Note: certain settings may not be supported by the SIM and therefore they are always saved to NVM, regardless the value of **<profile>**.<br><br>Note: If parameter is omitted the settings are saved in the non volatile memory. |
| **AT+CSAS?** | Read command has the same effect as Execution command with parameter omitted. |
| **AT+CSAS=?** | Test command returns the possible range of values for the parameter **<profile>**. |
| Reference | GSM 07.05 |

### 3.6.3.2.6 +CRES - Restore Settings

| **+CRES - Restore Settings** | |
|---|---|
| **AT+CRES [=<profile>]** | Execution command restores message service settings saved by **+CSAS** command from either NVM or SIM.<br><br>Parameter:<br>**<profile>**<br>0 - it restores message service settings from NVM.<br>1..n - it restores message service settings from SIM. The value of n depends on the SIM and its max is 3.<br><br>Note: certain settings may not be supported by the SIM and therefore they are always restored from NVM, regardless the value of **<profile>**.<br><br>Note: If parameter is omitted the command restores message service settings from NVM. |
| **AT+CRES?** | Read command has the same effect as Execution command with parameter omitted. |
| **AT+CRES=?** | Test command returns the possible range of values for the parameter **<profile>**. |
| Reference | GSM 07.05 |

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## 3.6.3.3 Message Receiving And Reading

### *3.6.3.3.1 +CNMI - New Message Indications To Terminal Equipment*

| **+CNMI - New Message Indications To Terminal Equipment** | |
|---|---|
| **AT+CNMI[=[ <mode>[,<mt> [,<bm>[,<ds> [,<bfr>]]]]]]** | Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**.<br><br>Parameter:<br>**<mode>** - unsolicited result codes buffering option<br>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.<br>1 - Discard indication and reject new received message unsolicited result codes when **TA-TE** link is reserved, otherwise forward them directly to the **TE**.<br>2 - Buffer unsolicited result codes in the **TA** in case the **DTE** is busy and flush them to the **TE** after reservation. Otherwise forward them directly to the **TE**.<br>3 - if **<mt>** is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too.<br>**<mt>** - result code indication reporting for SMS-DELIVER<br>0 - No SMS-DELIVER indications are routed to the **TE**.<br>1 - If SMS-DELIVER is stored into **ME/TA**, indication of the memory location is routed to the **TE** using the following unsolicited result code:<br>**+CMTI: <memr>,<index>**<br>where:<br>**<memr>** - memory storage where the new message is stored<br>"SM"<br>"ME"<br>**<index>** - location on the memory where SM is stored.<br>2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the **TE** using the following unsolicited result code:<br><br>**(PDU Mode)**<br>**+CMT: <length><CR><LF><pdu>**<br>where:<br>**<length>** - PDU length<br>**<pdu>** - PDU message<br><br>**(TEXT Mode)**<br>**+CMT:<oa>,<scts>*[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]*<CR><LF><data>** (the information written in italics will be present depending on **+CSDH** last setting) |

**+CNMI - New Message Indications To Terminal Equipment**

where:

**<oa>** - originating address, string type, converted in the currently selected character set (see **+CSCS**)

**<scts>** - arrival time of the message to the SC

***<tooa>***, ***<tosca>*** - type of number **<oa>** or ***<sca>***:

129 - number in national format

145 - number in international format (contains the "+")

***<fo>*** - first octet of GSM 03.40

***<pid>*** - Protocol Identifier

***<dcs>*** - Data Coding Scheme

***<sca>*** - Service Centre address, string type, converted in the currently selected character set (see **+CSCS**)

***<length>*** - text length

**<data>** - TP-User-Data

Class 2 messages and messages in the message waiting indication group (stored message) result in indication as defined in **<mt>=1**.

3 - 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 reporting option

0 - Cell Broadcast Messages are not sent to the **DTE**

2 - New Cell Broadcast Messages are sent to the **DTE** with the unsolicited result code:

**(PDU Mode)**

**+CBM: <length><CR><LF><PDU>**

where:

**<length>** - PDU length

**<PDU>** - message PDU

**(TEXT Mode)**

**+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data>**

where:

**<sn>** - message serial number

**<mid>** - message ID

**<dcs>** - Data Coding Scheme

**<pag>** - page number

**<pags>** - total number of pages of the message

**<data>** - CBM Content of Message

**<ds>** - SMS-STATUS-REPORTs reporting option

0 - status report receiving is not reported to the **DTE**

1 - the status report is sent to the **DTE** with the following unsolicited result code:

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| +CNMI - New Message Indications To Terminal Equipment | |
|---|---|
| | **(PDU Mode)**<br>**+CDS: <length><CR><LF><PDU>**<br>where:<br>**<length>** - PDU length<br>**<PDU>** - message PDU<br><br>**(TEXT Mode)**<br>**+CDS: <fo>,<mr>,,,<scts>,<dt>,<st>**<br>where:<br>**<fo>** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br><br>2 - if a status report is stored, then the following unsolicited result code is sent:<br>**+CDSI: <memr>,<index>**<br>where:<br>**<memr>** - memory storage where the new message is stored "SM"<br>**<index>** - location on the memory where SM is stored<br>**<bfr>** - buffered result codes handling method:<br>0 - **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)<br>1 - TA buffer of unsolicited result codes defined within this command is cleared when **<mode>=1..3** is entered.<br><br>Note: issuing **AT+CNMI<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+CNMI=<CR>** is the same as issuing the command **AT+CNMI=0<CR>**. |
| **AT+CNMI?** | Read command returns the current parameter settings for **+CNMI** command in the form:<br><br>**+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** |
| **AT+CNMI=?** | Test command reports the supported range of values for the **+CNMI** command parameters.<br><br>For compatibility with previous versions, Test command returns:<br><br>**+CNMI: (0-2)*,(0-3),(0,2),(0-2),(0,1)***<br><br>An enhanced version of Test command has been defined: **AT+CNMI=??**, that provides the complete range of values for parameter **<mode>**. |

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| **+CNMI - New Message Indications To Terminal Equipment** | |
|---|---|
| **AT+CNMI=??** | Enhanced test command reports the supported range of values for all the **+CNMI** command parameters. |
| Reference | GSM 07.05 |
| Note | **DTR** signal is ignored, hence the indication is sent even if the **DTE** is inactive (**DTR** signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while **DTE** is not, at **DTE** startup is suggested to check whether new messages have reached the device meanwhile with command **AT+CMGL=0** that lists the new messages received. |

### *3.6.3.3.2 +CMGL - List Messages*

| **+CMGL - List Messages** | |
|---|---|
| **AT+CMGL [=<stat>]** | Execution command reports the list of all the messages with status value **<stat>** stored into **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>The parameter type and the command output depend on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>Parameter:<br>**<stat>**<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent<br>3 - stored message already sent<br>4 - all messages.<br><br>Each message to be listed is represented in the format:<br><br>**+CMGL: <index>,<stat>,<length><CR><LF><pdu>**<br><br>where<br>**<index>** - message position in the memory storage list.<br>**<stat>** - status of the message<br>**<length>** - length of the PDU in bytes<br>**<pdu>** - message in PDU format according to GSM 3.40<br><br>**(Text Mode)**<br>Parameter:<br>**<stat>**<br>"REC UNREAD" - new message<br>"REC READ" - read message<br>"STO UNSENT" - stored message not yet sent |

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| **+CMGL - List Messages** | |
|---|---|
| | "STO SENT" - stored message already sent<br>"ALL" - all messages.<br><br>Each message to be listed is represented in the format (the information written in italics will be present depending on **+CSDH** last setting):<br><br>**+CMGL: <index>,<stat>,<oa/da>,,*[,<tooa/toda>,<length>]***<br>**<CR><LF> <data>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<oa/da>** - originator/destination address, string type , represented in the currently selected character set (see **+CSCS**)<br>***<tooa/toda>*** - type of number **<oa/da>**<br>129 - number in national format<br>145 - number in international format (contains the "+")<br>***<length>*** - text length<br>**<data>** - TP-User-Data<br><br>Each message delivery confirm is represented in the format**:**<br><br>**+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<fo>** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br><br>Note: **OK** result code is sent at the end of the listing.<br><br>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status. |
| **AT+CMGL?** | Read command has the same effect as Execution command with parameter omitted |
| **AT+CMGL=?** | Test command returns a list of supported **<stat>s** |
| Note | If Text Mode **(+CMGF=1**) the Test command output is not included in parenthesis<br><br>**AT+CMGL=?**<br>**+CMGL: "REC UNREAD","REC READ","STO UNSENT",**<br>**"STO SENT","ALL"** |

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| **+CMGL - List Messages** | |
|---|---|
| Note | The improving command @**CMGL** has been defined |
| Reference | GSM 07.05 |

### *3.6.3.3.3 @CMGL - List Messages*

| **@CMGL - List Messages** | |
|---|---|
| **AT@CMGL [=<stat>]** | Execution command reports the list of all the messages with status value **<stat>** stored into **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>The parameter type and the command output depend on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>Parameter:<br>**<stat>**<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent<br>3 - stored message already sent<br>4 - all messages.<br><br>Each message to be listed is represented in the format:<br><br>**@CMGL: <index>,<stat>,<length><CR><LF><pdu>**<br><br>where<br>**<index>** - message position in the memory storage list.<br>**<stat>** - status of the message<br>**<length>** - length of the PDU in bytes<br>**<pdu>** - message in PDU format according to GSM 3.40<br><br>**(Text Mode)**<br>Parameter:<br>**<stat>**<br>"REC UNREAD" - new message<br>"REC READ" - read message<br>"STO UNSENT" - stored message not yet sent<br>"STO SENT" - stored message already sent<br>"ALL" - all messages.<br><br>Each message to be listed is represented in the format:<br><br>**@CMGL: <index>,<stat>,<oa/da>[,,,<tooa/toda>,<length>]**<br>**<CR><LF> <data>** |

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| @CMGL - List Messages | |
|---|---|
| | where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<oa/da>** - originator/destination address, string type, represented in the currently selected character set (see **+CSCS**)<br>**<tooa/toda>** - type of number **<oa/da>**<br>129 - number in national format<br>145 - number in international format (contains the "+")<br>**<length>** - text length<br>**<data>** - TP-User-Data<br><br>Each message delivery confirm is represented in the format**:**<br><br>**@CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<fo>** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br><br>Note: The command differs from the **+CMGL** because at the end of the listing a **<CR><LF>** is put before the **OK** result code.<br><br>Note: If parameter is omitted the command returns the list of sms with “REC UNREAD” status. |
| **AT@CMGL?** | Read command has the same effect as Execution command with parameter omitted |
| **AT@CMGL=?** | Test command returns a list of supported **<stat>s** |
| Note | If Text Mode **(+CMGF=1**) the Test command output is not included in parenthesis<br><br>**AT@CMGL=?**<br>**@CMGL: "REC UNREAD","REC READ","STO UNSENT", "STO SENT","ALL"** |
| Reference | GSM 07.05 |

### *3.6.3.3.4 +CMGR - Read Message*

| +CMGR - Read Message | |
|---|---|
| **AT+CMGR=** | Execution command reports the message with location value **<index>** from |

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| **+CMGR - Read Message** | |
|---|---|
| **<index>** | **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>Parameter:<br>**<index>** - message index.<br><br>The output depends on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>The output has the following format:<br><br>**+CMGR: <stat>,<length><CR><LF><pdu>**<br><br>where<br>**<stat>** - status of the message<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent<br>3 - stored message already sent<br>**<length>** - length of the PDU in bytes.<br>**<pdu>** - message in PDU format according to GSM 3.40.<br><br>The status of the message and entire message data unit **<pdu>** is returned.<br><br>**(Text Mode)**<br>Output format for received messages:<br><br>**+CMGR: <stat>,<oa>,,<scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>, <tosca>,<length>]<CR><LF><text>**<br><br>Output format for sent messages:<br>**+CMGR: <stat>,<da>[,,<toda>,<fo>,<pid>,<dcs>,, <sca>,<tosca>,<length>]<CR><LF><text>**<br><br>Output format for message delivery confirm:<br>**+CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**<br><br>where:<br>**<stat>** - status of the message<br>"REC UNREAD" - new received message unread<br>"REC READ" - received message read<br>"STO UNSENT" - message stored not yet sent<br>"STO SENT" - message stored already sent<br>**<fo>** - first octet of the message PDU |

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| **+CMGR - Read Message** | |
|---|---|
| | **<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br>**<pid>** - Protocol Identifier<br>**<dcs>** - Data Coding Scheme<br>**<oa>** - Originator address, string type represented in the currently selected character set (see **+CSCS**)<br>**<da>** - Destination address, string type represented in the currently selected character set (see **+CSCS**)<br>**<sca>** - Service Centre number<br>**<tooa>**,**<toda >**,**<tosca>** - type of number **<oa>**,**<da>**,**<sca>**<br>129 - number in national format<br>145 - number in international format (contains the "+")<br>**<length>** - text length<br>**<data>** - TP-User_data<br><br>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.<br><br>Note: an error result code is sent on empty record **<index>**. |
| **AT+CMGR=?** | Test command returns the **OK** result code. |
| Note | The improving command **@CMGR** has been defined |
| Reference | GSM 07.05 |

### *3.6.3.3.5 @CMGR - Read Message*

| **@CMGR - Read Message** | |
|---|---|
| **AT@CMGR= <index>** | Execution command reports the message with location value **<index>** from **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>Parameter:<br>**<index>** - message index.<br><br>The output depends on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>The output has the following format:<br><br>**@CMGR: <stat>,<length><CR><LF><pdu>**<br><br>where<br>**<stat>** - status of the message |

**@CMGR - Read Message**

0 - new message
1 - read message
2 - stored message not yet sent
3 - stored message already sent
**<length>** - length of the PDU in bytes.
**<pdu>** - message in PDU format according to GSM 3.40.

The status of the message and entire message data unit **<pdu>** is returned.

**(Text Mode)**

Output format for received messages:

**@CMGR: <stat>,<oa>,,<scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>, <tosca>,<length>]<CR><LF><text>**

Output format for sent messages:
**@CMGR: <stat>,<da>[,,<toda>,<fo>,<pid>,<dcs>,, <sca>,<tosca>,<length>]<CR><LF><text>**

Output format for message delivery confirm:
**@CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**

where:
**<stat>** - status of the message
"REC UNREAD" - new received message unread
"REC READ" - received message read
"STO UNSENT" - message stored not yet sent
"STO SENT" - message stored already sent
**<fo>** - first octet of the message PDU
**<mr>** - message reference number
**<scts>** - arrival time of the message to the SC
**<dt>** - sending time of the message
**<st>** - message status as coded in the PDU
**<pid>** - Protocol Identifier
**<dcs>** - Data Coding Scheme
**<oa>** - Originator address, string type represented in the currently selected character set (see **+CSCS**)
**<da>** - Destination address, string type represented in the currently selected character set (see **+CSCS**)
**<sca>** - Service Centre number
**<tooa>**,**<toda >**,**<tosca>** - type of number **<oa>**,**<da>**,**<sca>**
129 - number in national format
145 - number in international format (contains the "+")
**<length>** - text length
**<text>** - message text

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| **@CMGR - Read Message** | |
|---|---|
| | Note: the command differs from the **+CMGR** because after the message **<pdu>** or **<text>** a **<CR><LF>** is put before the **OK** result code.<br><br>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.<br><br>Note: an error result code is sent on empty record **<index>**. |
| **AT@CMGR=?** | Test command has no effect; the answer is **OK** |
| Reference | GSM 07.05 |

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## 3.6.3.4 Message Sending And Writing

### *3.6.3.4.1 +CMGS - Send Message*

| **+CMGS - Send Message** | |
|---|---|
| *(PDU Mode)*<br>**AT+CMGS=**<br>**<length>** | **(PDU Mode)**<br>Execution command sends to the network a message.<br><br>Parameter:<br>**<length>** - length of the PDU to be sent in bytes (excluding the SMSC address octets).<br>7..164<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>and waits for the specified number of bytes.<br><br>Note: the **DCD** signal shall be in **ON** state while PDU is given.<br><br>Note: the echoing of given characters back from the TA is controlled by echo command **E**<br><br>Note: the **PDU** shall be hexadecimal format (each octet of the **PDU** is given as two IRA character long hexadecimal number) and given in one line.<br><br>Note: when the length octet of the SMSC address (given in the **PDU**) equals zero, the SMSC address set with command **+CSCA** is used; in this case the SMSC Type-of-Address octet shall not be present in the **PDU**.<br><br>To send the message issue **Ctrl-Z** char (0x1A hex).<br>To exit without sending the message issue **ESC** char (0x1B hex).<br><br>If message is successfully sent to the network, then the result is sent in the format:<br><br>**+CMGS: <mr>**<br>where<br>**<mr>** - message reference number.<br><br>Note: if message sending fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued. |

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| **+CMGS - Send Message** | |
|---|---|
| *(Text Mode)*<br>**AT+CMGS=<da> [,<toda>]** | **(Text Mode)**<br>Execution command sends to the network a message.<br><br>Parameters:<br>**<da>** - destination address, string type.<br>**<toda>** - type of destination address<br>129 - number in national format<br>145 - number in international format (contains the "+")<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>After this prompt text can be entered; the entered text should be formatted as follows:<br><br>- if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used.<br>- if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**)<br><br>Note: the **DCD** signal shall be in **ON** state while text is entered.<br><br>Note: the echoing of entered characters back from the TA is controlled by echo command **E**<br><br>To send the message issue **Ctrl-Z** char (0x1A hex).<br>To exit without sending the message issue **ESC** char (0x1B hex).<br><br>If message is successfully sent to the network, then the result is sent in the format:<br><br>**+CMGS: <mr>**<br>where<br>**<mr>** - message reference number.<br><br>Note: if message sending fails for some reason, an error code is reported. |

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| +CMGS - Send Message | |
|---|---|
| | Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.<br><br>Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if GSM 03.38 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used |
| Note | To avoid malfunctions is suggested to wait for the **+CMGS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands. |
| Reference | GSM 07.05 |

### *3.6.3.4.2 +CMSS - Send Message From Storage*

| +CMSS - Send Message From Storage | |
|---|---|
| **AT+CMSS= <index>[,<da> [,<toda>]]** | Execution command sends to the network a message which is already stored in the **<memw>** storage (see **+CPMS**) at the location **<index>**.<br><br>Parameters:<br>**<index>** - location value in the message storage **<memw>** of the message to send<br>**<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**); if it is given it shall be used instead of the one stored with the message.<br>**<toda>** - type of destination address<br>129 - number in national format<br>145 - number in international format (contains the "+")<br><br>If message is successfully sent to the network then the result is sent in the format:<br>**+CMSS: <mr>**<br>where:<br>**<mr>** - message reference number.<br><br>If message sending fails for some reason, an error code is reported:<br><br>**+CMS ERROR:<err>**<br><br>Note: to store a message in the **<memw>** storage see command **+CMGW**.<br><br>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued. |
| Note | To avoid malfunctions is suggested to wait for the **+CMSS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands. |

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| **+CMSS - Send Message From Storage** | |
|---|---|
| Reference | GSM 07.05 |

### *3.6.3.4.3 +CMGW - Write Message To Memory*

| **+CMGW - Write Message To Memory** | |
|---|---|
| *(PDU Mode)*<br>**AT+CMGW=**<br>**<length>**<br>**[,<stat>]** | **(PDU Mode)**<br>Execution command writes in the **<memw>** memory storage a new message.<br><br>Parameter:<br>**<length>** - length in bytes of the PDU to be written.<br>7..164<br>**<stat>** - message status.<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent (default)<br>3 - stored message already sent<br><br>The device responds to the command with the prompt '>' and waits for the specified number of bytes.<br><br>To write the message issue **Ctrl-Z** char (0x1A hex).<br>To exit without writing the message issue **ESC** char (0x1B hex).<br><br>If message is successfully written in the memory, then the result is sent in the format:<br><br>**+CMGW: <index>**<br>where:<br>**<index>** - message location index in the memory **<memw>**.<br><br>If message storing fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. |
| *(Text Mode)*<br>**AT+CMGW[=<da>[,**<br>**<toda>**<br>**[,<stat>]]]** | **(Text Mode)**<br>Execution command writes in the **<memw>** memory storage a new message.<br><br>Parameters:<br>**<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**).<br>**<toda>** - type of destination address.<br>129 - number in national format<br>145 - number in international format (contains the "+") |

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| +CMGW - Write Message To Memory | |
|---|---|
| | **<stat>** - message status.<br>"REC UNREAD" - new received message unread<br>"REC READ" - received message read<br>"STO UNSENT" - message stored not yet sent (default)<br>"STO SENT" - message stored already sent<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>After this prompt text can be entered; the entered text should be formatted as follows:<br><br>- if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used.<br>- if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**)<br><br>Note: the **DCD** signal shall be in ON state while text is entered.<br><br>Note: the echoing of entered characters back from the TA is controlled by echo command **E**<br><br>To write the message issue **Ctrl-Z** char (0x1A hex).<br>To exit without writing the message issue **ESC** char (0x1B hex).<br><br>If message is successfully written in the memory, then the result is sent in the format:<br><br>**+CMGW: <index>**<br>where:<br>**<index>** - message location index in the memory **<memw>**.<br><br>If message storing fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. |

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| +CMGW - Write Message To Memory | |
|---|---|
| | Note: it is possible to save a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if GSM 03.38 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used |
| Reference | GSM 07.05 |
| Note | To avoid malfunctions is suggested to wait for the **+CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands. |

### *3.6.3.4.4 +CMGD - Delete Message*

| +CMGD - Delete Message | |
|---|---|
| **AT+CMGD=<br><index><br>[,<delflag>]** | Execution command deletes from memory **<memr>** the message(s).<br><br>Parameter:<br>**<index>** - message index in the selected storage **<memr>**<br>**<delflag>** - an integer indicating multiple message deletion request.<br>0 (or omitted) - delete message specified in **<index>**<br>1 - delete all read messages from **<memr>** storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched<br>2 - delete all read messages from **<memr>** storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched<br>3 - delete all read messages from **<memr>** storage, sent and unsent mobile originated messages, leaving unread messages untouched<br>4 - delete all messages from **<memr>** storage.<br><br>Note: if **<delflag>** is present and not set to 0 then **<index>** is ignored and ME shall follow the rules for **<delflag>** shown above.<br><br>Note: if the location to be deleted is empty, an error message is reported. |
| **AT+CMGD=?** | Test command shows the valid memory locations and optionally the supported values of **<delflag>**.<br><br>**+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)]** |
| Example | `AT+CMGD=?`<br>`+CMGD: (1,2,3,6,7,17,18,19,20,37,38,39,47),(0-4)`<br><br>`OK` |
| Reference | GSM 07.05 |

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# 3.6.4 FAX Class 1 AT Commands

## 3.6.4.1 General Configuration

NOTE: All the test command results are without command echo

### *3.6.4.1.1 +FMI - Manufacturer ID*

| **+FMI - Manufacturer ID** | |
|---|---|
| **AT+FMI?** | Read command reports the manufacturer ID. The output depends on the choice made through **#SELINT** command. |
| Example | `AT+FMI?`<br>`Telit`<br>`OK` |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.6.4.1.2 +FMM - Model ID*

| **+FMM - Model ID** | |
|---|---|
| **AT+FMM?** | Read command reports the model ID |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.6.4.1.3 +FMR - Revision ID*

| **+FMR - Revision ID** | |
|---|---|
| **AT+FMR?** | Read command reports the software revision ID |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.6.4.2 Transmission/Reception Control

### *3.6.4.2.1 +FTS - Stop Transmission And Pause*

| **+FTS - Stop Transmission And Pause** | |
|---|---|
| **AT+FTS=<time>** | Execution command causes the modem to terminate a transmission and wait for **<time>** 10ms intervals before responding with **OK** result.<br><br>Parameter:<br>**<time>** - duration of the pause, expressed in 10ms intervals.<br>0..255 |
| **AT+FTS=?** | Test command returns all supported values of the parameter **<time>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.6.4.2.2 +FRS - Wait For Receive Silence*

| **+FRS - Wait For Receive Silence** | |
|---|---|
| **AT+FRS=<time>** | Execution command causes the modem to listen and report **OK** when silence has been detected for the specified period of time. This command will terminate when the required silence period is detected or when the **DTE** sends another character other than **XON** or **XOFF**.<br><br>Parameter:<br>**<time>** - amount of time, expressed in 10ms intervals.<br>..0..255 |
| **AT+FRS=?** | Test command returns all supported values of the parameter **<time>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.6.4.2.3 +FTM - Transmit Data Modulation*

| **+FTM - Transmit Data Modulation** | |
|---|---|
| **AT+FTM=<mod>** | Execution command causes the module to transmit facsimile data using the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>24 - V27ter/2400 bps<br>48 - V27ter/4800 bps<br>72 - V29/7200 bps<br>96 - V29/9600 bps |
| **AT+FTM=?** | Test command returns all supported values of the parameter **<mod>**.<br><br>Note: the output is not bracketed |

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| **+FTM - Transmit Data Modulation** | |
|---|---|
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### 3.6.4.2.4 +FRM - Receive Data Modulation

| **+FRM - Receive Data Modulation** | |
|---|---|
| **AT+FRM=<mod>** | Execution command causes the module to receive facsimile data using the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>24 - V27ter/2400 bps<br>48 - V27ter/4800 bps<br>72 - V29/7200 bps<br>96 - V29/9600 bps |
| **AT+FRM=?** | Test command returns all supported values of the parameter **<mod>**.<br><br>Note: the output is not bracketed |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### 3.6.4.2.5 +FTH - Transmit Data With HDLC Framing

| **+FTH - Transmit Data With HDLC Framing** | |
|---|---|
| **AT+FTH=<mod>** | Execution command causes the module to transmit facsimile data using HDLC protocol and the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>3 - V21/300 bps |
| **AT+FTH=?** | Test command returns all supported values of the parameter **<mod>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### 3.6.4.2.6 +FRH - Receive Data With HDLC Framing

| **+FRH - Receive Data Data With HDLC Framing** | |
|---|---|
| **AT+FRH=<mod>** | Execution command causes the module to receive facsimile data using HDLC protocol and the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>3 - V21/300 bps |
| **AT+FRH=?** | Test command returns all supported values of the parameter **<mod>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.6.4.3Serial Port Control

### *3.6.4.3.1 +FLO - Select Flow Control Specified By Type*

| **+FLO - Select Flow Control Specified By Type** | |
|---|---|
| **AT+FLO=<type>** | Set command selects the flow control behaviour of the serial port in both directions: from **DTE** to **DTA** and from **DTA** to **DTE**.<br>Parameter:<br>**<type>** - flow control option for the data on the serial port<br>0 - flow control None<br>1 - flow control Software (**XON-XOFF**)<br>2 - flow control Hardware (**CTS-RTS**) – (factory default).<br><br>Note: This command is a shortcut of the **+IFC** command.<br>Note: **+FLO's** settings are functionally a subset of **&K's** ones. |
| **AT+FLO?** | Read command returns the current value of parameter **<type>** |
| **AT+FLO=?** | Test command returns all supported values of the parameter **<type>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.6.4.3.2 +FPR - Select Serial Port Rate*

| **+FPR - Select Serial Port Rate** | |
|---|---|
| **AT+FPR=<rate>** | Set command selects the the serial port speed in both directions, from **DTE** to **DTA** and from **DTA** to **DTE**. When autobauding is selected, then the speed is detected automatically.<br><br>Parameter:<br>**<rate>** - serial port speed selection<br>0 – autobauding |
| **AT+FPR?** | Read command returns the current value of parameter **<rate>** |
| **AT+FPR=?** | Test command returns all supported values of the parameters **<rate>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.6.4.3.3 +FDD - Double Escape Character Replacement Control*

| **+FDD - Double Escape Character Replacement Control** | |
|---|---|
| **AT+FDD=<mode>** | Set command concerns the use of the **<DLE><SUB>** pair to encode consecutive escape characters (**<10h><10h>**) in user data.<br>Parameter<br>**<mode>**<br>0 - currently the only available value. The **DCE** decode of **<DLE><SUB>** is either **<DLE><DLE>** or discard. The **DCE** encode of **<10h><10h>** is **<DLE><DLE><DLE><DLE>** |
| **AT+FDD?** | Read command returns the current value of parameter **<mode>** |
| **AT+FDD=?** | Test command returns all supported values of parameter **<mode>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.6.5 Custom AT Commands

### 3.6.5.1 General Configuration AT Commands

#### *3.6.5.1.1 #CGMI - Manufacturer Identification*

| **#CGMI - Manufacturer Identification** | |
|---|---|
| **AT#CGMI** | Execution command returns the device manufacturer identification code with command echo. The output depends on the choice made through **#SELINT** command. |
| **AT#CGMI?** | Read command has the same effect as the Execution command |

#### *3.6.5.1.2 #CGMM - Model Identification*

| **#CGMM - Model Identification** | |
|---|---|
| **AT#CGMM** | Execution command returns the device model identification code with command echo. |
| **AT#CGMM?** | Read command has the same effect as the Execution command |

#### *3.6.5.1.3 #CGMR - Revision Identification*

| **#CGMR - Revision Identification** | |
|---|---|
| **AT#CGMR** | Execution command returns device software revision number with command echo. |
| **AT#CGMR?** | Read command has the same effect as the Execution command |

#### *3.6.5.1.4 #CGSN - Product Serial Number Identification*

| **#CGSN - Product Serial Number Identification** | |
|---|---|
| **AT#CGSN** | Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo. |
| **AT#CGSN?** | Read command has the same effect as the Execution command |

#### *3.6.5.1.5 #CIMI - International Mobile Subscriber Identity (IMSI)*

| **#CIMI - International Mobile Subscriber Identity (IMSI)** | |
|---|---|
| **AT#CIMI** | Execution command returns the international mobile subscriber identity, identified as the IMSI number, with command echo. |
| **AT#CIMI?** | Read command has the same effect as the Execution command |

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### 3.6.5.1.6 #CAP - Change Audio Path

| #CAP - Change Audio Path | |
|---|---|
| **AT#CAP[=[<n>]]** | Set command switches the active audio path depending on parameter **<n>**<br><br>Parameter:<br>**<n>** - audio path<br>0 - audio path follows the Axe input (factory default):<br>if Axe is low, handsfree is enabled;<br>if Axe is high, internal path is enabled<br>1 - enables handsfree external mic/ear audio path<br>2 - enables internal mic/ear audio path<br><br>Note: The audio path are mutually exclusive, enabling one disables the other.<br><br>Note: when changing the audio path, the volume level is set at the previously stored value for that audio path (see **+CLVL**).<br><br>Note: issuing **AT#CAP<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAP=<CR>** is the same as issuing the command **AT#CAP=0<CR>**. |
| **AT#CAP?** | Read command reports the active audio path in the format:<br><br>**#CAP: <n>**. |
| **AT#CAP=?** | Test command reports the supported values for the parameter **<n>**. |

### 3.6.5.1.7 #SRS - Select Ringer Sound

| #SRS - Select Ringer Sound | |
|---|---|
| **AT#SRS[=<n>,<tout>]** | Set command sets the ringer sound.<br><br>Parameters:<br>**<n>** - ringing tone<br>0 - current ringing tone<br>1..*max* - ringing tone number, where *max* can be read by issuing the Test command **AT#SRS=?**.<br><br>**<tout>** - ringing tone playing time-out in seconds.<br>0 - ringer is stopped (if present) and current ringer sound is set.<br>1..60 - ringer sound playing for **<tout>** seconds and, if **<n> > 0,** ringer sound **<n>** is set as default ringer sound.<br><br>Note: when the command is issued with **<n> > 0** and **<tout> > 0**, the **<n>** |

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| #SRS - Select Ringer Sound | |
|---|---|
| | ringing tone is played for **<tout>** seconds and stored as default ringing tone.<br><br>Note: if command is issued with **<n> > 0** and **<tout> = 0**, the playing of the ringing is stopped (if present) and **<n>** ringing tone is set as current.<br><br>Note: if command is issued with **<n> = 0** and **<tout> > 0** then the current ringing tone is played.<br><br>Note: if both **<n>** and **<tout>** are **0** then the default ringing tone is set as current and ringing is stopped.<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command |
| **AT#SRS?** | Read command reports current selected ringing and its status in the form:<br><br>**#SRS: <n>,<status>**<br><br>where:<br>**<n>** - ringing tone number<br>1..*max*<br><br>**<status>** - ringing status<br>0 - selected but not playing<br>1 - currently playing |
| **AT#SRS=?** | Test command reports the supported values for the parameters **<n>** and **<tout>** |

### *3.6.5.1.8 #SRP -Select Ringer Path*

| #SRP - Select Ringer Path | |
|---|---|
| **AT#SRP[=[<n>]]** | Set command selects the ringer path towards whom sending ringer sounds and all signalling tones.<br><br>Parameter:<br>**<n>** - ringer path number<br>0 - sound output towards current selected audio path (see command **#CAP**)<br>1 - sound output towards handsfree<br>2 - sound output towards handset<br>3 - sound output towards Buzzer Output pin GPIO7<br><br>Note: In order to use the Buzzer Output an external circuitry must be added to drive it properly from the GPIO7 pin, furthermore the GPIO7 pin direction must be set to Buzzer output (Alternate function); see command **#GPIO**. |

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| #SRP - Select Ringer Path | |
|---|---|
| | Note: issuing **AT#SRP<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SRP=<CR>** is the same as issuing the command **AT#SRP=0<CR>**. |
| **AT#SRP?** | Read command reports the selected ringer path in the format:<br><br>**#SRP: <n>**. |
| **AT#SRP=?** | Test command reports the supported values for the parameter **<n>**. |
| Example | AT#SRP=?<br>#SRP: (0-3)<br><br>OK<br>AT#SRP=3<br>OK |

### 3.6.5.1.9 #STM - Signaling Tones Mode

| #STM - Signaling Tones Mode | |
|---|---|
| **AT#STM [=<mode>]** | Set command enables/disables the signalling tones output on the audio path selected with **#SRP** command<br><br>Parameter:<br>**<mode>** - signalling tones status<br>0 - signalling tones disabled<br>1 - signalling tones enabled<br><br>Note: **AT#STM=0** has the same effect as **AT@CALM=2**; **AT#STM=1** has the same effect either as **AT+CALM=0** or **AT@CALM=0**.<br><br>Note: If parameter is omitted then the behaviour of Set command is the same as Read command |
| **AT#STM?** | Read command reports whether the current signaling tones status is enabled or not, in the format:<br><br>**#STM: <mode>** |
| **AT#STM=?** | Test command reports supported range of values for parameter **<mode>**. |

### 3.6.5.1.10 #PCT - Display PIN Counter

| #PCT - Display PIN Counter | |
|---|---|
| **AT#PCT** | Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on **+CPIN** requested password in the format: |

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| | |
|---|---|
| | **#PCT: <n>**<br>where:<br>**<n>** - remaining attempts<br>0 - the SIM is blocked.<br>1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given.<br>1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given. |
| **AT#PCT?** | Read command has the same behaviour as Execution command. |

### *3.6.5.1.11 #SHDN - Software Shut Down*

| **#SHDN - Software Shutdown** | |
|---|---|
| **AT#SHDN** | Execution command causes device detach from the network and shut down. Before definitive shut down an **OK** response is returned.<br><br>Note: after the issuing of this command any previous activity is terminated and the device will not respond to any further command.<br><br>Note: to turn it on again Hardware pin ON/OFF must be tied low. |
| **AT#SHDN?** | Read command has the same behaviour as Execution command. |

### *3.6.5.1.12 #WAKE - Wake From Alarm Mode*

| **#WAKE - Wake From Alarm Mode** | |
|---|---|
| **AT#WAKE[= <opmode>]** | Execution command stops any eventually present alarm activity and, if the module is in **alarm mode**, it exits the **alarm mode** and enters the **normal operating mode**.<br><br>Parameter:<br>**<opmode>** - operating mode<br>0 - normal operating mode; the module exits the **alarm mode**, enters the **normal operating mode**, any alarm activity is stopped (e.g. alarm tone playing) and an **OK** result code is returned.<br><br>Note: if parameter is omitted, the command returns the **operating status** of the device in the format:<br><br>**#WAKE: <status>**<br>where:<br>**<status>**<br>0 - normal operating mode<br>1 - alarm mode or normal operating mode with some alarm activity.<br><br>Note: the **alarm mode** is indicated by status **ON** of hardware pin **CTS** and |

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| #WAKE - Wake From Alarm Mode | |
|---|---|
| | by status **ON** of pin **DSR;** the **power saving** status is indicated by a **CTS - OFF** and **DSR - OFF** status; the **normal operating status** is indicated by **DSR - ON**.<br><br>Note: during the **alarm mode** the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SM, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state. |
| **AT#WAKE?** | Read command has the same effect as Execution command when parameter is omitted. |

### *3.6.5.1.13 #QTEMP -Query Temperature Overflow*

| #QTEMP - Query Temperature Overflow | |
|---|---|
| **AT#QTEMP [=<mode>]** | Set command has currently no effect. The interpretation of parameter **<mode>** is currently not implemented: any value assigned to it will simply have no effect.<br><br>Note: if parameter **<mode>** is omitted the behaviour of Set command is the same as Read command |
| **AT#QTEMP?** | Read command queries the device internal temperature sensor for over temperature and reports the result in the format:<br><br>**#QTEMP: <temp>**<br>where<br>**<temp>** - over temperature indicator<br>0 - the device temperature is in the working range<br>1 - the device temperature is out of the working range |
| **#QTEMP=?** | Test command reports supported range of values for parameter **<mode>**. |
| Note | The device should not be operated out of its working temperature range; if temperature is out of range proper functioning of the device is not ensured. |

### *3.6.5.1.14 #SGPO - Set General Purpose Output*

| #SGPO - Set General Purpose Output | |
|---|---|
| **AT#SGPO[= [<stat>]]** | Set command sets the value of the general purpose output pin **GPIO2**.<br><br>Parameter:<br>**<stat>**<br>0 - output pin cleared to 0 (**LOW**)<br>1 - output pin set to 1 (**HIGH**) |

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| #SGPO - Set General Purpose Output | |
|---|---|
| | Note: the **GPIO2** is an OPEN COLLECTOR output, the command sets the transistor base level, hence the open collector output is negated:<br>**AT#SGPO=0** sets the open collector output **HIGH**<br>**AT#SGPO=1** sets the open collector output **LOW**<br>A pull up resistor is required on pin **GPIO2**.<br><br>Note: issuing **AT#SGPO<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SGPO=<CR>** is the same as issuing the command **AT#SGPO=0<CR>**. |
| **AT#SGPO?** | Read command reports the **#SGPO** command setting, hence the opposite status of the open collector pin in the format:<br><br>**#SGPO: <stat>**. |
| **AT#SGPO=?** | Test command reports the supported range of values of parameter **<stat>**. |
| **Note** | This command is meaningful only for GM862 family |

### *3.6.5.1.15 #GGPI - General Purpose Input*

| #GGPI - General Purpose Input | |
|---|---|
| **AT#GGPI[=[<dir>]]** | Set command sets the general purpose input pin **GPIO1**.<br><br>Parameter:<br>**<dir>** - auxiliary input GPIO1 setting<br>0 - the Read command **AT#GGPI?** reports the logic input level read from GPIO1 pin.<br><br>Note: The device has an insulated input pin ( the input goes the base of an internal decoupling transistor) which can be used as a logic general purpose input. This command sets the read behaviour for this pin, since only direct read report is supported, the issue of this command is not needed.<br>In future uses the behavior of the read input may be more complex.<br><br>Note: If parameter is omitted then the behaviour of Set command is the same as Read command |
| **AT#GGPI?** | Read command reports the read value for the input pin GPIO1, in the format:<br><br>**#GGPI: <dir>,<stat>**<br><br>where<br>**<dir> -** direction setting (see **#GGPI=<dir>** )<br>**<stat>** - logic value read from pin GPIO1<br><br>Note: Since the reading is done after the insulating transistor, the reported |

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| #GGPI - General Purpose Input | |
|---|---|
| | value is the opposite of the logic status of the GPIO1 input pin. |
| **AT#GGPI=?** | Test command reports supported range of values for parameter **<dir>**. |
| **Note** | This command is meaningful only for GM862 family |

### *3.6.5.1.16 #GPIO - General Purpose Input/Output Pin Control*

| #GPIO - General Purpose Input/Output Pin Control | |
|---|---|
| **AT#GPIO[=<pin>,<mode>[,<dir>]]** | Execution command sets the value of the general purpose output pin **GPIO<pin>** according to **<dir>** and **<mode>** parameter.<br>Not all configuration for the three parameters are valid.<br><br>Parameters:<br>**<pin>** - GPIO pin number; supported range is from 1 to a value that depends on the hardware, but **GPIO1** is input only and **GPIO2** is output only.<br>**<mode>** - its meaning depends on **<dir>** setting:<br>0 - no meaning if **<dir>=0** - INPUT<br>- output pin cleared to 0 (LOW) if **<dir>=1** - OUTPUT<br>- no meaning if **<dir>=2** - ALTERNATE FUNCTION<br>1 - no meaning if **<dir>=0** - INPUT<br>- output pin set to 1 (HIGH) if **<dir>=1** - OUTPUT<br>- no meaning if **<dir>=2** - ALTERNATE FUNCTION<br>2 - Reports the read value from the input pin if **<dir>=0** - INPUT<br>- Reports the read value from the input pin if **<dir>=1** - OUTPUT<br>- Reports a no meaning value if **<dir>=2** - ALTERNATE FUNCTION<br>**<dir>** - GPIO pin direction<br>0 - pin direction is INPUT<br>1 - pin direction is OUTPUT<br>2 - pin direction is ALTERNATE FUNCTION (see Note).<br><br>Note: when **<mode>=2** (and **<dir>** is omitted) the command reports the direction and value of pin **GPIO<pin>** in the format:<br><br>**#GPIO: <dir>,<stat>**<br>where<br>**<dir>** - current direction setting for the **GPIO<pin>**<br>**<stat>**<br>• logic value read from pin **GPIO<pin>** in the case the pin **<dir>** is set to input;<br>• logic value present in output of the pin **GPIO<pin>** in the case the pin **<dir>** is currently set to output;<br>• no meaning value for the pin **GPIO<pin>** in the case the pin **<dir>** is set to alternate function.<br><br>Note: (valid only for **GPIO1**) since the reading is done after the insulating |

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| #GPIO - General Purpose Input/Output Pin Control | |
|---|---|
| | transistor, the reported value is the opposite of the logic status of the **GPIO1** input pin<br><br>Note: if all parameters are omitted the command reports the read direction and value of all **GPIO** pin, int the format:<br><br>**#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[…]]**<br><br>Note: "ALTERNATE FUNCTION" value is valid only for following pins:<br>• **GPIO5** - alternate function is “RF Transmission Monitor”<br>• **GPIO6** - alternate function is "Alarm Output" (see **+CALA**)<br>• **GPIO7** - alternate function is "Buzzer Output" (see **#SRP**)<br><br>Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.<br><br>Note: The **GPIO2** is an OPEN COLLECTOR output, the command sets the transistor base level, hence the open collector output is negated |
| **AT#GPIO?** | Read command has the same effect as Execution command when all parameters are omitted. |
| **AT#GPIO=?** | Test command reports the supported range of values of the command parameters **<pin>**, **<mode>** and **<dir>**. |
| Example | `AT#GPIO=3,0,1`<br>`OK`<br>`AT#GPIO=3,2`<br>`#GPIO: 1,0`<br>`OK`<br>`AT#GPIO=4,1,1`<br>`OK`<br>`AT#GPIO=5,0,0`<br>`OK`<br>`AT#GPIO=6,2`<br>`#GPIO: 0,1`<br>`OK` |

### *3.6.5.1.17 #I2S1 - Set PCM Output For Channel 1*

| #I2S1 - Set PCM Output For Channel 1 | |
|---|---|
| **AT#I2S1[= <mode> [,<clockmode>, <clockrate>]]** | Set command sets the type of operation.<br><br>Parameters:<br>**<mode>**<br>0 - PCM1 is not enabled; audio is forwarded to the analog line; PCM pins can be used as UART1 and GPIO. |

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| #I2S1 - Set PCM Output For Channel 1 | |
|---|---|
| | 1 - PCM1 is enabled; audio is forwarded to the PCM block; PCM pin cannot be used for UART1; any service on UART1 is suspended<br>2 - PCM1 is enabled; audio is forwarded both to the PCM block and to the analog line; PCM pins cannot be used for UART1; any service on UART1 is suspended<br>**<clockmode>**<br>0 - PCM acts as slave<br>1 - PCM acts as master<br>**<clockrate>**<br>64 - 64 kHz.<br>128 - 128 kHz.<br>256 - 256 kHz.<br>512 - 512 kHz<br>1024 - 1024 kHz<br>2048 - 2048 kHz<br><br>Note: issuing **AT#I2S1<CR>** is the same as issuing the Read command. |
| **AT#I2S1?** | Read command reports the last setting, in the format:<br><br>**#I2S1: <mode>,<clockmode>,<clockrate>** |
| **AT#I2S1=?** | Reports the range of supported values for parameters **<mode>, <clockmode>** and **<clockrate>** |

### *3.6.5.1.18 #E2SMSRI - SMS Ring Indicator*

| #E2SMSRI - SMS Ring Indicator | |
|---|---|
| **AT#E2SMSRI[=[<n>]]** | Set command enables/disables the Ring Indicator pin response to an incoming SMS message. If enabled, a negative going pulse is generated on receipt of an incoming SMS message. The duration of this pulse is determined by the value of **<n>**.<br><br>Parameter:<br>**<n>** - RI enabling<br>0 - disables RI pin response for incoming SMS messages (factory default)<br>50..1150 - enables RI pin response for incoming SMS messages. The value of **<n>** is the duration in ms of the pulse generated on receipt of an incoming SM.<br><br>Note: if **+CNMI=3,1** command is issued and the module is in a GPRS connection, a 100 ms break signal is sent and a 1 sec. pulse is generated on RI pin, no matter if the RI pin response is either enabled or not.<br><br>Note: issuing **AT#E2SMSRI<CR>** is the same as issuing the Read command. |

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| #E2SMSRI - SMS Ring Indicator | |
|---|---|
| | Note: issuing **AT#E2SMSRI=<CR>** returns the **OK** result code. |
| **AT#E2SMSRI?** | Read command reports the duration in ms of the pulse generated on receipt of an incoming SM, in the format:<br><br>**#E2SMSRI: <n>**<br><br>Note: as seen before, the value **<n>=0** means that the RI pin response to an incoming SM is disabled. |
| **AT#E2SMSRI=?** | Reports the range of supported values for parameter **<n>** |

### *3.6.5.1.19 #ADC - Analog/Digital Converter Input*

| #ADC - Analog/Digital Converter Input | |
|---|---|
| **AT#ADC[= <adc>,<mode> [,<dir>]]** | Execution command reads pin**<adc>** voltage, converted by ADC, and outputs it in the format:<br><br>**#ADC: <value>**<br><br>where:<br>**<value>** - pin**<adc>** voltage, expressed in mV<br><br>Parameters:<br>**<adc>** - index of pin<br>1 - available for GM862-QUAD, GM862-QUAD-PY, GM862-GPS, GE863-QUAD, GE863-PY, GE863-GPS, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br>2 - available only for GE863-QUAD, GE863-PY, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br>3 - available only for GE863-QUAD, GE863-PY, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br><br>**<mode>** - required action<br>2 - query ADC value<br>**<dir>** - direction; its interpretation is currently not implemented<br>0 - no effect.<br><br>If all parameters are omitted the command reports all pins voltage, converted by ADC, in the format:<br><br>**#ADC: <value>[<CR><LF>#ADC: <value>[…]]**<br><br>Note: The command returns the last valid measure. |
| **AT#ADC?** | Read command has the same effect as Execution command when all parameters are omitted. |

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| | |
|---|---|
| **AT#ADC=?** | Test command reports the supported range of values of the command parameters **<adc>**, **<mode>** and **<dir>**. |

### *3.6.5.1.20 #DAC - Digital/Analog Converter Control*

| **#DAC - Digital/Analog Converter Control** | |
|---|---|
| **AT#DAC[= <enable> [,<value>]]** | Set command enables/disables the DAC_OUT pin.<br><br>Parameters:<br>**<enable>** - enables/disables DAC output.<br>0 - disables pin; it is in high impedance status (factory default)<br>1 - enables pin; the corresponding output is driven<br>**<value>** - scale factor of the integrated output voltage; it must be present if **<enable>=1**<br>0..1023 - 10 bit precision<br><br>Note: **integrated output voltage = MAX_VOLTAGE * value / 1023**<br><br>Note: if all parameters are omitted then the behaviour of Set command is the same as the Read command. |
| **AT#DAC?** | Read command reports whether the DAC_OUT pin is currently enabled or not, along with the integrated output voltage scale factor, in the format:<br><br>**#DAC: <enable>,<value>** |
| **AT#DAC=?** | Test command reports the range for the parameters **<enable>** and **<value>**. |
| Example | *Enable the DAC out and set its integrated output to the 50% of the max value:*<br><br>AT#DAC=1,511<br>OK<br><br>*Disable the DAC out:*<br>AT#DAC=0<br>OK |
| Note | With this command the DAC frequency is selected internally.<br>D/A converter must not be used during POWERSAVING.<br><br>DAC_OUT line must be integrated (for example with a low band pass filter) in order to obtain an analog voltage.<br>For a more in depth description of the integration filter refer to the hardware user guide. |

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### 3.6.5.1.21 #VAUX - Auxiliary Voltage Pin Output

| #VAUX- Auxiliary Voltage Pin Output | |
|---|---|
| **AT#VAUX[=<n>, <stat>]** | Set command enables/disables Auxiliary Voltage pins output.<br><br>Parameters:<br>**<n>** - VAUX pin index<br>1 - there is currently just one VAUX pin<br>**<stat>**<br>0 - output off<br>1 - output on<br>2 - query current value of VAUX pin<br><br>Note: when **<stat>=2** and command is successful, it returns:<br><br>**#VAUX: <value>**<br><br>where:<br>**<value>** - power output status<br>0 - output off<br>1 - output on<br><br>Note: If all parameters are omitted the command has the same behaviour as Read command.<br><br>Note: for the GPS product (GE863-GPS): if the Auxiliary Voltage pins output is disabled while GPS or camera is powered on they'll both also be turned off. |
| **AT#VAUX?** | Read command reports the current status of all auxiliary voltage output pins, in the format:<br><br>**#VAUX: <value>[<CR><LF>#VAUX: <value>[...]]** |
| **AT#VAUX=?** | Test command reports the supported range of values for parameters **<n>**, **<stat>**. |

### 3.6.5.1.22 #AUTOATT – GPRS Auto-Attach Property

| #AUTOATT - Auto-Attach Property | |
|---|---|
| **AT#AUTOATT [=<auto>]** | Set command enables/disables the TE GPRS auto-attach property.<br><br>Parameter:<br>**<auto>**<br>0 - disables GPRS auto attach property<br>1 - enables GPRS auto attach property (factory default): after the command **#AUTOATT=1** has been issued (and at every following start-up) the terminal will automatically try to attach to the GPRS service. |

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| #AUTOATT - Auto-Attach Property | |
|---|---|
| | Note: If parameter is omitted then the behaviour of Set command is the same as Read command. |
| **AT#AUTOATT?** | Read command reports whether the auto-attach property is currently enabled or not, in the format:<br><br>**#AUTOATT: <auto>** |
| **AT#AUTOATT=?** | Test command reports available values for parameter **<auto>**. |

### *3.6.5.1.23 #MSCLASS - Multislot Class Control*

| #MSCLASS - Multislot Class Control | |
|---|---|
| **AT#MSCLASS[= <class>, <autoattach>]** | Set command sets the multislot class<br><br>Parameters:<br>**<class>** - multislot class; take care: class 7 is not supported.<br>1..6 - GPRS class<br>8..10 - GPRS class<br><br>**<autotattach>**<br>0 - the new multislot class is enabled only at the next detach/attach or after a reboot.<br>1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure.<br><br>Note: the **<class>** range for former GM862 family products is 1..8, excluding class 7.<br><br>Note: if all parameters are omitted the behaviour of set command is the same as read command. |
| **AT#MSCLASS?** | Read command reports the current value of the multislot class in the format:<br><br>**#MSCLASS: <class>** |
| **AT#MSCLASS=?** | Test command reports the range of available values for parameter **<class>**. |

### *3.6.5.1.24 #MONI - Cell Monitor*

| #MONI - Cell Monitor | |
|---|---|
| **AT#MONI[= [<number>]]** | Set command sets one cell out of seven, in a neighbour of the serving cell including it, from which extract GSM-related informations. |

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| #MONI - Cell Monitor | |
|---|---|
| | Parameter:<br>**<number>**<br>0..6 - it is the ordinal number of a cell, in a neighbour of the serving cell (default 0, serving cell).<br>7 - it is a special request to obtain GSM-related informations from the whole set of seven cells in the neighbour of the serving cell.<br><br>Note: issuing **AT#MONI<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#MONI=<CR>** is the same as issuing the command **AT#MONI=0<CR>**. |
| **AT#MONI?** | Read command reports the following GSM-related informations for selected cell and dedicated channel (if exists).<br><br>d) When extracting data for the serving cell and the network name is known the format is:<br>**#MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>**<br><br>e) When the network name is unknown, the format is:<br>**#MONI: Cc:<cc> Nc:<nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>**<br><br>f) When extracting data for an adjacent cell, the format is:<br>**#MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn> PWR:<dBm> dBm**<br><br>where:<br>**<netname>** - name of network operator<br>**<cc>** - country code<br>**<nc>** - network operator code<br>**<n>** - progressive number of adjacent cell<br>**<bsic>** - base station identification code<br>**<qual>** - quality of reception<br>0..7<br>**<lac>** - localization area code<br>**<id>** - cell identifier<br>**<arfcn>** - assigned radio channel<br>**<dBm>** - received signal strength in dBm<br>**<timadv>** = timing advance<br><br>Note: TA: **<timadv>** is reported only for the serving cell.<br><br>When the last setting done is **AT#MONI=7**, then the Read command reports the above informations for each of the cells in the neighbour of the serving cell, formatting them in a sequence of **<CR><LF>-terminated** strings. |

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| #MONI - Cell Monitor | |
|---|---|
| **AT#MONI=?** | Test command reports the maximum number of cells, in the neighbour of the serving cell, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format:<br><br>**#MONI: (<MaxCellNo>,<CellSet>)**<br><br>where:<br>**<MaxCellNo>** - maximum number of cells, in the neighbour of the serving cell, from which we can extract GSM-related informations (for compatibility with previous versions of code this value is always **6**).<br>**<CellSet>** - the last setting done with command **#MONI**.<br><br>An enhanced version of the Test command has been defined:<br>**AT#MONI=??** |
| **AT#MONI=??** | Enhanced test command reports the maximum number of cells, in a neighbour of the serving cell and including it, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format:<br><br>**#MONI: (<MaxCellNo>,<CellSet>)**<br><br>where:<br>**<MaxCellNo>** - maximum number of cells, in a neighbour of the serving cell and including it, from which we can extract GSM-related informations. This value is always **7**.<br>**<CellSet>** - the last setting done with command **#MONI**. |
| Note | The refresh time of the measures is preset to 3 sec.<br>The timing advance value is meaningful only during calls or GPRS transfers active. |

### *3.6.5.1.25 #SERVINFO - Serving Cell Information*

| #SERVINFO - Serving Cell Information | |
|---|---|
| **AT#SERVINFO** | Execution command reports informations about serving cell, in the format:<br><br>**#SERVINFO: <B-ARFCN>,<dBM>,<NetNameAsc>,<NetCode>, ,<BSIC>,<LAC>,<TA>,<GPRS>[,[<PB-ARFCN>],[<NOM>], <RAC>,[PAT]]**<br><br>where:<br>**<B-ARFCN>** - BCCH ARFCN of the serving cell<br>**<dBM>** - received signal strength in dBm<br>**<NetNameAsc>** - operator name, quoted string type |

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| #SERVINFO - Serving Cell Information | |
|---|---|
| | **<NetCode>** - country code and operator code, hexadecimal representation<br>**<BSIC>** - Base Station Identification Code<br>**<LAC>** - Localization Area Code<br>**<TA>** - Time Advance: it's available only if a GSM or GPRS is running<br>**<GPRS>** - GPRS supported in the cell<br>0 - not supported<br>1 - supported<br><br>The following informations will be present only if GPRS is supported in the cell<br>**<PB-ARFCN>** - PBCCH ARFCN of the serving cell; it'll be printed only if PBCCH is supported by the cell, otherwise the label **"hopping"** will be printed<br>**<NOM>** - Network Operation Mode<br>.."I"<br>"II"<br>.."III"<br>**<RAC>** - Routing Area Color Code<br>**<PAT>** - Priority Access Threshold<br>..0<br>..3..6 |
| **AT#SERVINFO?** | Read command has the same effect as Execution command |

### *3.6.5.1.26 #COPSMODE - +COPS Mode*

| #COPSMODE - +COPS Mode | |
|---|---|
| **AT#COPSMODE [=<mode>]** | Set command sets the behaviour of **+COPS** command (*see* ***+COPS***).<br><br>Parameter:<br>**<mode>**<br>0 - **+COPS** behaviour like former GM862 family products (default)<br>1 - **+COPS** behaviour compliant with ETSI format<br><br>Note: The setting is saved in NVM (and available on following reboot).<br><br>Note: if parameter **<mode>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#COPSMODE?** | Read command returns the current behaviour of **+COPS** command, in the format:<br><br>**#COPSMODE: <mode>**<br><br>where |

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| #COPSMODE - +COPS Mode | |
|---|---|
| | **<mode>** - **+COPS** behaviour as seen before. |
| **AT#COPSMODE=?** | Test command returns the range of available values for parameter **<mode>**. |
| Note | It's suggested to reboot the module after every **#COPSMODE** setting. |

### *3.6.5.1.27 #QSS - Query SIM Status*

| #QSS - Query SIM Status | |
|---|---|
| **AT#QSS[=[<mode>]]** | Set command enables/disables the Query SIM Status unsolicited indication in the ME.<br><br>Parameter:<br>**<mode>** - type of notification<br>0 - disabled (factory default); it's possible only to query the current SIM status through Read command **AT#QSS?**<br>1 - enabled; the ME informs at every SIM status change through the following unsolicited indication:<br><br>**#QSS: <status>**<br><br>where:<br>**<status>** - current SIM status<br>0 - SIM NOT INSERTED<br>1 - SIM INSERTED<br><br>Note: issuing **AT#QSS<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#QSS=<CR>** is the same as issuing the command **AT#QSS=0<CR>**. |
| **AT#QSS?** | Read command reports whether the unsolicited indication **#QSS** is currently enabled or not, along with the SIM status, in the format:<br><br>**#QSS: <mode>,<status>**<br>(**<mode>** and **<status>** are described above) |
| **AT#QSS=?** | Test command returns the supported range of values for parameter **<mode>**. |

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### 3.6.5.1.28 #DIALMODE - ATD Dialling Mode

| #DIALMODE - ATD Dialling Mode | |
|---|---|
| **AT#DIALMODE[=<mode>]** | Set command sets voice call **ATD** modality.<br><br>Parameter:<br>**<mode>**<br>0 - **OK** result code is received as soon as it starts remotely ringing (factory default)<br>1 - **OK** result code is received only after the called party answers. Any character typed aborts the call and **NO CARRIER** result code is received.<br>2 - the following custom result codes are received, monitoring step by step the call status:<br>**DIALLING** (MO in progress)<br>**RINGING** (remote ring)<br>**CONNECTED** (remote call accepted)<br>**RELEASED** (after **ATH**)<br>**DISCONNECTED** (remote hang-up)<br><br>Note: **AT#DIALMODE=2** is available also for data calls.<br><br>Note: The setting is saved in NVM and available on following reboot.<br><br>Note: if parameter **<mode>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#DIALMODE?** | Read command returns current **ATD** dialling mode in the format:<br><br>**#DIALMODE: <mode>** |
| **AT#DIALMODE=?** | Test command returns the range of values for parameter **<mode>** |

### 3.6.5.1.29 #ACAL - Automatic Call

| #ACAL - Automatic Call | |
|---|---|
| **AT#ACAL[=[<mode>]]** | Set command enables/disables the automatic call function.<br><br>Parameter:<br>**<mode>**<br>0 - disables the automatic call function (factory default)<br>1 - enables the automatic call function. If enabled (and **&D2** has been issued), the transition **OFF/ON** of **DTR** causes an automatic call to the first number (position 0) stored in the internal phonebook.<br><br>Note: type of call depends on the last issue of command **+FCLASS**.<br><br>Note: issuing **AT#ACAL<CR>** is the same as issuing the Read command. |

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| #ACAL - Automatic Call | |
|---|---|
| | Note: issuing **AT#ACAL=<CR>** is the same as issuing the command **AT#ACAL=0<CR>**. |
| **AT#ACAL?** | Read command reports whether the automatic call function is currently enabled or not, in the format:<br><br>**#ACAL: <mode>** |
| **AT#ACAL=?** | Test command returns the supported range of values for parameter **<mode>**. |
| Note | See **&Z** to write and **&N** to read the number on module internal phonebook. |

### *3.6.5.1.30 #ECAM - Extended Call Monitoring*

| #ECAM - Extended Call Monitoring | |
|---|---|
| **AT#ECAM[=[<onoff>]]** | This command enables/disables the call monitoring function in the **ME**.<br><br>Parameter:<br>**<onoff>**<br>0 - disables call monitoring function (factory default)<br>1 - enables call monitoring function; the **ME** informs about call events, such as incoming call, connected, hang up etc. using the following unsolicited indication:<br><br>**#ECAM: <ccid>,<ccstatus>,<calltype>,,, [<number>,<type>]**<br><br>where<br>**<ccid>** - call ID<br>**<ccstatus>** - call status<br>0 - idle<br>1 - calling (MO)<br>2 - connecting (MO)<br>3 - active<br>4 - hold<br>5 - waiting (MT)<br>6 - alerting (MT)<br>7 - busy<br>**<calltype>** - call type<br>1 - voice<br>2 - data<br>**<number>** - called number (valid only for **<ccstatus>=1**)<br>**<type>** - type of **<number>**<br>129 - national number<br>145 - international number |

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| #ECAM - Extended Call Monitoring | |
|---|---|
| | Note: the unsolicited indication is sent along with usual codes (**OK**, **NO CARRIER**, **BUSY**...).<br><br>Note: issuing **AT#ECAM<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#ECAM=<CR>** returns the **OK** result code. |
| **AT#ECAM?** | Read command reports whether the extended call monitoring function is currently enabled or not, in the format:<br><br>**#ECAM: <onoff>** |
| **AT#ECAM=?** | Test command returns the list of supported values for **<onoff>** |

### *3.6.5.1.31 #SMOV - SMS Overflow*

| #SMOV - SMS Overflow | |
|---|---|
| **AT#SMOV[=[<mode>]]** | Set command enables/disables the SMS overflow signalling function.<br><br>Parameter:<br>**<mode>**<br>0 - disables SMS overflow signalling function(factory default)<br>1 - enables SMS overflow signalling function; when the maximum storage capacity has reached, the following network initiated notification is send:<br><br>**#SMOV: <memo>**<br><br>Note: issuing **AT#SMOV<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SMOV=<CR>** is the same as issuing the command **AT#SMOV=0<CR>**. |
| **AT#SMOV?** | Read command reports whether the SMS overflow signaling function is currently enabled or not, in the format:<br><br>**#SMOV: <mode>** |
| **AT#SMOV=?** | Test command returns the supported range of values of parameter **<mode>**. |

### *3.6.5.1.32 #CODEC - Audio Codec*

| #CODEC - Audio Codec | |
|---|---|
| **AT#CODEC[=<codec>]** | Set command sets the audio codec mode. |

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| | |
|---|---|
| | Parameter:<br>**<codec>**<br>0 - all the codec modes are enabled (factory default)<br>1..31 - value obtained as sum of the following values, each of them representing a specific codec mode:<br><br>1 - **FR**, full rate mode enabled<br>2 - **EFR**, enhanced full rate mode enabled<br>4 - **HR**, half rate mode enabled<br>8 - **AMR-FR**, AMR full rate mode enabled<br>16 - **AMR-HR**, AMR half rate mode enabled<br><br>Note: the setting 0 is equivalent to the setting 31.<br><br>Note: The codec setting is saved in the profile parameters.<br><br>Note: if optional parameter **<codec>** is omitted the behavior of Set command is the same as Read command. |
| **AT#CODEC?** | Read command returns current audio codec mode in the format:<br><br>**#CODEC: <codec>** |
| **AT#CODEC=?** | Test command returns the range of available values for parameter **<codec>** |
| Example | AT#CODEC=14<br>OK<br><br>*sets the codec modes HR (4), EFR (2) and AMR-FR (8)* |

### *3.6.5.1.33 #SHFEC - Handsfree Echo Canceller*

| **#SHFEC - Handsfree Echo Canceller** | |
|---|---|
| **AT#SHFEC[=[<mode>]]** | Set command enables/disables the echo canceller function on audio handsfree output.<br><br>Parameter:<br>**<mode>**<br>0 - disables echo canceller for handsfree mode (factory default)<br>1 - enables echo canceller for handsfree mode<br><br>Note: This setting returns to default after power off.<br><br>Note: issuing **AT#SHFEC<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SHFEC=<CR>** is the same as issuing the command **AT#SHFEC=0<CR>**. |
| **AT#SHFEC?** | Read command reports whether the echo canceller function on audio |

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| #SHFEC - Handsfree Echo Canceller | |
|---|---|
| | handsfree output is currently enabled or not, in the format:<br><br>**#SHFEC: <mode>** |
| **AT#SHFEC=?** | Test command returns the supported range of values of parameter **<mode>**. |

### *3.6.5.1.34 #HFMICG - Handsfree Microphone Gain*

| #HFMICG - Handsfree Microphone Gain | |
|---|---|
| **AT#HFMICG[=[<level>]]** | Set command sets the handsfree microphone input gain<br><br>Parameter:<br>**<level>**: handsfree microphone input gain<br>0..7 - handsfree microphone gain (+6dB/step)<br><br>Note: issuing **AT#HFMICG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#HFMICG=<CR>** returns the **OK** result code. |
| **AT#HFMICG?** | Read command returns the current handsfree microphone input gain, in the format:<br><br>**#HFMICG: <level>** |
| **AT#HFMICG=?** | Test command returns the supported range of values of parameter **<level>**. |

### *3.6.5.1.35 #HSMICG - Handset Microphone Gain*

| #HSMICG - Handset Microphone Gain | |
|---|---|
| **AT#HSMICG[=[<level>]]** | Set command sets the handset microphone input gain<br><br>Parameter:<br>**<level>**: handset microphone input gain<br>0..7 - handset microphone gain (+6dB/step)<br><br>Note: issuing **AT#HSMICG<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#HSMICG=<CR>** returns the **OK** result code. |
| **AT#HSMICG?** | Read command returns the current handset microphone input gain, in the format: |

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| | |
|---|---|
| | **#HSMICG: <level>** |
| **AT#HSMICG=?** | Test command returns the supported range of values of parameter **<level>**. |

### *3.6.5.1.36 #SHFSD - Set Headset Sidetone*

| **#SHFSD - Set Headset Sidetone** | |
|---|---|
| **AT#SHFSD[= [<mode>]]** | Set command enables/disables the sidetone on headset audio output.<br><br>Parameter:<br>**<mode>**<br>0 - disables the headset sidetone (factory default)<br>1 - enables the headset sidetone.<br><br>Note: This setting returns to default after power off.<br><br>Note: issuing **AT#SHFSD<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SHFSD=<CR>** is the same as issuing the command **AT#SHFSD=0<CR>**. |
| **AT#SHFSD?** | Read command reports whether the headset sidetone is currently enabled or not, in the format:<br>**#SHFSD: <mode>** |
| **AT#SHFSD=?** | Test command returns the supported range of values of parameter **<mode>**. |

### *3.6.5.1.37 #/ - Repeat Last Command*

| **#/ - Repeat Last Command** | |
|---|---|
| **AT#/** | Execute command is used to execute again the last received command. |

### *3.6.5.1.38 #NITZ - Network Timezone*

| **#NITZ - Network Timezone** | |
|---|---|
| **AT#NITZ[= [<val> [,<mode>]]]** | Set command enables/disables automatic date/time updating and Network Timezone unsolicited indication.<br>Date and time information may be sent by the network after GSM |

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| #NITZ - Network Timezone | |
|---|---|
| | registration or after GPRS attach.<br><br>Parameters:<br>**<val>**<br>0 - disables automatic set (factory default)<br>1 - enables automatic set<br>**<mode>**<br>0 - disables unsolicited message (factory default)<br>1 - enables unsolicited message; after date and time updating the following unsolicited indication is sent:<br><br>**#NITZ: "yy/MM/dd,hh:mm:ss"**<br><br>where:<br>**yy** - year<br>**MM** - month (in digits)<br>**dd** - day<br>**hh** - hour<br>**mm** - minute<br>**ss** - second<br><br>Note: issuing **AT#NITZ<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#NITZ=<CR>** is the same as issuing the command **AT#NITZ=0<CR>**. |
| **AT#NITZ?** | Read command reports whether automatic date/time updating is currently enabled or not, and whether Network Timezone unsolicited indication is enabled or not, in the format:<br><br>**#NITZ: <val>,<mode>** |
| **AT#NITZ=?** | Test command returns supported values of parameters **<val>** and **<mode>**. |

### *3.6.5.1.39 #BND - Select Band*

| #BND - Select Band | |
|---|---|
| **AT#BND[=[<band>]]** | Set command selects the current band.<br><br>Parameter<br>**<band>**:<br>0 - GSM 900MHz + DCS 1800MHz<br>1 - GSM 900MHz + PCS 1900MHz<br>2 - GMS 850MHz + PCS 1800MHz (available only on quadri-band modules)<br>3 - GMS 850MHz + PCS 1900MHz (available only on quadri-band modules) |

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| | |
|---|---|
| | Note: This setting is maintained even after power off.<br><br>Note: issuing **AT#BND<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#BND=<CR>** is the same as issuing the command **AT#BND=0<CR>**. |
| **AT#BND?** | Read command returns the current selected band in the format:<br><br>**#BND: <band>** |
| **AT#BND=?** | Test command returns the supported range of values of parameter **<band>**.<br><br>Note: the range of values differs between triband modules and quadric-band modules |

### *3.6.5.1.40 #AUTOBND - Automatic Band Selection*

| **#AUTOBND - Automatic Band Selection** | |
|---|---|
| **AT#AUTOBND[= <value>]** | Set command enables/disables the automatic band selection at power-on.<br><br>Parameter:<br>**<value>**:<br>0 - disables automatic band selection at power-on (factory default)<br>1 - enables automatic band selection at power-on; **+COPS=0** is necessary condition to effectively have automatic band selection at next power-on; the automatic band selection stops as soon as a GSM cell is found.<br><br>Note: if automatic band selection is enabled the band changes every about 90 seconds through available bands until a GSM cell is found.<br><br>Note: if parameter **<value>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#AUTOBND?** | Read command returns whether the automatic band selection is enabled or not in the form:<br><br>**#AUTOBND: <value>** |
| **AT#AUTOBND=?** | Test command returns the range of supported values for parameter **<value>**. |

### *3.6.5.1.41 #SKIPESC - Skip Escape Sequence*

| **#SKIPESC - Skip Escape Sequence** | |
|---|---|
| **AT#SKIPESC[=** | Set command enables/disables skipping the escape sequence **+++** while |

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| #SKIPESC - Skip Escape Sequence | |
|---|---|
| **[<mode>]]** | transmitting during a data connection.<br><br>Parameter:<br>**<mode>**<br>0 - doesn't skip the escape sequence; its transmission is enabled (factory default).<br>1 - skips the escape sequence; its transmission is not enabled.<br><br>Note: in case of an FTP connection, the escape sequence is not transmitted, regardless of the command setting.<br><br>Note: issuing **AT#SKIPESC<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SKIPESC=<CR>** is the same as issuing the command **AT#SKIPESC=0<CR>**. |
| **AT#SKIPESC?** | Read command reports whether escape sequence skipping is currently enabled or not, in the format:<br><br>**#SKIPESC: <mode>** |
| **AT#SKIPESC=?** | Test command reports supported range of values for parameter **<mode>**. |

### *3.6.5.1.42 #E2ESC - Escape Sequence Guard Time*

| #E2ESC - Escape Sequence Guard Time | |
|---|---|
| **AT#E2ESC[=[<gt>]]** | Set command sets a guard time in seconds for the escape sequence in GPRS to be considered a valid one (and return to on-line command mode).<br><br>Parameter:<br>**<gt>**<br>0 - no guard time (factory default)<br>1..10 - guard time in seconds<br><br>Note: if the Escape Sequence Guard Time is set to a value different from zero, it overrides the one set with **S12**.<br><br>Note: issuing **AT#E2ESC<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#E2ESC=<CR>** returns the **OK** result code. |
| **AT#E2ESC?** | Read command returns current value of the escape sequence guard time, in the format:<br><br>**#E2ESC: <gt>** |
| **AT#E2ESC=?** | Test command returns the **OK** result code. |

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### 3.6.5.1.43 #GAUTH - PPP-GPRS Connection Authentication Type

| #GAUTH - PPP-GPRS Connection Authentication Type | |
|---|---|
| **AT#GAUTH[= <type>]** | Set command sets the PPP-GPRS connection authentication type.<br><br>Parameter<br>**<type>**<br>0 - no authentication<br>1 - PAP authentication (factory default)<br>2 - CHAP authentication<br><br>Note: for GSM connection **<type>** is fixed to PAP<br><br>Note: if parameter **<type>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#GAUTH?** | Read command reports the current PPP-GPRS connection authentication type, in the format:<br><br>**#GAUTH: <type>** |
| **AT#GAUTH=?** | Test command returns the range of supported values for parameter **<type>**. |

### 3.6.5.1.44 #RTCSTAT - RTC Status

| #RTCSTAT - RTC Status | |
|---|---|
| **AT#RTCSTAT[= <status>]** | Set command resets the RTC status flag.<br><br>Parameter:<br>**<status>**<br>0 - Set RTC Status to **RTC HW OK**<br><br>Note: the initial value of RTC status flag is **RTC HW Error** and it doesn't change until a command **AT#RTCSTAT=0** is issued.<br><br>Note: if a power failure occurs and the buffer battery is down the RTC status flag is set to **1**. It doesn't change until command **AT#RTCSTAT=0** is issued.<br><br>Note: if parameter **<status>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#RTCSTAT?** | Read command reports the current value of RTC status flag, in the format:<br><br>**#RTCSTAT: <status>** |
| **AT#RTCSTAT=?** | Test command returns the range of supported values for parameter **<status>** |

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## 3.6.5.2 FTP AT Commands

### *3.6.5.2.1 #FTPTO - FTP Time-Out*

| **#FTPTO - FTP Time-Out** | |
|---|---|
| **AT#FTPTO[=<tout>]** | Set command sets time-out for FTP operations.<br><br>Parameter:<br>**<tout>** - time-out in 100 ms units<br>100..5000 - hundreds of ms (factory default is 100)<br><br>Note: The parameter is not saved in NVM.<br><br>Note: if parameter **<tout>** is omitted the behaviour of Set command is the same as Read command. |
| **AT#FTPTO?** | Read command returns the current FTP operations time-out, in the format:<br><br>**#FTPTO: <tout>** |
| **AT#FTPTO=?** | Test command returns the range of supported values for parameter **<tout>** |

### *3.6.5.2.2 #FTPOPEN - FTP Open*

| **#FTPOPEN - FTP Open** | |
|---|---|
| **AT#FTPOPEN=<server:port>,<username>,<password>,<mode>** | Execution command opens an FTP connection toward the FTP server.<br><br>Parameters:<br>**<server:port>** - string type, address and port of FTP server (factory default port 21).<br>**<username>** - string type, authentication user identification string for FTP.<br>**<password>** - string type, authentication password for FTP.<br>**<mode>**<br>0 - active mode (default)<br>1 - passive mode<br><br>Note: Before opening FTP connection the GPRS must been activated with **AT#GPRS=1** |

### *3.6.5.2.3 #FTPCLOSE - FTP Close*

| **#FTPCLOSE - FTP Close** | |
|---|---|
| **AT#FTPCLOSE** | Execution command closes an FTP connection. |
| **AT#FTPCLOSE?** | Read command behavior is the same as Execution command. |

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### 3.6.5.2.4 #FTPPUT - FTP Put

| #FTPPUT - FTP Put | |
|---|---|
| **AT#FTPPUT= <filename>** | Execution command, issued during an FTP connection, opens a data connection and starts sending **<filename>** file to the FTP server.<br><br>If the data connection succeeds, a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent.<br><br>Parameter:<br>**<filename>** - string type, name of the file.<br><br>Note: use the escape sequence **+++** to close the data connection.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

### 3.6.5.2.5 #FTPPUTPH - FTP Put Photo

| #FTPPUTPH - FTP Put Photo | |
|---|---|
| **AT#FTPPUTPH= <filename>** | Execution command, issued during an FTP connection, opens a data connection and starts sending to the FTP server the last photo taken issuing **AT#TPHOTO**.<br><br>Parameter:<br>**<filename>** - string type, name of the file on the FTP server side.<br><br>Note: the file transfer type has to be binary in order to send the photo the right way (see command **#FTPTYPE**).<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| Example | `at#gprs=1`<br>`+IP: ###.###.###.###`<br><br>`OK`<br>`at#camon`<br>`OK`<br>`at#tphoto`<br>`OK`<br>`at#ftpopen="xxx.xxx.xxx.xxx",<usern.>,<passw.>,0`<br>`OK`<br>`at#ftptype=0`<br>`OK`<br>`at#ftpputph="photo.jpg"` |

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| #FTPPUTPH - FTP Put Photo | |
|---|---|
| | OK<br>at#ftpclose<br>OK |

### 3.6.5.2.6 #FTPGET - FTP Get

| #FTPGET - FTP Get | |
|---|---|
| **AT#FTPGET= <filename>** | Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server.<br>If the data connection succeeds a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent.<br>The file is received on the serial port.<br><br>Parameter:<br>**<filename>** - file name, string type.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

### 3.6.5.2.7 #FTPTYPE - FTP Type

| #FTPTYPE - FTP Type | |
|---|---|
| **AT#FTPTYPE[= <type>]** | Set command, issued during an FTP connection, sets the file transfer type.<br><br>Parameter:<br>**<type>** - file transfer type:<br>0 - binary<br>1 - ascii<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.<br><br>Note: If the parameter is omitted then the behaviour of Set command is the same of Read command. |
| **#FTPTYPE?** | Read command returns the current file transfer type, in the format:<br><br>**#FTPTYPE: <type>** |
| **#FTPTYPE=?** | Test command returns the range of available values for parameter **<type>**:<br><br>**#FTPTYPE: (0,1)** |

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### 3.6.5.2.8 #FTPMSG - FTP Read Message

| #FTPMSG - FTP Read Message | |
|---|---|
| **AT#FTPMSG** | Execution command returns the last response from the server. |
| **AT#FTPMSG?** | Read command behaviour is the same as Execution command. |

### 3.6.5.2.9 #FTPDELE - FTP Delete

| #FTPDELE - FTP Delete | |
|---|---|
| **AT#FTPDELE= <filename>** | Execution command, issued during an FTP connection, deletes a file from the remote working directory.<br><br>Parameter:<br>**<filename>** - string type, it's the name of the file to delete.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

### 3.6.5.2.10 #FTPPWD - FTP Print Working Directory

| #FTPPWD - FTP Print Working Directory | |
|---|---|
| **AT#FTPPWD** | Execution command, issued during an FTP connection, shows the current working directory on FTP server.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

### 3.6.5.2.11 #FTPCWD - FTP Change Working Directory

| #FTPCWD - FTP Change Working Directory | |
|---|---|
| **AT#FTPCWD= <dirname>** | Execution command, issued during an FTP connection, changes the working directory on FTP server.<br><br>Parameter:<br>**<dirname>** - string type, it's the name of the new working directory.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |

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### *3.6.5.2.12 #FTPLIST - FTP List*

| **#FTPLIST - FTP List** | |
|---|---|
| **AT#FTPLIST[= <name>]** | Execution command, issued during an FTP connection, opens a data connection and starts getting from the server the list of contents of the specified directory or the properties of the specified file.<br><br>Parameter:<br>**<name>** - string type, it's the name of the directory or file.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.<br><br>Note: issuing **AT#FTPLIST<CR>** opens a data connection and starts getting from the server the list of contents of the working directory. |

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## 3.6.5.3 Enhanced Easy GPRS® Extension AT Commands

### *3.6.5.3.1 #USERID - Authentication User ID*

| **#USERID - Authentication User ID** | |
|---|---|
| **AT#USERID [=<user>]** | Set command sets the user identification string to be used during the authentication step.<br><br>Parameter:<br>**<user>** - string type, it's the authentication User Id; the max length for this value is the output of Test command, **AT#USERID=?** (factory default is the empty string "").<br><br>Note: If parameter is omitted then the behaviour of Set command is the same of Read command. |
| **AT#USERID?** | Read command reports the current user identification string, in the format:<br><br>**#USERID: <user>**. |
| **AT#USERID=?** | Test command returns the maximum allowed length of the string parameter **<user>**. |
| Example | `AT#USERID="myName"`<br>`OK`<br>`AT#USERID?`<br>`#USERID: "myName"`<br><br>`OK` |

### *3.6.5.3.2 #PASSW - Authentication Password*

| **#PASSW - Authentication Password** | |
|---|---|
| **AT#PASSW= <pwd>** | Set command sets the user password string to be used during the authentication step.<br><br>Parameter:<br>**<pwd>** - string type, it's the authentication password; the max length for this value is the output of Test command, **AT#PASSW=?** (factory default is the empty string "). |
| **AT#PASSW=?** | Test command returns the maximum allowed length of the string parameter **<pwd>**. |
| Example | `AT#PASSW="myPassword"`<br>`OK` |

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### 3.6.5.3.3 #PKTSZ - Packet Size

| #PKTSZ - Packet Size | |
|---|---|
| **AT#PKTSZ[=[<size>]]** | Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending.<br><br>Parameter:<br>**<size>** - packet size in bytes<br>0 - automatically chosen by the device<br>1..512 - packet size in bytes (factory default is 300)<br><br>Note: issuing **AT#PKTSZ<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#PKTSZ=<CR>** is the same as issuing the command **AT#PKTSZ=0<CR>**. |
| **AT#PKTSZ?** | Read command reports the current packet size value.<br><br>Note: after issuing command **AT#PKTSZ=0**, the Read command reports the value automatically chosen by the device. |
| **AT#PKTSZ=?** | Test command returns the allowed values for the parameter **<size>**. |
| Example | `AT#PKTSZ=100`<br>`OK`<br>`AT#PKTSZ?`<br>`#PKTSZ: 100`<br><br>`OK`<br>`AT#PKTSZ=0`<br>`OK`<br>`AT#PKTSZ?`<br>`#PKTSZ: 300  ->value automatically chosen by device`<br><br>`OK` |

### 3.6.5.3.4 #DSTO - Data Sending Time-Out

| #DSTO - Data Sending Time-Out | |
|---|---|
| **AT#DSTO[=[<tout>]]** | Set command sets the maximum time that the module awaits before sending anyway a packet whose size is less than the default one.<br><br>Parameter:<br>**<tout>** - packet sending time-out in 100ms units (factory default is 50)<br>0 - no time-out, wait forever for packets to be completed before send.<br>1..255 hundreds of ms<br><br>Note: In order to avoid low performance issues, it is suggested to set the data sending time-out to a value greater than 5. |

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| #DSTO - Data Sending Time-Out | |
|---|---|
| | Note: this time-out applies to data whose size is less than packet size and whose sending would have been delayed for an undefined time until new data to be sent had been received and full packet size reached.<br><br>Note: issuing **AT#DSTO<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#DSTO=<CR>** is the same as issuing the command **AT#DSTO=0<CR>**. |
| **AT#DSTO?** | Read command reports the current data sending time-out value. |
| **AT#DSTO=?** | Test command returns the allowed values for the parameter **<tout>**. |
| Example | `AT#DSTO=10  ->1 sec. time-out`<br>`OK`<br>`AT#DSTO?`<br>`#DSTO: 10`<br><br>`OK` |

### 3.6.5.3.5 #SKTTO - Socket Inactivity Time-Out

| #SKTTO - Socket Inactivity Time-Out | |
|---|---|
| **AT#SKTTO[=[<tout>]]** | Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket and deactivating the GPRS context.<br><br>Parameter:<br>**<tout>** - socket inactivity time-out in seconds units<br>0 - no timeout.<br>1..65535 - time-out in sec. units (factory default is 90).<br><br>Note: this time-out applies when no data is exchanged in the socket for a long time and therefore the socket connection has to be automatically closed and the GPRS context deactivated.<br><br>Note: issuing **AT#SKTTO<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT+#SKTTO=<CR>** is the same as issuing the command **AT+#SKTTO=0<CR>**. |
| **AT#SKTTO?** | Read command reports the current socket inactivity time-out value. |
| **AT#SKTTO=?** | Test command returns the allowed values for parameter **<tout>**. |
| Example | `AT#SKTTO=30  ->(30 sec. time-out)`<br>`OK`<br>`AT#SKTTO?`<br>`#SKTTO: 30` |

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| #SKTTO - Socket Inactivity Time-Out | |
|---|---|
| | OK |

### 3.6.5.3.6 #SKTSET - Socket Definition

| #SKTSET - Socket Definition | |
|---|---|
| **AT#SKTSET[=<br><socket type>,<br><remote port>,<br><remote addr>,<br>[<closure type>],<br>[<local port>]]** | Set command sets the socket parameters values.<br><br>Parameters:<br>**<socket type>** - socket protocol type<br>0 - TCP (factory default)<br>1 - UDP<br>**<remote port>** - remote host port to be opened<br>0..65535 - port number (factory default is 0)<br>**<remote addr>** - address of the remote host, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host name>**<br>(factory default is the empty string “”)<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br>**<local port>** - local host port to be used on UDP socket<br>0..65535 - port number<br><br>Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused.<br><br>Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused.<br><br>Note: The resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTSET** command, then error message will be issued.<br><br>Note: the DNS Query to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**)<br>- the GPRS coverage is enough to permit a connection.<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command. |
| **AT#SKTSET?** | Read command reports the socket parameters values, in the format:<br><br>**AT#SKTSET: <socket type>,<remote port>,<remote addr>,** |

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| #SKTSET - Socket Definition | |
|---|---|
| | **<closure type>,<local port>** |
| **AT#SKTSET=?** | Test command returns the allowed values for the parameters. |
| Example | `AT#SKTSET=0,1024,"123.255.020.001"`<br>`OK`<br>`AT#SKTSET=0,1024,"www.telit.net"`<br>`OK` |

### 3.6.5.3.7 #SKTOP - Socket Open

| #SKTOP - Socket Open | |
|---|---|
| **AT#SKTOP** | Execution command activates the context number 1, proceeds with the authentication with the user ID and password previously set by **#USERID** and **#PASSW** commands, and opens a socket connection with the host specified in the **#SKTSET** command. Eventually, before opening the socket connection, it issues automatically a DNS query to solve the IP address of the host name.<br><br>If the connection succeeds a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent. |
| **AT#SKTOP?** | Read command behaviour is the same as Execution command. |
| Example | `AT#SKTOP`<br>*`..GPRS context activation, authentication and socket open..`*<br>`CONNECT` |

### 3.6.5.3.8 #QDNS - Query DNS

| #QDNS - Query DNS | |
|---|---|
| **AT#QDNS=<br><host name>** | Execution command executes a DNS query to solve the host name into an IP address.<br><br>Parameter:<br>**<host name>** - host name, string type.<br><br>If the DNS query is successful then the IP address will be reported in the result code:<br><br>**#QDNS:"<host name>",<IP address>**<br><br>Note: the command has to activate the GPRS context if it was not previously activated. In this case the context is deactivated after the DNS query. |

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| #QDNS - Query DNS | |
|---|---|
| | Note: **<IP address>** is in the format: **xxx.xxx.xxx.xxx** |
| Note | This command requires that the authentication parameters are correctly set and that the GPRS network is present. |

### *3.6.5.3.9 #SKTCT - Socket TCP Connection Time-Out*

| #SKTCT - Socket TCP Connection Time-Out | |
|---|---|
| **AT#SKTCT[=<tout>]** | Set command sets the TCP connection time-out for the first **CONNECT** answer from the TCP peer to be received.<br><br>Parameter:<br>**<tout>** - TCP first **CONNECT** answer time-out in 100ms units<br>10..1200 - hundreds of ms (factory default value is 600).<br><br>Note: this time-out applies only to the time that the TCP stack waits for the **CONNECT** answer to its connection request.<br><br>Note: The time for activate the GPRS and resolving the name with the DNS query (if the peer was specified by name and not by address) is not counted in this timeout.<br><br>Note: if parameter is omitted then the behaviour of Set command is the same as Read command. |
| **AT#SKTCT?** | Read command reports the current TCP connection time-out. |
| **AT#SKTCT=?** | Test command returns the allowed values for parameter **<tout>**. |
| Example | `AT#SKTCT=600`<br>`OK`<br>*`socket first connection answer timeout has been set to 60 s.`* |

### *3.6.5.3.10 #SKTSAV - Socket Parameters Save*

| #SKTSAV - Socket Parameters Save | |
|---|---|
| **AT#SKTSAV** | Execution command saves the actual socket parameters in the NVM of the device.<br><br>The socket parameters to store are:<br>- User ID<br>- Password<br>- Packet Size<br>- Socket Inactivity Time-Out<br>- Data Sending Time-Out<br>- Socket Type (UDP/TCP) |

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| | |
|---|---|
| | - Remote Port<br>- Remote Address<br>- TCP Connection Time-Out |
| Example | AT#SKTSAV<br>OK<br>*socket parameters have been saved in NVM* |
| Note | If some parameters have not been previously specified then a default value will be stored. |

### 3.6.5.3.11 #SKTRST - Socket Parameters Reset

| **#SKTRST - Socket Parameters Reset** | |
|---|---|
| **AT#SKTRST** | Execution command resets the actual socket parameters in the NVM of the device to the default ones.<br><br>The socket parameters to reset are:<br>- User ID<br>- Password<br>- Packet Size<br>- Socket Inactivity Timeout<br>- Data Sending Timeout<br>- Socket Type<br>- Remote Port<br>- Remote Address<br>- TCP Connection Time-Out |
| Example | AT#SKTRST<br>OK<br>*socket parameters have been reset* |

### 3.6.5.3.12 #GPRS - GPRS Context Activation

| **#GPRS - GPRS Context Activation** | |
|---|---|
| **AT#GPRS[=[<mode>]]** | Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with **#PASSW** and **#USERID**.<br><br>Parameter:<br>**<mode>** - GPRS context activation mode<br>0 - GPRS context deactivation request<br>1 - GPRS context activation request<br><br>In the case that the GPRS context has been activated, the result code **OK** is preceded by the intermediate result code: |

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| | |
|---|---|
| | **+IP: <ip_address_obtained>**<br><br>reporting the local IP address obtained from the network.<br><br>Note: issuing **AT#GPRS<CR>** reports the current status of the GPRS context, in the format:<br><br>**#GPRS: <status>**<br><br>where:<br>**<status>**<br>0 - GPRS context deactivated<br>1 - GPRS context activated<br>2 - GPRS context activation pending.<br><br>Note: issuing **AT#GPRS=<CR>** is the same as issuing the command **AT#GPRS=0<CR>**. |
| **AT#GPRS?** | Read command has the same effect as the Execution command **AT#GPRS<CR>.** |
| **AT#GPRS=?** | Test command returns the allowed values for parameter **<mode>**. |
| Example | `AT#GPRS=1`<br>`+IP: 129.137.1.1`<br>`OK`<br>*`Now GPRS Context has been activated and our IP is 129.137.1.1`*<br><br>`AT#GPRS=0`<br>`OK`<br>*`Now GPRS context has been deactivated, IP is lost.`* |

### *3.6.5.3.13 #SKTD - Socket Dial*

| **#SKTD - Socket Dial** | |
|---|---|
| **AT#SKTD [=<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]** | Set command opens the socket towards the peer specified in the parameters.<br><br>Parameters:<br>**<socket type>** - socket protocol type<br>0 - TCP (factory default)<br>1 - UDP<br>**<remote port>** - remote host port to be opened<br>0..65535 - port number (factory default is 0)<br>**<remote addr>** - address of the remote host, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host** |

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| #SKTD - Socket Dial | |
|---|---|
| | **name>**<br>(factory default is the empty string “”)<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br>**<local port>** - local host port to be used on UDP socket<br>0..65535 - port number<br><br>Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused.<br><br>Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused.<br><br>Note: the resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTD** command, then an error message will be issued.<br><br>Note: the command to be successful requests that:<br>- the GPRS context 1 is correctly set with **AT+CGDCONT**<br>- the authentication parameters are set **(#USERID**, **#PASSW**) the GPRS coverage is enough to permit a connection<br>- the GPRS has been activated with **AT#GPRS=1**<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command. |
| **AT#SKTD?** | Read command reports the socket dial parameters values, in the format:<br><br>**AT#SKTD: <socket type>,<remote port>,<remote addr>,<br><closure type>,<local port>** |
| **AT#SKTD=?** | Test command returns the allowed values for the parameters. |
| Example | `AT#SKTD=0,1024,"123.255.020.001",255`<br>`CONNECT`<br><br>`AT#SKTD=1,1024,"123.255.020.001", ,1025`<br>`CONNECT`<br>*In this way my local port 1025 is opened to the remote port 1024*<br><br>`AT#SKTD=0,1024,"www.telit.net", 255`<br>`CONNECT` |
| Note | The main difference between this command and the **AT#SKTOP** is that this command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **AT#SKTD** is closed the context (and hence the local IP address) is maintained. |

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### *3.6.5.3.14 #SKTL - Socket Listen*

| **#SKTL - Socket Listen** | |
|---|---|
| **AT#SKTL [=<mode>, <socket type>, <input port>, [<closure type>]]** | Execution command opens/closes the socket listening for connection requests.<br><br>Parameters:<br>**<mode>** - socket mode<br>0 - closes socket listening<br>1 - starts socket listening<br>**<socket type>** - socket protocol type<br>0 - TCP<br>**<input port>** - local host input port to be listened<br>0..65535 - port number<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br><br>Command returns the **OK** result code if successful.<br><br>Note: the command to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**)<br>- the GPRS coverage is enough to permit a connection<br>- the GPRS has been activated with **AT#GPRS=1**<br><br>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command **#FRWL**), an unsolicited code is reported:<br><br>**+CONN FROM: <remote addr>**<br><br>Where:<br>**<remote addr>** - host address of the remote machine that contacted the device.<br><br>When the connection is established the **CONNECT** indication is given and the modem goes into data transfer mode.<br><br>On connection close or when context is closed with **#GPRS=0** the socket is closed and no listen is anymore active.<br><br>If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported:<br><br>**#SKTL: ABORTED** |

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| #SKTL - Socket Listen | |
|---|---|
| | Note: if all parameters are omitted the command returns the current socket listening **status** and the last settings of parameters **<input port>** and **<closure type>**, in the format:<br><br>**#SKTL: <status>,<input port>,<closure type>**<br>where<br>**<status>** - socket listening status<br>0 - socket not listening<br>1 - socket listening |
| **AT#SKTL?** | Read command has the same effect as Execution command when parameters are omitted. |
| **AT#SKTL=?** | Test command returns the allowed values for parameters **<mode>**, **<input port>** and **<closure type>**. |
| Example | *Activate GPRS*<br>AT#GPRS=1<br>+IP: ###.###.###.###<br><br>OK<br>*Start listening*<br>AT#SKTL=1,0,1024<br>OK<br>or<br>AT#SKTL=1,0,1024,255<br>OK<br><br>*Receive connection requests*<br>+CONN FROM: 192.164.2.1<br>CONNECT<br><br>*exchange data with the remote host*<br><br>*send escape sequence*<br>+++<br>NO CARRIER<br>*Now listen is not anymore active*<br><br>*to stop listening*<br>AT#SKTL=0,0,1024, 255<br>OK |
| Note | The main difference between this command and the **#SKTD** is that **#SKTL** does not contact any peer, nor does any interaction with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **#SKTL** is closed the context (and hence the local IP address) is maintained.<br><br>The improving command **@SKTL** has been defined. |

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### 3.6.5.3.15 @SKTL - Socket Listen

| @SKTL - Socket Listen | |
|---|---|
| **AT@SKTL [=<mode>, <socket type>, <input port>, [<closure type>]]** | Execution command opens/closes the socket listening for connection requests.<br><br>Parameters:<br>**<mode>** - socket mode<br>0 - closes socket listening<br>1 - starts socket listening<br>**<socket type>** - socket protocol type<br>0 - TCP<br>**<input port>** - local host input port to be listened<br>0..65535 - port number<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br><br>Command returns the **OK** result code if successful.<br><br>Note: the command to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**)<br>- the GPRS coverage is enough to permit a connection<br>- the GPRS has been activated with **AT#GPRS=1**<br><br>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command **#FRWL**), an unsolicited code is reported:<br><br>**+CONN FROM: <remote addr>**<br><br>Where:<br>**<remote addr>** - host address of the remote machine that contacted the device.<br><br>When the connection is established the **CONNECT** indication is given and the modem goes into data transfer mode.<br><br>On connection close or when context is closed with **#GPRS=0** the socket is closed and no listen is anymore active.<br><br>If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported:<br><br>**@SKTL: ABORTED** |

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| **@SKTL - Socket Listen** | |
|---|---|
| | Note: if all parameters are omitted the command returns the current socket listening **status** and the last settings of parameters **<socket type>**, **<input port>** and **<closure type>**, in the format:<br><br>**@SKTL: <status>,<socket type>,<input port>,<closure type>**<br>Where<br>**<status>** - socket listening status<br>0 - socket not listening<br>1 - socket listening |
| **AT@SKTL?** | Read command has the same effect as Execution command when parameters are omitted. |
| **AT@SKTL=?** | Test command returns the allowed values for parameters **<mode>**, **<socket type>**, **<input port>** and **<closure type>**. |
| Example | *Activate GPRS*<br>AT#GPRS=1<br>+IP: ###.###.###.###<br><br>OK<br>*Start listening*<br>AT@SKTL=1,0,1024<br>OK<br>or<br>AT@SKTL=1,0,1024,255<br>OK<br><br>*Receive connection requests*<br>+CONN FROM: 192.164.2.1<br>CONNECT<br><br>*exchange data with the remote host*<br><br>*send escape sequence*<br>+++<br>NO CARRIER<br>*Now listen is not anymore active*<br><br>*to stop listening*<br>AT@SKTL=0,0,1024, 255<br>OK |
| Note | The main difference between this command and the **#SKTD** is that **@SKTL** does not contact any peer, nor does any interaction with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **@SKTL** is closed the context (and hence the local IP address) is maintained. |

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### 3.6.5.3.16 #E2SLRI - Socket Listen Ring Indicator

| **#E2SLRI - Socket Listen Ring Indicator** | |
|---|---|
| **AT#E2SLRI=[<n>]** | Set command enables/disables the Ring Indicator pin response to a Socket Listen connect and, if enabled, the duration of the negative going pulse generated on receipt of connect.<br><br>Parameter:<br>**<n>** - RI enabling<br>0 - RI disabled for Socket Listen connect (factory default)<br>50..1150 - RI enabled for Socket Listen connect; a negative going pulse is generated on receipt of connect and **<n>** is the duration in ms of this pulse. |
| **AT#E2SLRI?** | Read command reports whether the Ring Indicator pin response to a Socket Listen connect is currently enabled or not, in the format:<br><br>**#E2SLRI: <n>** |
| **AT#E2SLRI=?** | Test command returns the allowed values for parameter **<status>.** |

### 3.6.5.3.17 #FRWL - Firewall Setup

| **#FRWL - Firewall Setup** | |
|---|---|
| **AT#FRWL[=<action>,<ip_addr>,<net_mask>]** | Execution command controls the internal firewall settings.<br><br>Parameters:<br>**<action>** - command action<br>0 - remove selected chain<br>1 - add an **ACCEPT** chain<br>2 - remove all chains (**DROP** everything); **<ip_addr>** and **<net_mask>** has no meaning in this case.<br>**<ip_addr>** - remote address to be added into the **ACCEPT** chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx<br>**<net_mask>** - mask to be applied on the **<ip_addr>**; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx<br><br>Command returns **OK** result code if successful.<br><br>Note: the firewall applies for incoming (listening) connections only.<br><br>Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded.<br><br>When a packet comes from the IP address **incoming_IP**, the firewall chain rules will be scanned for matching with the following criteria:<br><br>**incoming_IP & <net_mask> = <ip_addr> & <net_mask>** |

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| #FRWL - Firewall Setup | |
|---|---|
| | If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.<br><br>Note: If all parameters are omitted the command reports the list of all **ACCEPT** chain rules registered in the Firewall settings in the format:<br>**#FRWL: <ip_addr>,<net_mask>**<br>**#FRWL: <ip_addr>,<net_mask>**<br>**....**<br>**OK** |
| **AT#FRWL?** | Read command has the same effect as Execution command when parameters are omitted. |
| **AT#FRWL=?** | Test command returns the allowed values for parameter **<action>.** |
| Example | *Let assume we want to accept connections only from our devices which are on the IP addresses ranging from 197.158.1.1 to 197.158.255.255*<br><br>*We need to add the following chain to the firewall:*<br>AT#FRWL=1,"197.158.1.1","255.255.0.0"<br>OK |
| Note | For outgoing connections made with **#SKTOP** and **#SKTD** the remote host is dynamically inserted into the **ACCEPT** chain for all the connection duration. Therefore the **#FRWL** command shall be used only for defining either the **#SKTL** or the **@SKTL** behaviour, deciding which hosts are allowed to connect to the local device.<br><br>Rules are not saved in NVM, at start-up the rules list will be empty. |

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## 3.6.5.4 Easy Camera® Management AT Commands

### *3.6.5.4.1 #CAMON - Camera ON*

| **#CAMON - Camera ON** | |
|---|---|
| **AT#CAMON** | Execution command turns the Camera **ON**. |
| **AT#CAMON?** | Read command has the same behaviour as Execution command |
| Example | `AT#CAMON`<br>`OK`<br>*`camera is now powered up`* |

### *3.6.5.4.2 #CAMOFF - Camera OFF*

| **#CAMOFF - Camera OFF** | |
|---|---|
| **AT#CAMOFF** | Execution command turns the Camera **OFF**.<br><br>Note: for the GPS product (GE863-GPS): if the camera is turned off while GPS or VAUX pin is enabled they'll both also be powered off. |
| **AT#CAMOFF?** | Read command has the same behaviour as Execution command |
| Example | `AT#CAMOFF`<br>`OK`<br>*`camera is now powered down`* |

### *3.6.5.4.3 #CAMEN - Camera ON/OFF*

| **#CAMEN - Camera ON/OFF** | |
|---|---|
| **AT#CAMEN[= <status>]** | Execution command turns camera **ON/OFF**.<br><br>Parameter:<br>**<status>** - camera status<br>0 - turns camera **OFF**<br>1 - turns camera **ON**<br><br>Note: if parameter **<status>** is omitted the Set command is the same as the Read command.<br><br>Note: for the GPS product (GE863-GPS): if the camera is turned off while GPS or VAUX pin is enabled they'll both also be powered off. |
| **AT#CAMEN?** | Read command reports the current camera status and, if the camera is **ON**, the current camera model, in the format:<br><br>**#CAMEN: 0** *if camera is **OFF***<br><br>**#CAMEN: 1,<cam>** *if camera is **ON*** |

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| | |
|---|---|
| | Where:<br>**<cam>** - camera model<br>2 - TRANSCHIP camera |
| **AT#CAMEN=?** | Test command returns the allowed values for parameter **<status>.** |

### 3.6.5.4.4 #SELCAM - Camera Model

| **#SELCAM - Camera Model** | |
|---|---|
| **AT#SELCAM[=[<cam>]]** | Set command selects current camera model<br><br>Parameter:<br>**<cam>** - camera model<br>0 - automatic detection (factory default)<br>2 - TRANSCHIP camera<br>3 - reserved for future use<br>4 - reserved for future use<br>5 - reserved for future use<br><br>Note: issuing **AT#SELCAM<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#SELCAM=<CR>** is the same as issuing the command **AT#SELCAM=0<CR>** |
| **AT#SELCAM?** | Read command reports the current camera model in the format:<br>**#SELCAM: <cam>** |
| **AT#SELCAM=?** | Test command returns the allowed values for parameter **<cam>** |

### 3.6.5.4.5 #CAMRES - Camera Resolution

| **#CAMRES - Camera Resolution** | |
|---|---|
| **AT#CAMRES[=[<res>]]** | Set command sets current camera resolution<br><br>Parameter:<br>**<res>** - camera resolution<br>0 - VGA photo output,640x480 (factory default)<br>1 - QVGA photo output, 320x240<br>2 - QQVGA photo output, 160x120<br>3 - reserved for future use<br>4 - reserved for future use<br><br>Note: issuing **AT#CAMRES<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMRES=<CR>** is the same as issuing the command |

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| | |
|---|---|
| | **AT#CAMRES=0<CR>**. |
| **AT#CAMRES?** | Read command reports the current value of the parameter **<res>** in format:<br><br>**#CAMRES:<res>** |
| **AT#CAMRES=?** | Test command returns the allowed values for parameter **<res>**. |

### *3.6.5.4.6 #CAMCOL - Camera Colour Mode*

| **#CAMCOL - Camera Colour Mode** | |
|---|---|
| **AT#CAMCOL[=[<col>]]** | Set command sets current colour mode<br><br>Parameter:<br>**<col>** - camera colour mode<br>0 - colour mode (factory default)<br>1 - Black&White mode<br><br>Note: issuing **AT#CAMCOL<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMCOL=<CR>** is the same as issuing the command **AT#CAMCOL=0<CR>**. |
| **AT#CAMCOL?** | Read command reports the current colour mode, in the format:<br><br>**#CAMCOL: <col>**. |
| **AT#CAMCOL=?** | Test command returns the allowed values for parameter **<col>**. |

### *3.6.5.4.7 #CAMQUA - Camera Photo Quality*

| **#CAMQUA - Camera Photo Quality** | |
|---|---|
| **AT#CAMQUA[=[<qual>]]** | Set command sets the quality of the photo.<br><br>Parameter:<br>**<qual>** - photo quality<br>0 - low quality of picture, high Jpeg compression<br>1 - medium quality of picture, medium Jpeg compression<br>2 - high quality of picture, low Jpeg compression (factory default)<br><br>Note: increasing the photo quality increases its size.<br><br>Note: issuing **AT#CAMQUA<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMQUA=<CR>** is the same as issuing the command **AT#CAMQUA=0<CR>**. |

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| | |
|---|---|
| **AT#CAMQUA?** | Read command reports the current photo quality, in the format:<br><br>**#CAMQUA: <qual>** |
| **AT#CAMQUA=?** | Test command returns the allowed values for parameter **<qual>**. |

### *3.6.5.4.8 #CMODE - Camera Exposure*

| **#CMODE - Camera Exposure** | |
|---|---|
| **AT#CMODE[=[<exp>]]** | Set command sets the camera exposure.<br><br>Parameter:<br>**<exp>** - camera exposure<br>0 - daylight mode, short exposure (factory default)<br>1 - nightlight mode, long exposure<br><br>Note: issuing **AT#CMODE<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CMODE=<CR>** is the same as issuing the command **AT#CMODE=0<CR>** |
| **AT#CMODE?** | Read command reports the current camera exposure in the format:<br><br>**#CMODE: <exp>** |
| **AT#CMODE=?** | Test command returns the allowed values for parameter **<exp>**. |

### *3.6.5.4.9 #CAMZOOM - Camera Zoom*

| **#CAMZOOM - Camera Zoom** | |
|---|---|
| **AT#CAMZOOM[=[<zoom>]]** | Set command sets current zoom.<br><br>Parameter:<br>**<zoom>** - camera zoom<br>0 - no zoom, x1 (factory default)<br>1 - zoom, x2<br>2 - zoom, x4<br>3 - reserved for future use<br><br>Note: issuing **AT#CAMZOOM<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMZOOM=<CR>** is the same as issuing the command **AT#CAMZOOM=0<CR>**. |
| **AT#CAMZOOM?** | Read command reports the current zoom setting, in the format:<br><br>**#CAMZOOM: <zoom>** |

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| #CAMZOOM - Camera Zoom | |
|---|---|
| **AT#CAMZOOM=?** | Test command returns the allowed values for parameter **<zoom>**. |

### 3.6.5.4.10 #CAMTXT - Camera Time/Date Overprint

| #CAMTXT - Camera Time/Date Overprint | |
|---|---|
| **AT#CAMTXT[=[<ov>]]** | Set command sets time/date overprinting.<br><br>Parameter:<br>**<ov>** - time/date overprinting mode<br>0 - no overprinting (factory default)<br>1 - time info printed at the bottom of picture<br>2 - date info printed at the bottom of picture<br>3 - time&date info printed at the bottom of picture<br>4 - reserved for future use<br><br>Note: issuing **AT#CAMTXT<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CAMTXT=<CR>** is the same as issuing the command **AT#CAMTXT=0<CR>**. |
| **AT#CAMTXT?** | Read command reports the current time/date overprinting mode, in the format:<br><br>**#CAMTXT: <ov>** |
| **AT#CAMTXT=?** | Test command returns the allowed values for parameter **<ov>**. |

### 3.6.5.4.11 #TPHOTO - Camera Take Photo

| #TPHOTO - Camera Take Photo | |
|---|---|
| **AT#TPHOTO** | Execution command is used to take the photo and to store it in the MODULE memory.<br><br>Note: the photo is stored in the MODULE RAM memory, therefore after a power off it is lost.<br><br>Note: there's only 1 position for the photo, every photo will overwrite the previous. |
| **AT#TPHOTO?** | Read command has the same behaviour as Execution command |
| Example | AT#TPHOTO<br>OK<br>*the camera has taken the photo and it is now stored on the MODULE memory* |
| Note | The photo is taken during IDLE time, if the mobile is busy on network |

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| #TPHOTO - Camera Take Photo | |
|---|---|
| | operations, (e.g. during a call) the photo cannot be taken. |

### 3.6.5.4.12 #RPHOTO - Camera Read Photo

| #RPHOTO - Camera Read Photo | |
|---|---|
| **AT#RPHOTO** | Execution command is used to flushing the photo stored in the MODULE RAM memory to the serial line, ending it with the sequence:<br><br>**<CR><LF>OK<CR><LF>** |
| **AT#RPHOTO?** | Read command has the same behaviour as Execution command |
| Example | AT#RPHOTO<br>xxxxxxxxxxxx *(binary digits of the JPEG image)*<br><cr><lf>OK<cr><lf><br>*the photo has been flushed to the serial line* |
| Note | The photo is flushed as hexadecimal characters in the format selected.<br>The baudrate is fixed at 115200, using hardware flow control. |

### 3.6.5.4.13 #OBJL - Object List

| #OBJL- Object List Command | |
|---|---|
| **AT#OBJL[=<obj>]** | Execution command reports the list of the objects stored in the MODULE memory.<br><br>Parameter:<br>**<obj>** - type of objects to be listed, string type.<br>"IMG" - image object.<br><br>Note: the behaviour of the command doesn't change even if the **<obj>** parameter is omitted<br><br>The output format is:<br><br>**#OBJL: <filename>,<size>**<br><br>where:<br>**<filename>** - name of the object; it is always "Snapshot"<br>**<size>** - size of the object in bytes |
| **AT#OBJL?** | Read command has the same behaviour as Execution command |
| **AT#OBJL=?** | Test command has the same behaviour as Execution command |
| Example | AT#OBJL="IMG"<br>#OBJL: Snapshot,47224<br><br>OK |

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### 3.6.5.4.14 #OBJR - Object Read

| #OBJR - Object Read | |
|---|---|
| **AT#OBJR=<obj>, "Snapshot"** | Execution command is used to flushing the photo stored in the MODULE RAM memory to the serial line.<br><br>The difference between this command and **#RPHOTO** is that **#OBJR** output ends without the sequence:<br><br>**<CR><LF>OK<CR><LF>**<br><br>Parameter:<br>**<obj>** - type of objects to be listed, string type<br>"IMG" - Image object<br><br>Note: **"Snapshot"** is the only name of the object. |
| Example | `AT#OBJR="IMG","Snapshot"`<br>`xxxxxxxxxxxx` *binary digits of the JPEG image*<br>*… the photo has been flushed to the serial line.* |
| Note | The photo is flushed as hexadecimal characters in the format selected. The baudrate is fixed at 115200, using hardware flow control. |

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## 3.6.5.5 E-mail Management AT Commands

### *3.6.5.5.1 #ESMTP - E-mail SMTP Server*

| **#ESMTP - E-mail SMTP Server** | |
|---|---|
| **AT#ESMTP [=<smtp>]** | Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name.<br><br>Parameter:<br>**<smtp>** - SMTP server address, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host name>**<br>(factory default is the empty string “”)<br><br>Note: the max length for **<smtp>** is the output of Test command.<br><br>Note: If parameter is omitted then the behaviour of Set command is the same of Read command |
| **AT#ESMTP?** | Read Command reports the current SMTP server address, in the format:<br><br>**#ESMTP: <smtp>** |
| **AT#ESMTP=?** | Test command returns the max length for the parameter **<smtp>.** |
| Example | `AT#ESMTP="smtp.mydomain.com"`<br>`OK` |
| Note | The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the email. |

### *3.6.5.5.2 #EADDR - E-mail Sender Address*

| **#EADDR – E-mail Sender Address** | |
|---|---|
| **AT#EADDR [=<e-addr>]** | Set command sets the sender address string to be used for sending the e-mail.<br><br>Parameter:<br>**<e-addr>** - sender address, string type.<br>- any string value up to max length reported in the Test command.<br>(factory default is the empty string “”)<br><br>Note: If parameter is omitted then the behaviour of Set command is the same of Read command |
| **AT#EADDR?** | Read command reports the current sender address, in the format:<br><br>**#EADDR: <e-addr>** |

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| #EADDR – E-mail Sender Address | |
|---|---|
| **AT#EADDR=?** | Test command returns the maximum allowed length of the string parameter **<e-addr>.** |
| Example | `AT#EADDR="me@email.box.com"`<br>`OK`<br>`AT#EADDR?`<br>`#EADDR: "me@email.box.com"`<br><br>`OK` |

### *3.6.5.5.3 #EUSER - E-mail Authentication User Name*

| #EUSER - E-mail Authentication User Name | |
|---|---|
| **AT#EUSER [=<e-user>]** | Set command sets the user identification string to be used during the authentication step of the SMTP.<br><br>Parameter:<br>**<e-user>** - email authentication User ID, string type.<br>- any string value up to max length reported in the Test command. (factory default is the empty string “”)<br><br>Note: if no authentication is required then the **<e-user>** parameter shall be empty "".<br><br>Note: If parameter is omitted then the behaviour of Set command is the same of Read command |
| **AT#EUSER?** | Read command reports the current user identification string, in the format:<br><br>**#EUSER: <e-user>** |
| **AT#EUSER=?** | Test command returns the maximum allowed length of the string parameter **<e-user>**. |
| Example | `AT#EUSER="myE-Name"`<br>`OK`<br>`AT#EUSER?`<br>`#EUSER: "myE-Name"`<br><br>`OK` |
| Note | It is a different user field than the one used for GPRS authentication (see **#USERID**). |

### *3.6.5.5.4 #EPASSW - E-mail Authentication Password*

| #EPASSW - E-mail Authentication Password | |
|---|---|
| **AT#EPASSW=** | Set command sets the password string to be used during the authentication |

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| #EPASSW - E-mail Authentication Password | |
|---|---|
| **<e-pwd>** | step of the SMTP.<br><br>Parameter:<br>**<e-pwd>** - email authentication password, string type.<br>- any string value up to max length reported in the Test command. (factory default is the empty string “”)<br><br>Note: if no authentication is required then the **<e-pwd>** parameter shall be empty "". |
| **AT#EPASSW=?** | Test command returns the maximum allowed length of the string parameter **<e-pwd>**. |
| Example | `AT#USERID="myPassword"`<br>`OK` |
| Note | It is a different password field than the one used for GPRS authentication (see **#PASSW**). |

### *3.6.5.5.5 #SEMAIL - E-mail Sending With GPRS Context Activation*

| #SEMAIL - E-mail Sending With GPRS Context Activation | |
|---|---|
| **AT#SEMAIL= <da>,<subj>, <att>[,<filename>]** | Execution command activates a GPRS context, if not previously activated by **#EMAILACT**, and sends an e-mail message. The GPRS context is deactivated when the e-mail is sent.<br><br>Parameters:<br>**<da>** - destination address, string type.<br>**<subj>** - subject of the message, string type.<br>**<att>** - attached image flag<br>0 - don't attach any image<br>1 - attach the last snapshot taken<br>**<filename>** - image name (default is “snapshot.jpg”)<br><br>The device responds to the command with the prompt '**>**' and awaits for the message body text.<br><br>To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex).<br><br>If e-mail message is successfully sent, then the response is **OK**.<br>If message sending fails for some reason, an error code is reported<br><br>Note: Care must be taken to ensure that during the command execution, no other commands are issued.<br><br>To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands. |

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| #SEMAIL - E-mail Sending With GPRS Context Activation | |
|---|---|
| | Note: if GPRS context was previously activated by **#GPRS** it's not possible to successfully send the e-mail message and the response is the result code **activation failed**.<br><br>Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute. |
| Example | `AT#SEMAIL="me@myaddress.com","subject of the mail",1`<br>`>message body… this is the text of the mail message…`<br>`CTRL-Z`<br><br>*`..wait..`*<br>`OK`<br><br>*`Message has been sent.`* |

### 3.6.5.5.6 #EMAILACT - E-mail GPRS Context Activation

| #EMAILACT - E-mail GPRS Context Ativation | |
|---|---|
| **AT#EMAILACT[=[<mode>]]** | Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with **#PASSW** and **#USERID**.<br><br>Parameter:<br>**<mode>** - GPRS context activation mode<br>0 - GPRS context deactivation request<br>1 - GPRS context activation request<br><br>Note: issuing **AT#EMAILACT<CR>** reports the current status of the GPRS context for the e-mail, in the format:<br><br>**#EMAILACT: <status>**<br><br>where:<br>**<status>**<br>0 - GPRS context deactivated<br>1 - GPRS context activated<br><br>Note: issuing **AT#EMAILACT=<CR>** is the same as issuing the command **AT#EMAILACT=0<CR>**. |
| **AT#EMAILACT?** | Read command has the same effect of the Execution command **AT#EMAILACT<CR>**. |
| **AT#EMAILACT=?** | Test command returns the allowed values for parameter **<mode>**. |
| Example | `AT#EMAILACT=1`<br>`OK` |

| #EMAILACT - E-mail GPRS Context Ativation | |
|---|---|
| | *Now GPRS Context has been activated*<br><br>AT# EMAILACT=0<br>OK<br>*Now GPRS context has been deactivated.* |

### 3.6.5.5.7 #EMAILD - E-mail Sending

| #EMAILD - E-mail Sending | |
|---|---|
| **AT#EMAILD= <da>,<subj>, <att>[,<filename>]** | Execution command sends an e-mail message if GPRS context has already been activated with **AT#EMAILACT=1**.<br><br>Parameters:<br>**<da>** - destination address, string type.<br>**<subj>** - subject of the message, string type<br>**<att>** - attached image flag<br>0 - don't attach any image<br>1 - attach the last snapshot taken<br>**<filename>** - image name (default is “snapshot.jpg”)<br><br>The device responds to the command with the prompt '**>**' and awaits for the message body text.<br><br>To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex).<br><br>If e-mail message is successfully sent, then the response is **OK**.<br>If message sending fails for some reason, an error code is reported<br><br>Note: Care must be taken to ensure that during the command execution, no other commands are issued.<br><br>To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands.<br><br>Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute. |
| Example | AT#EMAILD=”me@myaddress.com”,”subject of the mail”,1<br>>message body… this is the text of the mail message…<br>CTRL-Z<br><br>*..wait..*<br>OK<br>*Message has been sent.* |
| Note | The only difference between this command and the **#SEMAIL** is that this |

| #EMAILD - E-mail Sending | |
|---|---|
| | command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the **#EMAILACT** setting, thus, when the connection made with **#EMAILD** is closed, the context status is maintained. |

### *3.6.5.5.8 #ESAV - Email Parameters Save*

| #ESAV - Email Parameters Save | |
|---|---|
| **AT#ESAV** | Execution command saves the actual e-mail parameters in the NVM of the device.<br><br>The values stored are:<br>- E-mail User Name<br>- E-mail Password<br>- E-mail Sender Address<br>- E-mail SMTP server |
| Note | If some parameters have not been previously specified then a default value will be taken. |

### *3.6.5.5.9 #ERST - E-mail Parameters Reset*

| #ERST - E-mail Parameters Reset | |
|---|---|
| **AT#ERST** | Execution command resets the actual e-mail parameters in the NVM of the device to the default ones.<br><br>The values reset are:<br>- E-mail User Name<br>- E-mail Password<br>- E-mail Sender Address<br>- E-mail SMTP server |

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## 3.6.5.6 Easy Scan® Extension AT Commands

### *3.6.5.6.1 #CSURV - Network Survey*

| **#CSURV - Network Survey** | |
|---|---|
| **AT#CSURV [=<s>,<e>]**<br><br>**AT*CSURV [=<s>,<e>]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through channels belonging to the band selected by last **#BND** command issue, starting from channel **<s>** to channel **<e>**. If parameters are omitted, a full band scan is performed.<br><br>Parameters:<br>**<s>** - starting channel<br>**<e>** - ending channel<br><br>After issuing the command the device responds with the string:<br><br>**Network survey started…**<br><br>and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:<br><br>**(For BCCH-Carrier)**<br>**arfcn: <arfcn> bsic: <bsic> rxLev: <rxLev> ber: <ber> mcc: <mcc> mnc: <mnc> lac: <lac> cellId: <cellId> cellStatus: <cellStatus> numArfcn: <numArfcn> arfcn: [<arfcn1> ..[ <arfcn64>]] [numChannels: <numChannels> array: [<ba1> ..[<ba32>]] [pbcch: <pbcch> [nom: <nom> rac: <rac> spgc: <spgc> pat: <pat> nco: <nco> t3168: <t3168> t3192: <t3192> drxmax: <drxmax> ctrlAck: <ctrlAck> bsCVmax: <bsCVmax> alpha: <alpha> pcMeasCh: <pcMeasCh>]]]**<br>**<CR><LF><CR><LF><CR><LF>**<br>where:<br>**<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel)<br>**<bsic>** - base station identification code<br>**<rxLev>** - receiption level (in dBm)<br>**<ber>** - bit error rate (in %)<br>**<mcc>** - mobile country code<br>**<mnc>** - mobile network code<br>**<lac>** - location area code<br>**<cellId>** - cell identifier<br>**<cellStatus>** - cell status<br>..CELL_SUITABLE - C0 is a suitable cell.<br>CELL_LOW_PRIORITY - the cell is low priority based on the received system information.<br>CELL_FORBIDDEN - the cell is forbidden.<br>CELL_BARRED - the cell is barred based on the received system information. |

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| #CSURV - Network Survey | |
|---|---|
| | CELL_LOW_LEVEL - the cell **<rxLev>** is low.<br>CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available…etc.<br>**<numArfcn>** - number of valid channels in the Cell Channel Description<br>**<arfcn*n*>** - arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)<br>**<numChannels>** - number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting:<br>3. if **#CSURVEXT=0** this information is displayed only for serving cell<br>4. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier.<br>**<ba*n*>** - arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting:<br>3. if **#CSURVEXT=0** this information is displayed only for serving cell<br>4. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier.<br>5.<br>*(The following informations will be printed only if GPRS is supported in the cell)*<br>**<pbcch> -**<br>0<br>1<br>**<nom**> - network operation mode<br>1<br>2<br>3<br>**<rac**> - routing area code<br>0..255 -<br>**<spgc**> - SPLIT_PG_CYCLE support<br>..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell<br>..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell<br>**<pat>** - priority access threshold<br>0 -<br>3..6 -<br>**<nco>** - network control order<br>0..2 -<br>**<t3168>** - timer 3168<br>**<t3192>** - timer 3192<br>**<drxmax>** - discontinuous reception max time (in seconds)<br>**<ctrlAck>** - packed control ack<br>**<bsCVmax> -** blocked sequenc countdown max value<br>**<alpha> -** alpha parameter for power control |

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| #CSURV - Network Survey | |
|---|---|
| | **<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control<br>0 - BCCH<br>1 - PDCH<br>**(For non BCCH-Carrier)**<br>**arfcn: <arfcn> rxLev: <rxLev>**<br><br>where:<br>**<arfcn>** - decimal number; it is the RF channel<br>**<rxLev>** - decimal number; it is the receiption level (in dBm)<br><br>The last string received from **#CSURV** depends on the last **#CSURVF** setting:<br><br>if **#CSURVF=0** or **#CSURVF=1**<br>the output ends with the string:<br>**Network survey ended**<br><br>if **#CSURVF=2**<br>the output ends with the string:<br>**Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)**<br>where<br>**<NoARFCN>** - number of scanned frequencies<br>**<NoBCCH>** - number of found BCCh |
| **AT#CSURV?**<br><br>**AT*CSURV?** | Read command has the same behaviour as Execution command with parameters omitted. |
| Example | AT#CSURV<br><br>`Network survey started…`<br><br>`arfcn: 48 bsic: 24 rxLev: -52 ber: 0.00 mcc: 610 mnc: 1 lac: 33281 cellId: 3648 cellStatus: CELL_SUITABLE numArfcn: 2 arfcn: 30 48 numChannels: 5 array: 14 19 22 48 82`<br><br>`arfcn: 14 rxLev: 8`<br><br>`Network survey ended`<br><br>`OK` |
| Note | The command is executed within max. 2 minutes. |

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### 3.6.5.6.2 #CSURVC - Network Survey (Numeric Format)

| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| **AT#CSURVC [=<s>,<e>]**<br><br>**AT*CSURVC [=<s>,<e>]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through channels belonging to the band selected by last **#BND** command issue, starting from channel **<s>** to channel **<e>**. If parameters are omitted, a full band scan is performed.<br><br>Parameters:<br>**<s>** - starting channel<br>**<e>** - ending channel<br><br>After issuing the command the device responds with the string:<br><br>**Network survey started…**<br><br>and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:<br><br>**(For BCCH-Carrier)**<br>**<arfcn>,<bsic>,<rxLev>,<ber>,<mcc>,<mnc>,<lac>,<cellId>, <cellStatus>,<numArfcn>[,<arfcn1> ..[ <arfcn64>]] [,<numChannels>[,<ba1> ..[<ba32>]] [<pbcch> [<nom> <rac> <spgc> <pat> <nco> <t3168> <t3192> <drxmax> <ctrlAck> <bsCVmax> <alpha> <pcMeasCh>]]]**<br>**<CR><LF><CR><LF><CR><LF>**<br><br>where:<br>**<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel)<br>**<bsic>** - base station identification code<br>**<rxLev>** - receiption level (in dBm)<br>**<ber>** - bit error rate (in %)<br>**<mcc>** - mobile country code<br>**<mnc>** - mobile network code<br>**<lac>** - location area code<br>**<cellId>** - cell identifier<br>**<cellStatus>** - cell status<br>..0 - C0 is a suitable cell (CELL_SUITABLE).<br>1 - the cell is low priority based on the received system information (CELL_LOW_PRIORITY).<br>2 - the cell is forbidden (CELL_FORBIDDEN).<br>3 - the cell is barred based on the received system information (CELL_BARRED).<br>4 - the cell **<rxLev>** is low (CELL_LOW_LEVEL).<br>5 - none of the above e.g. exclusion timer running, no BCCH available…etc.. (CELL_OTHER).<br>**<numArfcn>** - number of valid channels in the Cell Channel Description |

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| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| | **<arfcn*n*>** - arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)<br>**<numChannels>** - number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting:<br>5. if **#CSURVEXT=0** this information is displayed only for serving cell<br>6. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier.<br>**<ba*n*>** - arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting:<br>6. if **#CSURVEXT=0** this information is displayed only for serving cell<br>7. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier.<br>*(The following informations will be printed only if GPRS is supported in the cell)*<br>**<pbcch> -**<br>0<br>1<br>**<nom>** - network operation mode<br>1<br>2<br>3<br>**<rac>** - routing area code<br>0..255 -<br>**<spgc>** - SPLIT_PG_CYCLE support<br>..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell<br>..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell<br>**<pat>** - priority access threshold<br>0 -<br>3..6 -<br>**<nco>** - network control order<br>0..2 -<br>**<t3168>** - timer 3168<br>**<t3192>** - timer 3192<br>**<drxmax>** - discontinuous reception max time (in seconds)<br>**<ctrlAck>** - packed control ack<br>**<bsCVmax> -** blocked sequenc countdown max value<br>**<alpha> -** alpha parameter for power control<br>**<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control<br>0 - BCCH<br>1 - PDCH |

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| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| | **(For non BCCH-Carrier)**<br>**<arfcn>,<rxLev>**<br><br>where:<br>**<arfcn>** - decimal number; it is the RF channel<br>**<rxLev>** - decimal number; it is the receiption level (in dBm)<br><br>The last string received from **#CSURVC** depends on the last **#CSURVF** setting:<br><br>if **#CSURVF=0** or **#CSURVF=1**<br>The output ends with the string:<br>**Network survey ended**<br><br>if **#CSURVF=2**<br>the output ends with the string:<br>**Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)**<br>where<br>**<NoARFCN**> - number of scanned frequencies<br>**<NoBCCH**> - number of found BCCh |
| **AT#CSURVC?**<br><br>**AT*CSURVC?** | Read command has the same behaviour as the Execution command with parameters omitted |
| Example | AT#CSURVC<br><br>Network survey started…<br><br>48,24,-52,0.00,610,1,33281,3648,0,2,30 48,5,14 19 22 48 82<br><br>14,8<br><br>Network survey ended<br><br>OK |
| Note | The command is executed within max. 2 minute.<br><br>The information provided by **#CSURVC** is the same as that provided by **#CSURV**. The difference is that the output of **#CSURVC** is in numeric format only. |

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### 3.6.5.6.3 #CSURVU - Network Survey Of User Defined Channels

| #CSURVU - Network Survey Of User Defined Channels | |
|---|---|
| **AT#CSURVU=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br><br>**AT*CSURVU=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through the given channels. The range of available channels depends on the last **#BND** issue.<br><br>The result format is like command **#CSURV**.<br><br>Parameters:<br>**<ch*n*>** - channel number (arfcn)<br><br>Note: the **<ch*n*>** must be in a increasing order.<br><br>Note: issuing **AT#CSURVU=<CR>** is the same as issuing the command **AT#CSURVU=0<CR>**. |
| Example | `AT#CSURVU=59,110`<br><br>`Network survey started…`<br><br>`arfcn: 59 bsic: 16 rxLev: -76 ber: 0.00 mcc: 546 mnc: 1 lac: 54717 cellId: 21093 cellStatus: CELL_SUITABLE numArfcn 2 arfcn: 36 59`<br><br>`arfcn: 110 rxLev: -107`<br><br>`Network survey ended`<br><br>`OK` |
| Note | The command is executed within max. 2 minute. |

### 3.6.5.6.4 #CSURVUC - Network Survey Of User Defined Channels (Numeric Format)

| #CSURVUC - Network Survey Of User Defined Channels (Numeric Format) | |
|---|---|
| **AT#CSURVUC=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br><br>**AT*CSURVUC=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through the given channels. The range of available channels depends on the last **#BND** issue.<br><br>The result format is like command **#CSURVC**.<br><br>Parameters:<br>**<ch*n*>** - channel number (arfcn) |

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| #CSURVUC - Network Survey Of User Defined Channels (Numeric Format) | |
|---|---|
| | Note: the **<ch*n*>** must be in a increasing order.<br><br>Note: issuing **AT#CSURVUC=<CR>** is the same as issuing the command **AT#CSURVUC=0<CR>**. |
| Example | `AT#CSURVUC=59,110`<br><br>`Network survey started…`<br><br>`59,16,-76,0.00,546,1,54717,21093,0,2,36 59`<br><br>`110,-107`<br><br>`Network survey ended`<br><br>`OK` |
| Note | The command is executed within max. 2 minute.<br><br>The information provided by **#CSURVUC** is the same as that provided by **#CSURVU**. The difference is that the output of **#CSURVUC** is in numeric format only. |

### *3.6.5.6.5 #CSURVB - BCCH Network Survey*

| #CSURVB - BCCH Network Survey | |
|---|---|
| **AT#CSURVB=<n>** | Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found.<br><br>The result format is like command **#CSURV**.<br><br>Parameter:<br>**<n>** - number of desired BCCH carriers<br>1..M |
| **AT#CSURVB=?** | Test command reports the range of values for parameter **<n>** in the format:<br><br>**(1-M)**<br><br>where **M** is the maximum number of available frequencies depending on last selected band. |

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### 3.6.5.6.6 #CSURVBC - BCCH Network Survey (Numeric Format)

| #CSURVBC - BCCH Network Survey (Numeric Format) | |
|---|---|
| **AT#CSURVBC=<br><n>** | Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found.<br><br>The result is given in numeric format and is like command **#CSURVC**.<br><br>Parameter:<br>**<n>** - number of desired BCCH carriers<br>1..M |
| **AT#CSURVBC=?** | Test command reports the range of values for parameter **<n>** in the format:<br><br>**(1-M)**<br><br>where **M** is the maximum number of available frequencies depending on last selected band. |

### 3.6.5.6.7 #CSURVF - Network Survey Format

| #CSURVF - Network Survey Format | |
|---|---|
| **AT#CSURVF[=<br>[<format>]]** | Set command controls the format of the numbers output by all the Easy Scan®<br><br>Parameter:<br>**<format>** - numbers format<br>0 - Decimal<br>1 - Hexadecimal values, no text<br>2 - Hexadecimal values with text<br><br>Note: issuing **AT#CSURVF<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#CSURVF=<CR>** is the same as issuing the command **AT#CSURVF=0<CR>**. |
| **AT#CSURVF?** | Read command reports the current number format, as follows:<br><br>**#CSURVF: <format>** |
| **AT#CSURVF=?** | Test command reports the supported range of values for the parameter **<format>**. |

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### 3.6.5.6.8 #CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family

| #CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family | |
|---|---|
| **AT#CSURVNLF [=<value>]** | Set command enables/disables the automatic **<CR><LF>** removing from each information text line.<br><br>Parameter:<br>**<value>**<br>0 - disables **<CR><LF>** removing; they'll be present in the information text (factory default)<br>1 - remove **<CR><LF>** from imformation text<br><br>Note: if parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT#CSURVNLF?** | Read command reports whether automatic **<CR><LF>** removing is currently enabled or not, in the format:<br><br>**<value>** |
| **AT#CSURVNLF=?** | Test command reports the range of values for parameter **<value>.** |

### 3.6.5.6.9 #CSURVEXT - Extended Network Survey

| #CSURVEXT - Extended Network Survey | |
|---|---|
| **AT#CSURVEXT [=<value>]** | Set command enables/disables extended network survey.<br><br>Parameter:<br>**<value>**<br>0 - disables extended network survey (factory default)<br>1 - enables extended network survey; all the network survey execution commands (**#CSURV**, **#CSURVC**, **#CSURVU**, **#CSURVUC**, **#CSURVB**, **#CSURVBC**) display the BAList for every valid scanned BCCh carrier<br>2 - enables extended network survey; all the network survey execution commands (**#CSURV**, **#CSURVC**, **#CSURVU**, **#CSURVUC**, **#CSURVB**, **#CSURVBC**) display the BAList for every valid scanned BCCh carrier and, if GPRS is supported in the cell, they report some GPRS informations carried by the System Information 13 of the BCCh<br><br>Note: if parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT#CSURVEXT?** | Read command reports whether extended network survey is currently enabled or not, in the format:<br><br>**<value>** |
| **AT#CSURVEXT=?** | Test command reports the range of values for parameter **<value>.** |

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## 3.6.5.7 Jammed Detect & Report AT Commands

### *3.6.5.7.1 #JDR - Jammed Detect & Report*

| **#JDR - Jammed Detect & Report** | |
|---|---|
| **AT#JDR[=[<mode>[,<MNPL>,<DCMN>]]]** | Set command allows to control the Jammed Detect & Report feature.<br><br>The MODULE can detect if a communication Jammer is active in its range and give indication to the user of this condition either on the serial line with an unsolicited code or on a dedicated GPIO by rising it.<br><br>The MODULE can also report to the network the Jammed status condition, even if normal communications are inhibited by the Jammer, by using a unique message.<br><br>Parameters:<br>**<mode>** - behaviour mode of the Jammed Detect & Report<br>0 - disables Jammed Detect & Report (factory default)<br>1 - enables the Jammed Detect; the Jammed condition is reported on pin GPIO2/JDR<br>GPIO2/JDR **LOW** - Normal Operating Condition<br>GPIO2/JDR **HIGH** - Jammed Condition.<br>2 - enables the Jammed Detect; the Jammed condition is reported with a single unsolicited result code on serial line, in the format:<br><br>**#JDR: <status>**<br>where:<br>**<status>**<br>JAMMED - Jammed condition detected<br>OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.<br>3 - enables the Jammed Detect; the MODULE will make both the actions as for **<mode>=1** and **<mode>=2**.<br>4 - enables the Jammed Detect; the Jammed condition is reported with an unsolicited code every 3s on serial line, in the format:<br><br>**#JDR: <status>**<br>where:<br>**<status>**<br>JAMMED - Jammed condition detected<br>OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.<br>5 - enables the Jammed Detect; the MODULE will make both the actions as for **<mode>=1** and **<mode>=4**.<br><br>**<MNPL>** - Maximum Noise Power Level<br>0..127 |

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| #JDR - Jammed Detect & Report | |
|---|---|
| | **<DCMN>** - Disturbed Channel Minimum Number<br>0..254<br><br>Note: issuing **AT#JDR<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#JDR=<CR>** is the same as issuing the command **AT#JDR=0<CR>**. |
| **AT#JDR?** | Read command reports the current behaviour mode, Maximum Noise Power Level and Disturbed Channel Minimum Number, in the format:<br><br>**#JDR: <mode>,<MNPL>,<DCMN>** |
| **AT#JDR=?** | Test command reports the supported range of values for the parameters **<mode>**,**<MNPL>** and **<DCMN>** |
| Example | `AT#JDR=2`<br>`OK`<br>*…jammer enters in the range…*<br>`#JDR: JAMMED`<br>*…jammer exits the range…*<br>`#JDR: OPERATIVE` |
| Note | It is suggested not to change the default setting for Maximum Noise Power Level and Disturbed Channel Minimum Number.<br><br>If the device is installed in a particular environment where the default values are not satisfactory the two parameters **<MNPL>** and **<DCMN>** permit to adapt the detection to all conditions. |

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## 3.6.5.8 Easy Script® Extension - Python[11] Interpreter, AT Commands

### *3.6.5.8.1 #WSCRIPT - Write Script*

| **#WSCRIPT - Write Script** | |
|---|---|
| **AT#WSCRIPT= <script_name>, <size> [,<hidden>]** | Execution command inserts a script text and save it with the name **<script_name>** in the NVM of the module supporting the Python extension.<br><br>The script text should be sent using Raw Ascii file transfer.<br>It is important to set properly the port settings. In particular:<br>**Baud rate: 115200 bps**<br>**Flow control: hardware.**<br><br>Parameters:<br>**<script_name>** - file name, string type (max 16 chars, case sensitive).<br>**<size>** - file size in bytes<br>**<hidden>** - file hidden attribute<br>0 - file content is readable with **#RSCRIPT** (default).<br>1 - file content is hidden, **#RSCRIPT** command will report empty file.<br><br>The device responds to the command with the prompt '**>>>**' and waits for the script file text for **<size>** bytes.<br><br>The operations completes when all the bytes are received.<br><br>If script writing ends successfully, the response is **OK**; otherwise an error code is reported<br><br>Note: The script name should be passed between quotes and all Executable Scripts files must have **.py** extension - Script names are Case sensitive.<br><br>Note: When sending the script be sure that the line terminator is **<CR><LF>** and that your terminal program does not change it.<br><br>Note: with the hidden attribute it is possible to protect your script from being viewed and copied, only the file name can be viewed, its content is hidden even if the file is still being run correctly. It's your care to maintain knowledge on what the script file contains. |
| Example | `AT#WSCRIPT="First.py ",54,0`<br>*>>> here receive the prompt: depending on your editor settings it's possible that the prompt overrides the above line; then type or send the script, sized 54 bytes*<br>`OK` |

[11] PYTHON is a registered trademark of the Python Software Foundation.

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| #WSCRIPT - Write Script | |
|---|---|
| | `Script has been stored.` |
| Note | This command can also be used to write any text file in the MODULE-PYTHON memory (not script files only), for example application data or settings files with a different extension than **.py**. |

### 3.6.5.8.2 #ESCRIPT - Select Active Script

| #ESCRIPT - Select Active Script | |
|---|---|
| **AT#ESCRIPT[= [<script_name>]]** | Set command selects the name of the script that will be executed by the Easy Script® interpreter at the start-up. The script will be executed at start-up only if the DTR line is found LOW during initial start-up (that is: COM is not open on a PC), otherwise the Easy Script® interpreter will not execute and the module with Python extension will behave normally answering only to AT commands on the serial port.<br><br>Parameter:<br>**<script-name>** - file name, string type (max 16 chars, case sensitive).<br><br>Note: all script files must have **.py** extension.<br><br>Note: The **<script_name>** must match with a file name written with the **#WSCRIPT** in order to have it run.<br><br>Note: the command does not check whether the script **<script_name>** does exist in the NVM of the module supporting the Python extension or not. If the file **<script_name>** is not present at the start-up then the Script Interpreter will not execute.<br><br>Note: issuing **AT#ESCRIPT<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#ESCRIPT=<CR>** is the same as issuing the command **AT#ESCRIPT=""<CR>**. |
| **AT#ESCRIPT?** | Read command reports the name of the script that will be executed by the Easy Script® interpreter at the start-up. |

### 3.6.5.8.3 #RSCRIPT - Read Script

| #RSCRIPT - Read Script | |
|---|---|
| **AT#RSCRIPT= <script_name>** | Execution command reports the content of script file **<script_name>**.<br><br>Parameter:<br>**<script-name>** - file name, string type (max 16 chars, case sensitive). |

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| #RSCRIPT - Read Script | |
|---|---|
| | The device responds to the command with the prompt '**<<<**', followed by the script file text.<br><br>Note: if the file **<script_name>** was saved with the hidden attribute, then an empty file is reported with the **OK** result code.<br><br>Note: If the file **<script_name>** is not present an error code is reported. |
| Example | `AT#RSCRIPT="First.py "`<br>*hereafter receive the prompt: depending on your editor settings it's possible that the prompt overrides the above line; then the script is displayed, immediately after the prompt*<br>`<<<import MDM`<br><br>`MDM.send('AT\r',10)`<br>`Ans=MDM.receive(20)`<br>`OK` |
| Note | Executable scripts files must have **.py** extension. |

### 3.6.5.8.4 #LSCRIPT - List Script Names

| #LSCRIPT - List Script Names | |
|---|---|
| **AT#LSCRIPT** | Execution command reports the list of script files names currently saved into the NVM and the available free NVM memory in the format:<br><br>**[#LSCRIPT: <script_name1> <size1>…**<br>**[<CR><LF><CR><LF>#LSCRIPT: <script_name*n*> <size*n*>]]**<br>**<CR><LF><CR><LF>#LSCRIPT: free bytes: <free_NVM>**<br><br>where:<br>**<script-name*n*>** - file name, string type (max 16 chars, case sensitive)<br>**<size*n*>** - size of script in bytes<br>**<free_NVM>** - size of available NVM memory in bytes |
| **AT#LSCRIPT?** | Read command has the same behavior of Execution command. |
| Example | `AT#LSCRIPT`<br>`#LSCRIPT: First.py 51`<br><br>`#LSCRIPT: Second.py 178`<br><br>`#LSCRIPT: Third.py 95`<br><br>`#LSCRIPT: free bytes: 20000` |

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| #LSCRIPT - List Script Names | |
|---|---|
| | OK |

### 3.6.5.8.5 #DSCRIPT - Delete Script

| #DSCRIPT - Delete Script | |
|---|---|
| **AT#DSCRIPT= <script_name>** | Execution command deletes a script file from NVM memory.<br><br>Parameter:<br>**<script_name>** - name of the script file to delete, string type (max 16 chars, case sensitive)<br><br>Note: if the file **<script_name>** is not present an error code is reported. |
| Example | AT#DSCRIPT="Third.py"<br>OK |

### 3.6.5.8.6 #REBOOT - Reboot

| #REBOOT - Reboot | |
|---|---|
| **AT#REBOOT** | Execution command reboots immediately the unit.<br><br>It can be used to reboot the system after a remote update of the script in order to have the new one running. |
| **AT#REBOOT?** | Read command has the same behavior of Execution command. |
| Example | AT#REBOOT<br><br>…. Module Reboots … |
| Note | This command does not return result codes. |

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## 3.6.5.9 GPS AT Commands Set

### *3.6.5.9.1 $GPSP - GPS Controller Power Management*

| **$GPSP - GPS Controller Power Management** | |
|---|---|
| **AT$GPSP=<status>** | Set command allows to manage power-up or down of the GPS controller<br><br>Parameter:<br>**<status>**<br>0 - GPS controller is powered down<br>1 - GPS controller is powered up (default)<br><br>Note: for the GPS product (GE863-GPS): if the GPS controller is powered down while camera or VAUX pin is enabled they'll both also be also powered off. |
| **AT$GPSP?** | Read command reports the current value of the **<status>** parameter, in the format:<br><br>**$GPSP: <status>** |
| **AT$GPSP=?** | Test command reports the range of supported values for parameter **<status>** |
| Example | `AT$GPSP=0`<br>`OK` |
| Note | If a camera is used with the module and it is powered on, issuing **$GPSP=0** causes the GPS module to be reset but not to be powered down, because the camera power supply is in common with the GPS module. |

### *3.6.5.9.2 $GPSR - GPS Reset*

| **$GPSR - GPS Reset** | |
|---|---|
| **AT$GPSR= <reset_type>** | Execution command allows to reset the GPS controller.<br><br>Parameter:<br>**<reset_type>**<br>0 - Hardware reset: the GPS receiver is reset and restarts by using the values stored in the internal memory of the GPS receiver.<br>1 - Coldstart (No Almanac, No Ephemeris): this option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained. It is available in controlled mode only.<br>2 - Warmstart (No ephemeris): this option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Receiver Initialization Setup screen. The almanac is retained but the ephemeris is cleared. It is available in controlled mode only. |

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| $GPSR - GPS Reset | |
|---|---|
| | 3 - Hotstart (with stored Almanac and Ephemeris): the GPS receiver restarts by using the values stored in the internal memory of the GPS receiver; validated ephemeris and almanac. It is available in controlled mode only. |
| **AT$GPSR=?** | Test command reports the range of supported values for parameter **<reset_type>** |
| Example | AT$GPSR=0<br>OK |

### 3.6.5.9.3 $GPSD - GPS Device Type Set

| $GPSD - GPS Device Type Set | |
|---|---|
| **AT$GPSD= <device_type>** | Set command defines which GPS device is connected to the module. It dedicates the Serial port #1 of the module (TRACE) to receive the GPS strings from the GPS module.<br><br>Parameter:<br>**<device type>**<br>0 - none; the serial port is not connected to GPS device and available for standard use<br>1 - currently has no meaning, maintained for backward compatibility<br>2 - serial port connected to GPS serial port: controlled mode (default)<br>3 - currently has no meaning, maintained for backward compatibility<br><br>Note: the current setting is stored through **$GPSSAV** |
| **AT$GPSD?** | Read command reports the current value of **<device_type>** parameter, in the format:<br><br>**$GPSD: <device_type>** |
| **AT$GPSD=?** | Test command reports the range of supported values for parameter **<device_type>** |
| Example | AT$GPSD=0<br>OK |

### 3.6.5.9.4 $GPSSW - GPS Software Version

| $GPSSW - GPS Software Version | |
|---|---|
| **AT$GPSSW** | Execution command provides GPS Module software version in the format:<br><br>**$GPSSW: <sw version>** |
| **AT$GPSSW?** | Read command has the same meaning as the Execution command |
| **AT$GPSSW=?** | Test command returns the **OK** result code |
| Example | AT$GPSSW |

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| $GPSSW - GPS Software Version | |
|---|---|
| | $GPSSW: GSW3.1.1_3.1.00.07-C23P1.00<br>OK |

### 3.6.5.9.5 $GPSAT - GPS Antenna Type Definition

| $GPSAT - GPS Antenna Type Definition | |
|---|---|
| **AT$GPSAT=<type>** | Set command selects the GPS antenna used.<br><br>Parameter:<br>**<type>**<br>0 - GPS Antenna not power supplied by the module<br>1 - GPS Antenna power supplied by the module (default)<br><br>Note: if current **<type>** is 0, either **$GPSAV** and **$GPSAI** have no meaning.<br><br>Note: the current setting is stored through **$GPSSAV** |
| **AT$GPSAT?** | Read command returns the currently used antenna, in the format:<br><br>**$GPSAT: <type>** |
| **AT$GPSAT=?** | Test command reports the range of supported values for parameter **<type>** |
| Example | AT$GPSAT=1<br>OK |
| Note | Refer to the HW user guide for the compatible GPS antennas |

### 3.6.5.9.6 $GPSAV - GPS Antenna Supply Voltage Readout

| $GPSAV - GPS Antenna Supply Voltage Readout | |
|---|---|
| **AT$GPSAV** | Execution command returns the measured GPS antenna's supply voltage in mV |
| **AT$GPSAV?** | Read command has the same meaning as the Execution command |
| **AT$GPSAV=?** | Test command returns the **OK** result code |
| Example | AT$GPSAV<br>$GPSAV:3800<br>OK |
| Note | It has meaning only if current **$GPSAT** setting is not 0 |

### 3.6.5.9.7 $GPSAI - GPS Antenna Current Readout

| $GPSAI - GPS Antenna Current Readout | |
|---|---|
| **AT$GPSAI** | Execution command reports the GPS antenna's current consumption in the format: |

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| **$GPSAI - GPS Antenna Current Readout** | |
|---|---|
| | **$GPSAI:<value>[,<status>]**<br><br>where:<br>**<value>** - the measured current in mA<br>**<status>**<br>0 - GPS antenna OK<br>1 - GPS antenna consumption out of the limits<br><br>Note: the output **<status>** is available only if the antenna protection is activated (see **$GPSAP**) |
| **AT$GPSAI?** | Read command has the same meaning as the Execution command |
| **AT$GPSAI=?** | Test command returns the **OK** result code |
| Example | `AT$GPSAI?`<br>`$GPSAI:040,0`<br>`OK` |
| Note | It has meaning only if current **$GPSAT** setting is not 0 |

### *3.6.5.9.8 $GPSAP - GPS Antenna Protection*

| **$GPSAP - GPS Antenna Protection** | |
|---|---|
| **AT$GPSAP=**<br>**<set>**<br>**[,<value>]** | Set command allows to activate an automatic protection in case of high current consumption of GPS antenna. The protection disables the GPS antenna supply voltage.<br><br>Parameters:<br>**<set>**<br>0 - deactivate current antenna protection (default)<br>1 - activate current antenna protection<br><br>**<value>** - the antenna current limit value in mA<br>0..200<br><br>If parameter **<set>=0** parameter **<value>** has no meaning and can be omitted.<br><br>Note: the new setting is stored through **$GPSSAV** |
| **AT$GPSAP?** | Read command reports the current activation status of antenna automatic protection and the current antenna limit value, in the format:<br><br>**$GPSAP: <set>,<value>** |
| **AT$GPSAP=?** | Test command reports the range of supported values for parameters **<set>** and **<value>** |
| Example | `AT$GPSAP=0`<br>`OK`<br>*Note : no SW control on antenna status (HW current limitation only)* |

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| $GPSAP - GPS Antenna Protection | |
|---|---|
| | AT$GPSAP=1,25<br>OK<br>*activate current antenna protection with related current limit*<br><br>AT$GPSAP?<br>$GPSAP:1,50<br>OK<br>*Antenna protection activated with 50mA limit* |
| Note | The module is already provided of an Hardware protection for the high current consumption that is automatically activated if the consumption exceeds 50mA |

### 3.6.5.9.9 $GPSS - GPS NMEA Serial Port Speed

| $GPSS - GPS Serial Port Speed | |
|---|---|
| **AT$GPSS=<speed>** | Set command allows to select the speed of the NMEA serial port.<br><br>Parameter:<br>**<speed>**<br>4800 - (default)<br>9600<br>19200<br>38400<br>57600<br><br>Note: the new setting is stored through **$GPSSAV** |
| **AT$GPSS?** | Read command returns the current serial ports speed in the format:<br><br>**$GPSS: <speed>** |
| **AT$GPSAP=?** | Test command returns the available range for **<speed>** |

### 3.6.5.9.10 $GPSNMUN - Unsolicited NMEA Data Configuration

| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| **AT$GPSNMUN= <enable> [,<GGA>,<GLL>, <GSA>,<GSV>, <RMC>,<VTG >]** | Set command permits to activate an Unsolicited streaming of GPS data (in NMEA format) through the standard GSM serial port and defines which NMEA sentences will be available<br><br>Parameters:<br>**<enable>**<br>0 - NMEA data stream de-activated (default)<br>1 - NMEA data stream activated with the following unsolicited response |

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| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| | syntax:<br>**$GPSNMUN:<CR><NMEA SENTENCE><CR>**<br>2 - NMEA data stream activated with the following unsolicited response syntax:<br>**<NMEA SENTENCE><CR>**<br>3 - dedicated NMEA data stream; it is not possible to send AT commands; with the escape sequence '+++' the user can return to command mode<br><br>**<GGA>** - Global Positioning System Fix Data<br>0 - disable (default)<br>1 - enable<br>**<GLL>** - Geographical Position - Latitude/Longitude<br>0 - disable (default)<br>1 - enable<br>**<GSA>** - GPS DOP and Active Satellites<br>0 - disable (default)<br>1 - enable<br>**<GSV>** - GPS Satellites in View<br>0 - disable (default)<br>1 - enable<br>**<RMC>** - recommended Minimum Specific GPS Data<br>0 - disable (default)<br>1 - enable<br>**<VTG>** - Course Over Ground and Ground Speed<br>0 - disable (default)<br>1 - enable |
| **AT$GPSNMUN?** | Read command returns whether the unsolicited GPS NMEA data streaming is currently enabled or not, along with the NMEA sentences availability status, in the format:<br><br>**$GPSNMUN:<enable>,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG >** |
| **AT$GPSNMUN=?** | Test command returns the supported range of values for parameters **<enable>, <GGA>, <GLL>, <GSA>, <GSV>, <RMC>, <VTG>** |
| Example | `AT$GPSNMUN=1,0,0,1,0,0,0`<br>`OK`<br>*These sets the GSA as available sentence in the unsolicited message*<br><br>`AT$GPSNMUN=0`<br>`OK`<br>*Turn-off the unsolicited mode*<br><br>`AT$GPSNMUN?`<br>`$GPSNMUN: 1,0,0,1,0,0,0`<br>`OK`<br>*Give the current frame selected (GSA)* |

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| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| | The unsolicited message will be:<br>$GPSNMUN:<br>$GPGSA,A,3,23,20,24,07,13,04,02,,,,,,2.4,1.6,1.8*3C |
| Reference | NMEA 01803 Specifications |
| Note | *The command is available in "Controlled Mode" only*<br><br>*The available NMEA Sentences are depending on the GPS receiver used*<br><br>*In GE863-GPS and GM862-GPS the fields PDOP and VDOP are not available*<br>*Use NMEA serial port instead if full DOP info are needed* |

### 3.6.5.9.11 $GPSACP - Get Acquired Position

| $GPSACP - Get Acquired Position | |
|---|---|
| **AT$GPSACP** | Execution command returns information about the last GPS position in the format:<br><br>**$GPSACP: <UTC>,<latitude>,<longitude>,<hdop>,<altitude>, <fix>,<cog>,<spkm>,<spkn>,<date>,<nsat>**<br><br>where:<br>**<UTC>** - UTC time (hhmmss.sss) referred to GGA sentence<br>**<latitude>** - format is ddmm.mmmm N/S (referred to GGA sentence)<br>where:<br>dd - degrees<br>00..90<br>mm.mmmm - minutes<br>00.0000..59.9999<br>N/S: North / South<br>**<longitude>** - format is dddmm.mmmm E/W (referred to GGA sentence)<br>where:<br>ddd - degrees<br>000..180<br>mm.mmmm - minutes<br>00.0000..59.9999<br>E/W: East / West<br>**<hdop>** - x.x - Horizontal Diluition of Precision (referred to GGA sentence)<br>**<altitude>** - xxxx.x Altitude - mean-sea-level (geoid) in meters (referred to GGA sentence)<br>**<fix>** - referred to GSA sentence<br>1 - Invalid Fix<br>2 - 2D fix<br>3 - 3D fix<br>**<cog>** - ddd.mm - Course over Ground (degrees, True) (referred to VTG |

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| $GPSACP - Get Acquired Position | |
|---|---|
| | sentence)<br>where:<br>ddd - degrees<br>000..360<br>mm - minutes<br>00..59<br>**<spkm>** - xxxx.x Speed over ground (Km/hr) (referred to VTG sentence)<br>**<spkn>** - xxxx.x- Speed over ground (knots) (referred to VTG sentence)<br>**<date>** - ddmmyy Date of Fix (referred to RMC sentence)<br>where:<br>dd - day<br>01..31<br>mm - month<br>01..12<br>yy - year<br>00..99 - 2000 to 2099<br>**<nsat>** - nn - Total number of satellites in view (referred to GSV sentence) |
| **AT$GPSACP?** | Read command has the same meaning as the Execution command |
| **AT$GPSACP=?** | Test command returns the **OK** result code |
| Example | `AT$GPSACP`<br>`$GPSACP:080220.479,4542.82691N,01344.26820E,259.07,3,2.1,0.1,0.0,0.0,270705,09`<br><br>`OK` |

### *3.6.5.9.12 $GPSCON - Direct Access to GPS Module*

| $GPSCON - Direct Access to GPS Module | |
|---|---|
| **AT$GPSCON** | Execution command allows to set the GSM baseband in transparent mode in order to have a direct access to the serial port of the GPS module. The GSM module will transfer directly the received data to the GPS module, without checking or elaborating them.<br><br>Note: the new setting is stored through **$GPSSAV**<br><br>Note: the command is usable only in “controlled mode”.<br><br>Note: in case of an incoming call from GSM, this will be visible on the RING pin of serial port.<br><br>Note: the escape sequence is “+++”<br><br>Note: the Serial Port Speed can be maximum 38400 bps |
| **AT$GPSCON=?** | Test command returns the **OK** result code |

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### 3.6.5.9.13 $GPSPRG - Set The GPS Module In Programming Mode

| $GPSPRG - Set The GPS Module In Programming Mode | |
|---|---|
| **AT$GPSPRG** | Execution command allows to switch on the GPS part in BOOT mode and set the GSM processor in Transparent Mode, in order to permit the re-programming of th GPS flash memory.<br><br>Note: the escape sequence is “+++”<br><br>Note: it is possible to issue **$GPSPRG** only if the Serial Port Speed is fixed 38400 bps |
| **AT$GPSCON?** | Read command has the same effect as Execution command. |
| **AT$GPSCON=?** | Test command returns the **OK** result code |

### 3.6.5.9.14 $GPSPS - Set The GPS Module In Power Saving Mode

| $GPSPS - Set The GPS Module In Power Saving Mode | |
|---|---|
| **AT$GPSPS= <mode [,<PTF_Period>]** | Set command allows to set the GPS module in Power saving mode.<br><br>Parameters:<br>**<mode>** - the GPS receiver can operate in three modes<br>0 - full power mode, power saving disabled (default); it is the standard operating mode; power is supplied to the receiver continuously and the GPS receiver continues to operate without an interrupt.<br>1 - tricklepower mode; the power to the SiRF chipset is cycled periodically, so that it operates only a fraction of the time; power is applied only when a position fix is scheduled.<br>2 - push-to-fix mode; the GPS receiver is generally off, but turns on frequently enough to collect ephemeris data to maintain the GPS1 real-time clock calibration so that, upon user request, a position fix can be provided quickly after power-up.<br>**<PTF_Period>** - push-to-fix period, numeric value in secs; when mode is push-to-fix, the receiver turns on periodically according to this parameter; default value is 1800 sec. |
| **AT$GPSPS?** | Read command returns the current power saving mode and push-to-fix period, in the format:<br><br>**$GPSPS: <mode>,<PTF_Period>** |
| **AT$GPSPS=?** | Test command returns the available range for **<mode>** and **<PTF_Period>** |
| Note | Available in “controlled mode” only |

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### 3.6.5.9.15 $GPSWK - Wake Up GPS From Power Saving Mode

| $GPSWK - Wake Up GPS From Power Saving Mode | |
|---|---|
| **AT$GPSWK** | Execution command allows to wake up the GPS module if set in sleeping mode due to power saving.<br><br>Note: if the GPS module is in tricklepower mode, it will start up, make the fix and then continue to work in power saving mode.<br><br>Note: if the GPS module is in push-to-fix mode, issuing **$GPSWK** pemits to wake up it before the push to fix period; after the new fix the GPS module will return in push-to-fix mode with the same parameters. |
| **AT$GPSWK=?** | Test command returns the **OK** result code |
| Note | Available in “controlled mode” only |

### 3.6.5.9.16 $GPSSAV - Save GPS Parameters Configuration

| $GPSSAV - Save GPS Parameters Configuration | |
|---|---|
| **AT$GPSSAV** | Execution command saves the current configuration in the non volatile EEPROM memory of the module. |
| **AT$GPSSAV=?** | Test command returns the **OK** result code |
| Example | AT$GPSSAV<br>OK |
| Note | The module must be restarted to use the new configuration |

### 3.6.5.9.17 $GPSRST - Restore To Default GPS Parameters

| $GPSRST - Restore To Default GPS Parameters | |
|---|---|
| **AT$GPSRST** | Execution command restores the GPS parameters to “Factory Default” configuration and stores them in the non volatile EEPROM memory of the module. |
| **AT$GPSRST=?** | Test command returns the **OK** result code |
| Example | AT$GPSRST<br>OK |
| Note | The module must be restarted to use the new configuration |

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# 3.7 SELINT 2

## 3.7.1 Hayes Compliant AT Commands

### 3.7.1.1 Generic Modem Control

#### *3.7.1.1.1 &F - Set To Factory-Defined Configuration*

| **&F - Set To Factory-Defined Configuration** | |
|---|---|
| **AT&F[<value>]** | Execution command sets the configuration parameters to default values specified by manufacturer; it takes in consideration hardware configuration switches and other manufacturer-defined criteria.<br><br>Parameter:<br>**<value>**:<br>0 - just the factory profile base section parameters are considered.<br>1 - either the factory profile base section and the extended section are considered (full factory profile).<br><br>Note: if parameter **<value>** is omitted, the command has the same behaviour as **AT&F0** |
| Reference | V25ter. |

#### *3.7.1.1.2 Z - Soft Reset*

| **Z - Soft Reset** | |
|---|---|
| **ATZ[<n>]** | Execution command loads the base section of the specified user profile and the extended section of the default factory profile.<br><br>Parameter:<br>**<n>**<br>0..1 - user profile number<br><br>Note: any call in progress will be terminated.<br><br>Note: if parameter **<n>** is omitted, the command has the same behaviour as **ATZ0**. |
| Reference | V25ter. |

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### 3.7.1.1.3 +FCLASS - Select Active Service Class

| **+FCLASS - Select Active Service Class** | |
|---|---|
| **AT+FCLASS=<n>** | Set command sets the wireless module in specified connection mode (data, fax, voice), hence all the calls done afterwards will be data or voice.<br><br>Parameter:<br>**<n>**<br>0 - data<br>1 - fax class 1<br>8 - voice |
| **AT+FCLASS?** | Read command returns the current configuration value of the parameter **<n>**. |
| **AT+FCLASS=?** | Test command returns all supported values of the parameters **<n>**. |
| Reference | GSM 07.07 |

### 3.7.1.1.4 &Y - Designate A Default Reset Basic Profile

| **&Y - Designate A Default Reset Basic Profile** | |
|---|---|
| **AT&Y[<n>]** | Execution command defines the basic profiles which will be loaded on startup.<br><br>Parameter:<br>**<n>**<br>0..1 - profile (default is 0): the wireless module is able to store 2 complete configurations (see command **&W**).<br><br>Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&Y** will be loaded on every startup.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&Y0** |

### 3.7.1.1.5 &P - Designate A Default Reset Full Profile

| **&P - Designate A Default Reset Full Profile** | |
|---|---|
| **AT&P[<n>]** | Execution command defines which full profile will be loaded on startup.<br><br>Parameter:<br>**<n>**<br>0..1 – profile number: the wireless module is able to store 2 full configurations (see command **&W**). |

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| | |
|---|---|
| | Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&P** will be loaded on every startup.<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&P0** |
| Reference | Telit Specifications |

### *3.7.1.1.6 &W - Store Current Configuration*

| **&W - Store Current Configuration** | |
|---|---|
| **AT&W[<n>]** | Execution command stores on profile **<n>** the complete configuration of the device.<br><br>Parameter:<br>**<n>**<br>0..1 - profile<br><br>Note: if parameter is omitted, the command has the same behaviour of **AT&W0.** |

### *3.7.1.1.7 &Z - Store Telephone Number In The Module Internal Phonebook*

| **&Z - Store Telephone Number In The Wireless Module Internal Phonebook** | |
|---|---|
| **AT&Z<n>=<nr>** | Execution command stores in the record **<n>** the telephone number **<nr>**. The records cannot be overwritten, they must be cleared before rewriting.<br><br>Parameters:<br>**<n>** - phonebook record<br>**<nr>** - telephone number (string type)<br><br>Note: the wireless module has a built in non volatile memory in which 10 telephone numbers of a maximum 24 digits can be stored<br><br>Note: to delete the record **<n>** the command **AT&Z<n>=<CR>** must be issued.<br><br>Note: the records in the module memory can be viewed with the command **&N**, while the telephone number stored in the record n can be dialed by giving the command **ATDS=<n>.** |

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#### 3.7.1.1.8 &N - Display Internal Phonebook Stored Numbers

| **&N - Display Internal Phonebook Stored Numbers** | |
|---|---|
| **AT&N[<n>]** | Execution command returns the telephone number stored at the **<n>** position in the internal memory.<br><br>Parameter:<br>**<n>** - phonebook record number<br><br>Note: if parameter **<n>** is omitted then all the internal records are shown. |

#### 3.7.1.1.9 +GMI - Manufacturer Identification

| **+GMI - Manufacturer Identification** | |
|---|---|
| **AT+GMI** | Execution command returns the manufacturer identification.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |
| Reference | V.25ter |

#### 3.7.1.1.10 +GMM - Model Identification

| **+GMM - Model Identification** | |
|---|---|
| **AT+GMM** | Execution command returns the model identification. |
| Reference | V.25ter |

#### 3.7.1.1.11 +GMR - Revision Identification

| **+GMR - Revision Identification** | |
|---|---|
| **AT+GMR** | Execution command returns the software revision identification. |
| Reference | V.25ter |

#### 3.7.1.1.12 +GCAP - Capabilities List

| **+GCAP - Capabilities List** | |
|---|---|
| **AT+GCAP** | Execution command returns the equipment supported command set list.<br>Where:<br>**+CGSM**: GSM ETSI command set<br>**+FCLASS**: Fax command set<br>**+DS**: Data Service common modem command set<br>**+MS**: Mobile Specific command set |
| Reference | V.25ter |

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### 3.7.1.1.13 +GSN - Serial Number

| **+GSN - Serial Number** | |
|---|---|
| **AT+GSN** | Execution command returns the device board serial number.<br><br>Note: The number returned is not the IMSI, it is only the board number |
| Reference | V.25ter |

### 3.7.1.1.14 &V - Display Current Configuration & Profile

| **&V - Display Current Configuration & Profile** | |
|---|---|
| **AT&V** | Execution command returns some of the base configuration parameters settings.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |

### 3.7.1.1.15 &V0 - Display Current Configuration & Profile

| **&V0 - Display Current Configuration & Profile** | |
|---|---|
| **AT&V0** | Execution command returns all the configuration parameters settings.<br><br>Note: this command is the same as **&V**, it is included only for backwards compatibility.<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting. |

### 3.7.1.1.16 &V1 - Display S Registers Values

| **&V1 - Display S Registers Values** | |
|---|---|
| **AT&V1** | Execution command returns the value of the **S registers** in decimal and hexadecimal value in the format:<br><br>**REG DEC HEX**<br>**<reg0><dec> <hex>**<br>**<reg1><dec> <hex>**<br>...<br>where<br>**<reg*n*>** - **S** register number<br>000..005<br>007<br>012<br>025<br>038 |

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| | |
|---|---|
| | **<dec>** - current value in decimal notation<br>**<hex>** - current value in hexadecimal notation |

### *3.7.1.1.17 &V3 - Display S Registers Values*

| **&V3 - Display S Registers Values** | |
|---|---|
| **AT&V3** | Execution command returns the value of the **S registers** in decimal and hexadecimal value in the format:<br><br>**REG DEC HEX**<br>**<reg0><dec> <hex>**<br>**<reg1><dec> <hex>**<br>...<br>where<br>**<reg*n*>** - **S** register number<br>000..005<br>007<br>012<br>025<br>030<br>038<br>**<dec>** - current value in decimal notation<br>**<hex>** - current value in hexadecimal notation |

### *3.7.1.1.18 &V2 - Display Last Connection Statistics*

| **&V2 - Display Last Connection Statistics** | |
|---|---|
| **AT&V2** | Execution command returns the last connection statistics and connection failure reason. |

### *3.7.1.1.19 \V - Single Line Connect Message*

| **\V - Single Line Connect Message** | |
|---|---|
| **AT\V<n>** | Execution command set single line connect message.<br><br>Parameter:<br>**<n>**<br>0 - off<br>1 - on |

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### 3.7.1.1.20 +GCI - Country Of Installation

| +GCI - Country Of Installation | |
|---|---|
| **AT+GCI=<code>** | Set command selects the installation country code according to ITU-T.35 Annex A.<br><br>Parameter:<br>**<code>**<br>59 - it currently supports only the Italy country code |
| **AT+GCI?** | Read command reports the currently selected country code. |
| **AT+GCI=?** | Test command reports the supported country codes. |
| Reference | V25ter. |

### 3.7.1.1.21 %L - Line Signal Level

| %L - Line Signal Level | |
|---|---|
| **AT%L** | It has no effect and is included only for backward compatibility with landline modems |

### 3.7.1.1.22 %Q - Line Quality

| %Q - Line Quality | |
|---|---|
| **AT%Q** | It has no effect and is included only for backward compatibility with landline modems |

### 3.7.1.1.23 L - Speaker Loudness

| L - Speaker Loudness | |
|---|---|
| **ATL<n>** | It has no effect and is included only for backward compatibility with landline modems |

### 3.7.1.1.24 M - Speaker Mode

| M - Speaker Mode | |
|---|---|
| **ATM<n>** | It has no effect and is included only for backward compatibility with landline modems |

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## 3.7.1.2 DTE - Modem Interface Control

### *3.7.1.2.1 E - Command Echo*

| **E - Command Echo** | |
|---|---|
| **ATE[<n>]** | Set command enables/disables the command echo.<br><br>Parameter:<br>**<n>**<br>0 - disables command echo<br>1 - enables command echo (factory default) , hence command sent to the device are echoed back to the **DTE** before the response is given.<br><br>Note: if parameter is omitted, the command has the same behaviour of **ATE0** |
| Reference | V25ter |

### *3.7.1.2.2 Q - Quiet Result Codes*

| **Q - Quiet Result Codes** | |
|---|---|
| **ATQ[<n>]** | Set command enables or disables the result codes.<br><br>Parameter:<br>**<n>**<br>0 - enables result codes (factory default)<br>1 - disables result codes<br>2 - disables result codes (only for backward compatibility)<br><br>Note: After issuing either **ATQ1** or **ATQ2** every information text transmitted in response to commands is not affected<br><br>Note: if parameter is omitted, the command has the same behaviour of **ATQ0** |
| Example | *After issuing ATQ1 or ATQ2*<br><br>AT+CGACT=?<br>**+CGACT: (0-1) nothing is appended to the response** |
| Reference | V25ter |

### *3.7.1.2.3 V - Response Format*

| **V - Response Format** | |
|---|---|
| **ATV[<n>]** | Set command determines the contents of the header and trailer transmitted |

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<table>
<tr><td></td><td>with result codes and information responses. It also determines if result codes are transmitted in a numeric form or an alphanumeric form (see [§3.2.3 Information Responses And Result Codes] for the table of result codes).<br><br>Parameter:<br><n><br>0 - limited headers and trailers and numeric format of result codes<br><br><table><tr><td>information responses</td><td><text><CR><LF></td></tr><tr><td>result codes</td><td><numeric code><CR></td></tr></table><br>1 - full headers and trailers and verbose format of result codes (factory default)<br><br><table><tr><td>information responses</td><td><CR><LF><br><text><CR><LF></td></tr><tr><td>result codes</td><td><CR><LF><br><numeric code><CR><LF></td></tr></table><br>Note: the <text> portion of information responses is not affected by this setting.<br><br>Note: if parameter is omitted, the command has the same behaviour of ATV0</td></tr>
<tr><td>Reference</td><td>V25ter</td></tr>
</table>

### *3.7.1.2.4 X - Extended Result Codes*

<table>
<tr><td colspan="2">X - Extended Result Codes</td></tr>
<tr><td>ATX[<n>]</td><td>Set command selects the result code messages subset used by the modem to inform the DTE of the result of the commands.<br><br>Parameter:<br><n><br>0 - send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER results. Busy tones reporting is disabled.<br>1..4 - reports all messages (factory default is 1).<br><br>Note: If parameter is omitted, the command has the same behaviour of ATX0</td></tr>
</table>

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| | |
|---|---|
| Note | For complete control on **CONNECT** response message see also **+DR** command. |
| Reference | V25ter |

### 3.7.1.2.5 I - Identification Information

| **I - Identification Information** | |
|---|---|
| **ATI[<n>]** | Execution command returns one or more lines of information text followed by a result code.<br><br>Parameter:<br>**<n>**<br>0 - numerical identifier.<br>1 - module checksum<br>2 - checksum check result<br>3 - manufacturer<br>4 - product name<br>5 - DOB version<br><br>Note: this is one of the commands whose output differs depending on the last **#SELINT** setting.<br><br>Note: if parameter is omitted, the command has the same behaviour of **ATI0** |
| Reference | V25ter |

### 3.7.1.2.6 &C - Data Carrier Detect (DCD) Control

| **&C - Data Carrier Detect (DCD) Control** | |
|---|---|
| **AT&C[<n>]** | Set command controls the RS232 **DCD** output behaviour.<br><br>Parameter:<br>**<n>**<br>0 - **DCD** remains **high** always.<br>1 - **DCD** follows the Carrier detect status: if carrier is detected **DCD** is high, otherwise **DCD** is **low**. (factory default)<br>2 - **DCD off** while disconnecting<br><br>Note: if parameter is omitted, the command has the same behaviour of **AT&C0** |
| Reference | V25ter |

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### 3.7.1.2.7 &D - Data Terminal Ready (DTR) Control

| **&D - Data Terminal Ready (DTR) Control** | |
|---|---|
| **AT&D[<n>]** | Set command controls the Module behaviour to the RS232 **DTR** transitions.<br><br>Parameter:<br>**<n>**<br>0 - **DTR** transitions are ignored. (factory default)<br>1 - when the MODULE is connected, the **high** to **low** transition of **DTR** pin sets the device in command mode, the current connection is NOT closed.<br>2 - when the MODULE is connected , the **high** to **low** transition of **DTR** pin sets the device in command mode and the current connection is closed.<br>3 - **C108/1** operation is enabled.<br>4 - **C108/1** operation is disabled.<br><br>Note: if **AT&D2** has been issued and the **DTR** has been tied **low**, autoanswering is inhibited and it is possible to answer only issuing command **ATA**.<br><br>Note: if parameter is omitted, the command has the same behaviour of **AT&D0** |
| Reference | V25ter |

### 3.7.1.2.8 \Q - Standard Flow Control

| **\Q - Standard Flow Control** | |
|---|---|
| **AT\Q[<n>]** | Set command controls the RS232 flow control behaviour.<br><br>Parameter:<br>**<n>**<br>0 - no flow control<br>1 - software bi-directional with filtering (**XON/XOFF**)<br>2 - hardware mono-directional flow control (only **CTS** active)<br>3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default)<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT\Q0**<br><br>Note: **\Q's** settings are functionally a subset of **&K's** ones. |
| Reference | V25ter |

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### 3.7.1.2.9 &K - Flow Control

| **&K - Flow Control** | |
|---|---|
| **AT&K[<n>]** | Set command controls the RS232 flow control behaviour.<br><br>Parameter:<br>**<n>**<br>0 - no flow control<br>1 - hardware mono-directional flow control (only **CTS** active)<br>2 - software mono-directional flow control (**XON/XOFF**)<br>3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default)<br>4 - software bi-directional with filtering (**XON/XOFF**)<br>5 - pass through: software bi-directional without filtering (**XON/XOFF**)<br>6 - both hardware bi-directional flow control (both **RTS/CTS** active) and software bi-directional flow control (**XON/XOFF**) with filtering<br><br>Note: if parameter is omitted, the command has the same behaviour as **AT&K0**<br><br>Note: **&K** has no Read Command. To verify the current setting of **&K**, simply check the settings of the active profile with **AT&V**. |

### 3.7.1.2.10 &S - Data Set Ready (DSR) Control

| **&S - Data Set Ready (DSR) Control** | |
|---|---|
| **AT&S[<n>]** | Set command controls the RS232 **DSR** pin behaviour.<br><br>Parameter:<br>**<n>**<br>0 - always **ON**<br>1 - follows the GSM traffic channel indication.<br>2 - **ON** when connected<br>3 - **ON** when device is ready to receive commands (factory default).<br><br>Note: if option 1 is selected then **DSR** is tied up when the device receives from the network the GSM traffic channel indication.<br><br>Note: if parameter is omitted, the command has the same behaviour of **AT&S0** |

### 3.7.1.2.11 \R - Ring (RI) Control

| **\R - Ring (RI) Control** | |
|---|---|
| **AT\R[<n>]** | Set command controls the **RING** output pin behaviour. |

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| | |
|---|---|
| | Parameter:<br>**<n>**<br>0 - **RING** on during ringing and further connection<br>1 - **RING** on during ringing (factory default)<br>2 - **RING** follows the ring signal<br><br>Note: to check the ring option status use the **&V** command.<br><br>Note: if parameter is omitted, the command has the same behaviour of **AT\R0** |

### *3.7.1.2.12 +IPR - Fixed DTE Interface Rate*

| **+IPR - Fixed DTE Interface Rate** | |
|---|---|
| **AT+IPR=<rate>** | Set command specifies the **DTE** speed at which the device accepts commands during command mode operations; it may be used to fix the **DTE-DCE** interface speed.<br><br>Parameter:<br>**<rate>**<br>0<br>..300<br>1200<br>2400<br>4800<br>9600<br>19200<br>38400<br>57600<br>115200<br><br>If **<rate>** is set to 0, then automatic speed detection is enabled and also character format (see **+ICF**) is set to auto-detect. (default)<br><br>If **<rate>** is specified and not 0, **DTE-DCE** speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled. |
| **AT+IPR?** | Read command returns the current value of **+IPR** parameter. |
| **AT+IPR=?** | Test command returns the list of supported autodetectable **<rate>** values and the list of fixed-only **<rate>** values in the format:<br><br>**+IPR**:(list of supported autodetectable **<rate>** values), (list of fixed-only **<rate>** values) |
| Reference | V25ter |

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### 3.7.1.2.13 +IFC - DTE-Modem Local Flow Control

| **+IFC - DTE-Modem Local Flow Control** | |
|---|---|
| **AT+IFC=<by_te>, <by_ta>** | Set command selects the flow control behaviour of the serial port in both directions: from **DTE** to **modem** (**<by_ta>** option) and from **modem** to **DTE** (**<by_te>**)<br><br>Parameter:<br>**<by_te>** - flow control option for the data received by **DTE**<br>0 - flow control None<br>1 - **XON/XOFF** filtered<br>2 - **C105** (**RTS**) (factory default)<br>3 - **XON/XOFF** not filtered<br><br>**<by_ta>** - flow control option for the data sent by **modem**<br>0 - flow control None<br>1 - **XON/XOFF**<br>2 - **C106** (**CTS**) (factory default)<br><br>Note: This command is equivalent to **&K** command. |
| **AT+IFC?** | Read command returns active flow control settings. |
| **AT+IFC=?** | Test command returns all supported values of the parameters **<by_te>** and **<by_ta>**. |
| Reference | V25ter |

### 3.7.1.2.14 +ILRR - DTE-Modem Local Rate Reporting

| **+ILRR - DTE-Modem Local Rate Reporting** | |
|---|---|
| **AT+ILRR=<n>** | Set command controls whether or not the **+ILRR: <rate>** information text is transmitted from the **modem** (module) to the **DTE**.<br>Parameter:<br>**<n>**<br>0 - local port speed rate reporting disabled (factory default)<br>1 - local port speed rate reporting enabled<br><br>Note: this information if enabled is sent upon connection. |
| **AT+ILRR?** | Read command returns active setting of <>. |
| **AT+ILRR=?** | Test command returns all supported values of the parameter **<n>** |
| Reference | V25ter |

### 3.7.1.2.15 +ICF - DTE-Modem Character Framing

| **+ICF - DTE-Modem Character Framing** | |
|---|---|
| **AT+ICF=<format> [,<parity>]** | Set command defines the asynchronous character framing to be used when autobauding is disabled. |

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| | |
|---|---|
| | Parameters:<br>**<format>** - determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame.<br>0 - autodetection<br>1 - 8 Data, 2 Stop<br>2 - 8 Data, 1 Parity, 1 Stop<br>3 - 8 Data, 1 Stop<br>4 - 7 Data, 2 Stop<br>5 - 7 Data, 1 Parity, 1 Stop<br><br>**<parity>** - determines how the parity bit is generated and checked, if present<br>0 - Odd<br>1 - Even |
| **AT+ICF?** | Read command returns current settings for subparameters **<format>** and **<parity>**. |
| **AT+ICF=?** | Test command returns the ranges of values for the parameters **<format>** and **<parity>** |
| Reference | V25ter |
| Example | `AT+ICF = 0 - auto detect`<br>`AT+ICF = 1 - 8N2`<br>`AT+ICF = 2,0 - 8O1`<br>`AT+ICF = 2,1 - 8E1`<br>`AT+ICF = 3 - 8N1 (default)`<br>`AT+ICF = 5,0 - 7O1`<br>`AT+ICF = 5,1 - 7E1` |

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## 3.7.1.3 Call Control

### *3.7.1.3.1 D - Dial*

| **D - Dial** | |
|---|---|
| **ATD<number>[;]** | Execution command starts a call to the phone number given as parameter. If "**;**" is present, a **voice** call to the given number is performed, regardless of the current value of the connection mode set by **+FCLASS** command.<br><br>Parameter:<br>**<number>** - phone number to be dialed<br><br>Note: type of call (**data**, **fax** or **voice**) depends on last **+FCLASS** setting.<br><br>Note: the numbers accepted are 0-9 and *,#,"A", "B", "C", "D","+".<br><br>Note: for backwards compatibility with landline modems modifiers "T", "P", "R", ",", "W", "!", "@" are accepted but have no effect. |
| **ATD><str>[;]** | Issues a call to phone number which corresponding alphanumeric field is **<str>**; all available memories will be searched for the correct entry.<br><br>If "**;**" is present a **voice** call is performed.<br><br>Parameter:<br>**<str>** - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks.<br><br>Note: used character set should be the one selected with **+CSCS**. |
| **ATD><mem><n>[;]** | Issues a call to phone number in phonebook memory storage **<mem>**, entry location **<n>** (available memories may be queried with **AT+CPBS=?**).<br>If "**;**" is present a **voice** call is performed.<br><br>Parameters:<br>**<mem>** - phonebook memory storage; it must not be enclosed in quotation marks.<br>SM - SIM phonebook<br>FD - SIM fixed dialling-phonebook<br>LD - SIM last-dialling-phonebook<br>MC - device missed (unanswered received) calls list<br>RC - ME received calls list<br><br>**<n>** - entry location; it should be in the range of locations available in the memory used. |
| **ATD><n>[;]** | Issues a call to phone number in entry location **<n>** of the active phonebook memory storage (see **+CPBS**). |

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| D - Dial | |
|---|---|
| | If "**;**" is present a **voice** call is performed.<br><br>Parameter:<br>**<n>** - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage. |
| **ATDL** | Issues a call to the last number dialed. |
| **ATDS=<nr>[;]** | Issues a call to the number stored in the MODULE internal phonebook position number **<nr>**.<br>**If "; " is present a voice** call is performed.<br><br>Parameter:<br>**<nr>** - internal phonebook position to be called (See commands **&N** and **&Z**) |
| **ATD<number>I[;]**<br>**ATD<number>i[;]** | Issues a call overwriting the CLIR supplementary service subscription default value for this call<br>If "**;**" is present a **voice** call is performed.<br><br>**I** - invocation, restrict CLI presentation<br>**i** - suppression, allow CLI presentation |
| **ATD<number>G[;]**<br>**ATD<number>g[;]** | Issues a call checking the CUG supplementary service information for the current call. Refer to **+CCUG** command.<br>If "**;**" is present a **voice** call is performed. |
| **ATD*<gprs_sc>[*<addr>][*[<L2P>][*[<cid>]]]]#** | This command is specific of GPRS functionality and causes the **MT** to perform whatever actions are necessary to establish communication between the **TE** and the external PDN.<br><br>Parameters:<br>**<gprs_sc>** - GPRS Service Code, a digit string (value 99) which identifies a request to use the GPRS<br><br>**<addr>** - string that identifies the called party in the address space applicable to the PDP.<br><br>**<L2P>** - 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:<br>1 - PPP<br>Other values are reserved and will result in an **ERROR** response to the Set command.<br><br>**<cid>** - a digit which specifies a particular **PDP** context definition (see **+CGDCONT** command). |
| Example | *To dial a number in SIM phonebook entry 6:*<br>ATD>SM6<br>OK |

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| D - Dial | |
|---|---|
| | *To have a voice call to the 6-th entry of active phonebook:*<br>ATD>6;<br>OK<br><br>*To call the entry with alphanumeric field "Name":*<br>ATD>"Name";<br>OK |
| Reference | V25ter. |

### 3.7.1.3.2 T - Tone Dial

| T - Tone Dial | |
|---|---|
| **ATT** | Set command has no effect is included only for backward compatibility with landline modems. |
| Reference | V25ter. |

### 3.7.1.3.3 P - Pulse Dial

| P - Pulse Dial | |
|---|---|
| **ATP** | Set command has no effect is included only for backward compatibility with landline modems. |
| Reference | V25ter. |

### 3.7.1.3.4 A - Answer

| A - Answer | |
|---|---|
| **ATA** | Execution command is used to answer to an incoming call if automatic answer is disabled.<br><br>Note: This command MUST be the last in the command line and must be followed immediately by a **<CR>** character. |
| Reference | V25ter. |

### 3.7.1.3.5 H - Disconnect

| H - Disconnect | |
|---|---|
| **ATH** | Execution command is used to close the current conversation (voice, data or fax). |

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| H - Disconnect | |
|---|---|
| | Note: this command can be issued only in command mode; when a data conversation is active the device is in on-line mode (commands are not sensed and characters are sent to the other party), hence escape sequence (see **register S2**) is required before issuing this command, otherwise if **&D1** option is active, **DTR** pin has to be tied low to return in command mode. |
| Reference | V25ter. |

### *3.7.1.3.6 O - Return To On Line Mode*

| O - Return To On Line Mode | |
|---|---|
| **ATO** | Execution command is used to return to on-line mode from command mode. If there's no active connection it returns **NO CARRIER**.<br><br>Note: After issuing this command, if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see **register S2**) or tying low **DTR** pin if **&D1** option is active. |
| Reference | V25ter. |

### *3.7.1.3.7 &G - Guard Tone*

| &G - Guard Tone | |
|---|---|
| **AT&G** | Set command has no effect is included only for backward compatibility with landline modems. |

### *3.7.1.3.8 &Q - Sync/Async Mode*

| &Q - Sync/Async Mode | |
|---|---|
| **AT&Q** | Set command has no effect is included only for backward compatibility with landline modems. |

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### 3.7.1.4 Modulation Control

#### *3.7.1.4.1 +MS - Modulation Selection*

| **+MS - Modulation Selection** | |
|---|---|
| **AT+MS=<br><carrier><br>[,<automode><br>[,<min_rate><br>[,<max_rate>]]]** | Set command has no effect is included only for backward compatibility with landline modems.<br><br>Parameter:<br>**<carrier>** - a string which specifies the preferred modem carrier to use in originating or answering a connection<br>V21<br>V22<br>V22B<br>V23C<br>V32<br>V34<br>**<automode>** - it enables/disables automatic modulation negotiation.<br>0 - disabled<br>1 - enabled. It has effect only if it is defined for the associated modulation.<br>**<min_rate>** - it specifies the lowest value at which the DCE may establish a connection.<br>0 - unspecified<br>**<max_rate>** - it specifies the highest value at which the DCE may establish a connection.<br>0 - unspecified<br>300..14400 - rate in bps<br><br>Note: to change modulation requested use **+CBST** command. |
| **AT+MS?** | Read command returns the current value of **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters. |
| **AT+MS=?** | Test command returns all supported values of the **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters. |

#### *3.7.1.4.2 %E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward*

| **%E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward** | |
|---|---|
| **AT%E<n>** | Execution command has no effect and is included only for backward compatibility with landline modems. |

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## 3.7.1.5 Compression Control

### *3.7.1.5.1 +DS - Data Compression*

| **+DS - Data Compression** | |
|---|---|
| **AT+DS=<n>** | Set command sets the V42 compression parameter.<br><br>Parameter:<br>**<n>**<br>0 - no compression, it is currently the only supported value |
| **AT+DS?** | Read command returns current value of the data compression parameter. |
| **AT+DS=?** | Test command returns all supported values of the parameter **<n>** |
| Reference | V25ter |

### *3.7.1.5.2 +DR - Data Compression Reporting*

| **+DR - Data Compression Reporting** | |
|---|---|
| **AT+DR=<n>** | Set command enables/disables the data compression reporting upon connection.<br><br>Parameter:<br>**<n>**<br>0 - data compression reporting disabled;<br>1 - data compression reporting enabled upon connection.<br><br>Note: if enabled, the following intermediate result code is transmitted before the final result code:<br><br>**+DR: <compression>**<br>(the only supported value for **<compression>** is "**NONE**") |
| **AT+DR?** | Read command returns current value of **<n>**. |
| **AT+DR=?** | Test command returns all supported values of the parameter **<n>** |
| Reference | V25ter |

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### 3.7.1.6 Break Control

#### *3.7.1.6.1 \B - Transmit Break To Remote*

| **\B - Transmit Break To Remote** | |
|---|---|
| **AT\B** | Execution command has no effect and is included only for backward compatibility with landline modems |

#### *3.7.1.6.2 \K - Break Handling*

| **\K - Break Handling** | |
|---|---|
| **AT\K[<n>]** | Execution command has no effect and is included only for backward compatibility with landline modems<br><br>Parameter:<br>**<n>**<br>0..5 |

#### *3.7.1.6.3 \N - Operating Mode*

| **\N - Operating Mode** | |
|---|---|
| **AT\N** | Execution command has no effect and is included only for backward compatibility with landline modems |

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### 3.7.1.7 S Parameters

Basic commands that begin with the letter "**S**" are known as "**S-Parameters**". The number following the "**S**" indicates the "parameter number" being referenced. If the number is not recognized as a valid parameter number, an **ERROR** result code is issued.

If no value is given for the subparameter of an **S-Parameter**, an **ERROR** result code will be issued and the stored value left unchanged.

Note: what follows is a special way to select and set an **S-parameter**:

1. **ATS*n*<CR>** selects ***n*** as current parameter number. If the value of ***n*** is in the range (0, 2, 3, 4, 5, 7, 12, 25, 30, 38), this command establishes **S*n*** as last selected parameter. Every value out of this range and less than 256 can be used but has no meaning and is maintained only for backward compatibility with landline modems.
2. **AT=<value><CR>** or **ATS=<value><CR>** set the contents of the selected **S-parameter**

Example:

| | |
|---|---|
| **ATS7<CR>** | establishes **S7** as last selected parameter. |
| **AT=40<CR>** | sets the content of **S7** to 40 |
| **ATS=15<CR>** | sets the content of **S7** to 15. |

#### *3.7.1.7.1 S0 - Number Of Rings To Auto Answer*

| **S0 - Number Of Rings To Auto Answer** | |
|---|---|
| **ATS0=[<n>]** | Set command sets the number of rings required before device automatically answers an incoming call.<br><br>Parameter:<br>**<n>** - number of rings<br>0 - auto answer disabled (factory default)<br>1..255 - number of rings required before automatic answer. |
| **ATS0?** | Read command returns the current value of **S0 parameter**. |
| Reference | V25ter |

#### *3.7.1.7.2 S1 - Ring Counter*

| **S1 - Ring Counter** | |
|---|---|
| **ATS1** | **S1** is incremented each time the device detects the ring signal of an incoming call. **S1** is cleared as soon as no ring occur. |

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| | |
|---|---|
| | Note: the form **ATS1** has no effect. |
| **ATS1?** | Read command returns the value of this parameter. |

### *3.7.1.7.3 S2 - Escape Character*

| **S2 - Escape Character** | |
|---|---|
| **ATS2=[<char>]** | Set command sets the ASCII character to be used as escape character.<br><br>Parameter:<br>**<char>** - escape character decimal ASCII<br>0..255 - factory default value is 43 (+).<br><br>Note: the escape sequence consists of three escape characters preceded and followed by ***n*** ms of idle (see **S12** to set ***n***). |
| **ATS2?** | Read command returns the current value of **S2** parameter.<br><br>Note: the format of the numbers in output is always 3 digits, left-filled with 0s |

### *3.7.1.7.4 S3 - Command Line Termination Character*

| **S3 - Command Line Termination Character** | |
|---|---|
| **ATS3=[<char>]** | Set command sets the value of the character either recognized by the device as command line terminator and generated by the device as part of the header, trailer, and terminator for result codes and information text, along with **S4 parameter**.<br><br>Parameter:<br>**<char>** - command line termination character (decimal ASCII)<br>0..127 - factory default value is 13 (ASCII **CR**)<br><br>Note: the “previous” value of **S3** is used to determine the command line termination character for entering the command line containing the **S3** setting command. However the result code issued shall use the “new” value of **S3** (as set during the processing of the command line) |
| **ATS3?** | Read command returns the current value of **S3 parameter**.<br><br>Note: the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

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### 3.7.1.7.5 S4 - Response Formatting Character

| S4 - Response Formatting Character | |
|---|---|
| **ATS4=[<char>]** | Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the **S3 parameter**.<br><br>Parameter:<br>**<char>** - response formatting character (decimal ASCII)<br>0..127 - factory default value is 10 (ASCII **LF**)<br><br>Note: if the value of **S4** is changed in a command line the result code issued in response of that command line will use the new value of **S4**. |
| **ATS4?** | Read command returns the current value of S4 parameter.<br><br>Note: the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### 3.7.1.7.6 S5 - Command Line Editing Character

| S5 - Command Line Editing Character | |
|---|---|
| **ATS5=[<char>]** | Set command sets the value of the character recognized by the device as a request to delete from the command line the immediately preceding character.<br><br>Parameter:<br>**<char>** - command line editing character (decimal ASCII)<br>0..127 - factory default value is 8 (ASCII **BS**) |
| **ATS5?** | Read command returns the current value of **S5 parameter**.<br><br>Note: the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### 3.7.1.7.7 S7 - Connection Completion Time-Out

| S7 - Connection Completion Time-Out | |
|---|---|
| **ATS7=[<tout>]** | Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by A command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device.<br><br>Parameter:<br>**<tout>** - number of seconds<br>1..255 - factory default value is 60 |
| **ATS7?** | Read command returns the current value of **S7 parameter**. |

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| S7 - Connection Completion Time-Out | |
|---|---|
| | Note: the format of the numbers in output is always 3 digits, left-filled with 0s |
| Reference | V25ter |

### 3.7.1.7.8 S12 - Escape Prompt Delay

| S12 - Escape Prompt Delay | |
|---|---|
| **ATS12=[<time>]** | Set command sets:<br><br>• the minimum period, before receipt of the first character of the three escape character sequence, during which no other character has to be detected in order to accept it as valid first character.<br>• the maximum period allowed between receipt of first or second character of the three escape character sequence and receipt of the next.<br>• the minimum period, after receipt of the last character of the three escape character sequence, during which no other character has to be detected in order to accept the escape sequence as a valid one.<br><br>Parameter:<br>**<time>** - expressed in fiftieth of a second<br>20..255 - factory default value is 50.<br><br>Note: the minimum period S12 has to pass after **CONNECT** result code too, before a received character is accepted as valid first character of the three escape character sequence. |
| **ATS12?** | Read command returns the current value of **S12 parameter**.<br><br>Note: the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.7.1.7.9 S25 - Delay To DTR Off

| S25 -Delay To DTR Off | |
|---|---|
| **ATS25=[<time>]** | Set command defines the amount of time, in hundredths of second, that the device will ignore the **DTR** for taking the action specified by command **&D**.<br><br>Parameter:<br>**<time>** - expressed in hundredths of a second<br>0..255 - factory default value is 5.<br><br>Note: the delay is effective only if its value is greater than 5. |
| **ATS25?** | Read command returns the current value of **S25 parameter**. |

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| S25 -Delay To DTR Off | |
|---|---|
| | Note: the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.7.1.7.10 S30 - Disconnect Inactivity Timer

| S30 -Disconnect Inactivity Timer | |
|---|---|
| **ATS30=[<tout>]** | Set command defines the inactivity timeout in minutes. The device disconnects if no characters are exchanged for a time period of at least **<tout>** minutes.<br><br>Parameter:<br>**<tout>** - expressed in minutes<br>0 - disabled, disconnection due to inactivity is disabled (factory default).<br>1..127 - inactivity timeout value |
| **ATS30?** | Read command returns the current value of **S30 parameter**.<br><br>Note: the format of the numbers in output is always 3 digits, left-filled with 0s |

### 3.7.1.7.11 S38 - Delay Before Forced Hang Up

| S38 -Delay Before Forced Hang Up | |
|---|---|
| **ATS38=[<delay>]** | Set command sets the delay, in seconds, between the device's receipt of **H** command (or **ON**-to-**OFF** transition of **DTR** if device is programmed to follow the signal) and the disconnect operation.<br><br>Parameter:<br>**<delay>** - expressed in seconds<br>0..254 - the device will wait **<delay>** seconds for the remote device to acknowledge all data in the device buffer before disconnecting (factory default value is 20).<br>255 - the device doesn't time-out and continues to deliver data in the buffer until the connection is lost or the data is delivered.<br><br>Note: **<delay>** parameter can be used to ensure that data in device buffer is sent before device disconnects. |
| **ATS38?** | Read command returns the current value of **S38 parameter**.<br><br>Note: the format of the numbers in output is always 3 digits, left-filled with 0s |

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# 3.7.2 ETSI GSM 07.07 AT Commands

## 3.7.2.1 General

### *3.7.2.1.1 +CGMI - Request Manufacturer Identification*

| **+CGMI - Request Manufacturer Identification** | |
|---|---|
| **AT+CGMI** | Execution command returns the device manufacturer identification code without command echo. The output depends on the choice made through **#SELINT** command. |
| **AT+CGMI=?** | Test command returns **OK** result code. |
| Reference | GSM 07.07 |

### *3.7.2.1.2 +CGMM - Request Model Identification*

| **+CGMM - Request Model Identification** | |
|---|---|
| **AT+CGMM** | Execution command returns the device model identification code without command echo. |
| **AT+CGMM=?** | Test command returns **OK** result code. |
| Reference | GSM 07.07 |

### *3.7.2.1.3 +CGMR - Request Revision Identification*

| **+CGMR - Request Revision Identification** | |
|---|---|
| **AT+CGMR** | Execution command returns device software revision number without command echo. |
| **AT+CGMR=?** | Test command returns **OK** result code. |
| Reference | GSM 07.07 |

### *3.7.2.1.4 +CGSN - Request Product Serial Number Identification*

| **+CGSN - Request Product Serial Number Identification** | |
|---|---|
| **AT+CGSN** | Execution command returns the product serial number, identified as the IMEI of the mobile, without command echo. |
| **AT+CGSN=?** | Test command returns **OK** result code. |
| Reference | GSM 07.07 |

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### 3.7.2.1.5 +CSCS - Select TE Character Set

| **+CSCS - Select TE Character Set** | |
|---|---|
| **AT+CSCS=<br>[<chset>]** | Set command sets the current character set used by the device.<br><br>Parameter:<br>**<chset>** - character set<br>"IRA" - ITU-T.50<br>"8859-1" - ISO 8859 Latin 1<br>"PCCP437" - PC character set Code Page 437<br>"UCS2" - 16-bit universal multiple-octet coded character set (ISO/IEC10646) |
| **AT+CSCS?** | Read command returns the current value of the active character set. |
| **AT+CSCS=?** | Test command returns the supported values for parameter **<chset>**. |
| Reference | GSM 07.07 |

### 3.7.2.1.6 +CIMI - Request International Mobile Subscriber Identity (IMSI)

| **+CIMI - Request International Mobile Subscriber Identify (IMSI)** | |
|---|---|
| **AT+CIMI** | Execution command returns the value of the Internal Mobile Subscriber Identity stored in the SIM without command echo.<br><br>Note: a SIM card must be present in the SIM card housing, otherwise the command returns **ERROR**. |
| **AT+CIMI=?** | Test command returns **OK** result code. |
| Reference | GSM 07.07 |

### 3.7.2.1.7 +CMUX - Multiplexing Mode

| **+CMUX - Multiplexing Mode** | |
|---|---|
| **AT+CMUX=<br><mode><br>[,<subset>]** | Set command is used to enable/disable the GSM 07.10 multiplexing protocol control channel<br><br>Parameters:<br>**<mode>** multiplexer transparency mechanism<br>0 - basic option; it is currently the only supported value.<br>**<subset>**<br>0 - UIH frames used only; it is currently the only supported value.<br><br>Note: after entering the Multiplexed Mode a timeout of five seconds start. If no CMUX control channel is established the engine returns to AT Command Mode |

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| **+CMUX - Multiplexing Mode** | |
|---|---|
| | Note: all the CMUX protocol parameter are fixed as defined in GSM07.10 and cannot be changed.<br><br>Note: the maximum frame size is fixed: **N1=31** |
| **AT+CMUX?** | Read command returns the current value of **<mode>** and **<subset>** parameters, in the format:<br><br>**+CMUX: <mode>,<subset>** |
| **AT+CMUX=?** | Test command returns the range of supported values for parameters **<mode>** and **<subset>** |
| Reference | GSM 07.07, GSM 07.10 |

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## 3.7.2.2 Call Control

### *3.7.2.2.1 +CHUP - Hang Up Call*

| **+CHUP - Hang Up Call** | |
|---|---|
| **AT+CHUP** | Execution command cancels all active and held calls, also if a multi-party session is running. |
| **AT+CHUP=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

### *3.7.2.2.2 +CBST - Select Bearer Service Type*

| **+CBST - Select Bearer Service Type** | |
|---|---|
| **AT+CBST=<br>[<speed><br>[,<name><br>[,<ce>]]]** | Set command sets the bearer service **<name>** with data rate **<speed>**, and the connection element **<ce>** to be used when data calls are originated. Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls (refer **+CSNS**).<br><br>Parameters:<br>The default values of the subparameters are manufacturer specific since they depend on the purpose of the device and data services provided by it. Not all combinations of these subparameters are supported. The supported values are:<br><br>**<speed>**<br>0 - autobauding (automatic selection of the speed, factory default)<br>1 - 300 bps (V.21)<br>2 - 1200 bps (V.22)<br>3 - 1200/75 bps (V.23)<br>4 - 2400 bps (V.22bis)<br>6 - 4800 bps (V.32)<br>7 - 9600 bps (V.32)<br>14 - 14400 bps (V.34)<br>65 - 300 bps (V.110)<br>66 - 1200 bps (V.110)<br>68 - 2400 bps (V.110 or X.31 flag stuffing)<br>70 - 4800 bps (V.110 or X.31 flag stuffing)<br>71 - 9600 bps (V.110 or X.31 flag stuffing)<br>75 - 14400 bps (V110 or X.31 flag stuffing)<br>**<name>**<br>0 - data circuit asynchronous (factory default)<br>**<ce>**<br>0 - transparent<br>1 - non transparent (default) |

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| +CBST - Select Bearer Service Type | |
|---|---|
| | Note: the settings<br>**AT+CBST=0,0,0**<br>**AT+CBST=14,0,0**<br>**AT+CBST=75,0,0**<br>are not supported. |
| **AT+CBST?** | Read command returns current value of the parameters **<speed>**, **<name>** and **<ce>** |
| **AT+CBST=?** | Test command returns the supported range of values for the parameters. |
| Reference | GSM 07.07 |

### *3.7.2.2.3 +CRLP - Radio Link Protocol*

| +CRLP - Radio Link Protocol | |
|---|---|
| **AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>]]]]]** | Set command sets Radio Link Protocol (RLP) parameters used when non-transparent data calls are originated<br><br>Parameters:<br>**<iws>** - IWF window Dimension<br>1..61 - factory default value is 61<br>**<mws>** - MS window Dimension<br>1..61 - default value is 61<br>**<T1>** - acknowledge timer (10 ms units).<br>39..255 - default value is 78<br>**<N2>** - retransmission attempts<br>1..255 - default value is 6<br>**<ver>** - protocol version<br>0 |
| **AT+CRLP?** | Read command returns the current value of the RLP protocol parameters. |
| **AT+CRLP=?** | Test command returns supported range of values of the RLP protocol parameters. |
| Reference | GSM 07.07 |

### *3.7.2.2.4 +CR - Service Reporting Control*

| +CR - Service Reporting Control | |
|---|---|
| **AT+CR=[<mode>]** | Set command controls whether or not intermediate result code<br><br>**+CR: <serv>**<br><br>is returned from the **TA** to the **TE**, where:<br>**<serv>**<br>ASYNC - asynchronous transparent<br>SYNC - synchronous transparent |

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| | |
|---|---|
| | REL ASYNC - asynchronous non-transparent<br>REL SYNC - synchronous non-transparent.<br><br>If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the **TA** has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code **CONNECT** is transmitted.<br><br>Parameter:<br>**<mode>**<br>0 - disables intermediate result code report (factory default)<br>1 - enables intermediate result code report.<br><br>This command replaces V.25ter [14] command Modulation Reporting Control **+MR**, which is not appropriate for use with a GSM terminal. |
| **AT+CR?** | Read command returns current intermediate report setting |
| **AT+CR=?** | Test command returns the supported range of values of parameter **<mode>**. |
| Reference | GSM 07.07 |

### *3.7.2.2.5 +CEER - Extended Error Report*

| **+CEER - Extended Error Report** | |
|---|---|
| **AT+CEER** | Execution command returns one or more lines of information text **<report>** in the format:<br><br>**+CEER: <report>**<br><br>This report regards some error condition that may occur:<br>- the failure in the last unsuccessful call setup (originating or answering)<br>- the last call release<br>- the last unsuccessful GPRS attach or unsuccessful PDP context activation,<br>- the last GPRS detach or PDP context deactivation.<br><br>Note: if none of this condition has occurred since power up then No Error condition is reported |
| **AT+CEER=?** | Test command returns **OK** result code. |
| Reference | GSM 07.07 |

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### 3.7.2.2.6 +CRC - Cellular Result Codes

| **+CRC - Cellular Result Codes** | |
|---|---|
| **AT+CRC= [<mode>]** | Set command controls whether or not the extended format of incoming call indication is used.<br><br>Parameter:<br>**<mode>**<br>0 - disables extended format reporting (factory default)<br>1 - enables extended format reporting:<br><br>When enabled, an incoming call is indicated to the **TE** with unsolicited result code<br><br>**+CRING: <type>**<br><br>instead of the normal **RING**.<br><br>where<br>**<type>** - call type:<br>ASYNC - asynchronous transparent data<br>SYNC - synchronous transparent data<br>REL ASYNC - asynchronous non-transparent data<br>REL SYNC - synchronous non-transparent data<br>FAX - facsimile (TS 62)<br>VOICE - normal voice (TS 11) |
| **AT+CRC?** | Read command returns current value of the parameter **<mode>**. |
| **AT+CRC=?** | Test command returns supported values of the parameter **<mode>**. |
| Reference | GSM 07.07 |

### 3.7.2.2.7 +CSNS - Single Numbering Scheme

| **+CSNS - Single Numbering Scheme** | |
|---|---|
| **AT+CSNS= [<mode>]** | Set command selects the bearer or teleservice to be used when mobile terminated single numbering scheme call is established. Parameter values set with **+CBST** command shall be used when **<mode>** equals to a data service.<br><br>Parameter:<br>**<mode>**<br>0 - voice (factory default)<br>2 - fax (TS 62)<br>4 - data<br><br>Note: if **+CBST** parameter is set to a value that is not applicable to single numbering calls, ME/TA shall map the value to the closest valid one. E.g. if |

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| | |
|---|---|
| | user has set **<speed>=71**, **<name>=0** and **<ce>=1** (non-trasparent asynchronous 9600 bps V.110 ISDN connection) for mobile originated calls, ME/TA shall map the values into non-trasparent asynchronous 9600 bps V.32 modem connection when single numbering scheme call is answered. |
| **AT+CSNS?** | Read command returns current value of the parameter **<mode>**. |
| **AT+CSNS=?** | Test command returns supported values of parameter **<mode>**. |
| Reference | GSM 07.07 |

### *3.7.2.2.8 +CVHU - Voice Hang Up Control*

| **+CVHU - Voice Hang Up Control** | |
|---|---|
| **AT+CVHU= [<mode>]** | Set command selects whether **ATH** or "**drop DTR**" shall cause a voice connection to be disconnected or not.<br><br>Parameter:<br>**<mode>**<br>0 - "**Drop DTR**" ignored but **OK** result code given. **ATH** disconnects.<br>1 - "**Drop DTR**" and **ATH** ignored but **OK** result code given.<br>2 - "**Drop DTR**" behaviour according to **&D** setting. **ATH** disconnects (factory default). |
| **AT+CVHU?** | Read command reports the current value of the **<mode>** parameter, in the format:<br><br>**+CVHU: <mode>** |
| **AT+CVHU=?** | Test command reports the range of supported values for parameter **<mode>** |

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## 3.7.2.3 Network Service Handling

### *3.7.2.3.1 +CNUM - Subscriber Number*

| **+CNUM - Subscriber Number** | |
|---|---|
| **AT+CNUM** | Execution command returns the MSISDN related to the subscriber (the phone number of the device that is stored in the SIM card) in the format:<br><br>**+CNUM: <alpha>,<number>,<type>**<br><br>where<br>**<alpha>** - alphanumeric string associated to **<number>**; used character set should be the one selected with **+CSCS**.<br>**<number>** - string containing the phone number in the format **<type>**<br>**<type>** - type of number:<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "+"). |
| **AT+CNUM=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

### *3.7.2.3.2 +COPN - Read Operator Names*

| **+COPN - Read Operator Names** | |
|---|---|
| **AT+COPN** | Execution command returns the list of operator names from the **ME** in the format:<br><br>**+COPN: <numeric1>,<alpha1>[<CR><LF>**<br>**+COPN: <numeric2>,<alpha2>[…]]**<br><br>where:<br>**<numeric*n*>** - string type, operator in numeric format (see **+COPS**)<br>**<alpha*n*>** - string type, operator in long alphanumeric format (see **+COPS**)<br><br>Note: each operator code **<numeric*n*>** that has an alphanumeric equivalent **<alpha*n*>** in the ME memory is returned |
| **AT+COPN=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

### *3.7.2.3.3 +CREG - Network Registration Report*

| **+CREG - Network Registration Report** | |
|---|---|
| **AT+CREG= [<mode>]** | Set command enables/disables network registration reports depending on the parameter **<mode>**. |

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| **+CREG - Network Registration Report** | |
|---|---|
| | Parameter:<br>**<mode>**<br>0 - disable network registration unsolicited result code (factory default)<br>1 - enable network registration unsolicited result code<br>2 - enable network registration unsolicited result code with network Cell identification data<br><br>If **<mode>=1**, network registration result code reports:<br><br>**+CREG: <stat>**<br><br>where<br>**<stat>**<br>0 - not registered, ME is not currently searching a new operator to register to<br>1 - registered, home network<br>2 - not registered, but ME is currently searching a new operator to register to<br>3 - registration denied<br>4 -unknown<br>5 - registered, roaming<br><br>If **<mode>=2**, network registration result code reports:<br><br>**+CREG: <stat>[**,**<Lac>**,**<Ci>**]<br><br>where:<br>**<Lac>** - Local Area Code for the currently registered on cell<br>**<Ci>** - Cell Id for the currently registered on cell<br><br>Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell. |
| **AT+CREG?** | Read command reports the **<mode>** and **<stat>** parameter values in the format:<br><br>**+CREG: <mode>**,**<stat>**[,**<Lac>**,**<Ci>**]<br><br>Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell. |
| **AT+CREG=?** | Test command returns the range of supported **<mode>** |
| Example | `AT`<br>`OK`<br>`at+creg?`<br>`+CREG: 0,2  (the MODULE  is in network searching state)`<br><br>`OK`<br>`at+creg?` |

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| +CREG - Network Registration Report | |
|---|---|
| | `+CREG: 0,2`<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,2`<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,2`<br>`OK`<br>`at+creg?`<br>`+CREG: 0,1  (the MODULE is registered )`<br><br>`OK`<br>`at+creg?`<br>`+CREG: 0,1`<br><br>`OK` |
| Reference | GSM 07.07 |

### *3.7.2.3.4 +COPS - Operator Selection*

| +COPS - Operator Selection | |
|---|---|
| **AT+COPS=**<br>**[<mode>**<br>**[,<format>**<br>**[,<oper>]]]** | Set command forces an attempt to select and register the GSM network operator.<br>**<mode>** parameter defines whether the operator selection is done automatically or it is forced by this command to operator **<oper>**.<br>The operator **<oper>** shall be given in format **<format>**.<br><br>Parameters:<br>**<mode>**<br>0 - automatic choice (the parameter **<oper>** will be ignored) (factory default)<br>1 - manual choice (**<oper>** field shall be present)<br>2 - deregister from GSM network; the MODULE is kept unregistered until a **+COPS** with **<mode>=0, 1** or **4** is issued<br>3 - set only **<format>** parameter (the parameter **<oper>** will be ignored)<br>4 - manual/automatic (**<oper>** field shall be present); if manual selection fails, automatic mode (**<mode>=0**) is entered<br>**<format>**<br>0 - alphanumeric long form (max length 16 digits)<br>2 - numeric 5 digits [country code (3) + network code (2)]<br>**<oper>**: network operator in format defined by **<format>** parameter.<br><br>Note: **<mode>** parameter setting is stored in NVM and available at next |

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| +COPS - Operator Selection | |
|---|---|
| | reboot, if it is not **3** (i.e.: set only **<format>** parameter).<br><br>Note: if **<mode>=1 or 4**, the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted)<br><br>Note: **<format>** parameter setting is never stored in NVM |
| **AT+COPS?** | Read command returns current value of **<mode>**,**<format>** and **<oper>** in format **<format>**; if no operator is selected, **<format>** and **<oper>** are omitted<br><br>**+COPS: <mode>**[, **<format>**, **<oper>**] |
| **AT+COPS=?** | Test command returns a list of quadruplets, each representing an operator present in the network.<br>The quadruplets in the list are separated by commas:<br><br>**+COPS: [list of supported (<stat> ,<oper (in <format>=0)>,,<br><oper (in <format>=2)>)s][,,(list of supported <mode>s),<br>(list of supported<format>s)]**<br><br>where<br>**<stat>** - operator availability<br>0 - unknown<br>1 - available<br>2 - current<br>3 - forbidden<br><br>Note: since with this command a network scan is done, this command may require some seconds before the output is given. |
| Reference | GSM 07.07 |

### *3.7.2.3.5 +CLCK - Facility Lock/Unlock*

| +CLCK - Facility Lock/Unlock | |
|---|---|
| **AT+CLCK=<br><fac>,<mode><br>[,<passwd><br>[,<class>]]** | Execution command is used to lock or unlock a **ME** o a network facility.<br><br>Parameters:<br>**<fac>** - facility<br>"SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued)<br>"AO"- BAOC (Barr All Outgoing Calls)<br>"OI" - BOIC (Barr Outgoing International Calls)<br>"OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country)<br>"AI" - BAIC (Barr All Incoming Calls)<br>"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home |

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| **+CLCK - Facility Lock/Unlock** | |
|---|---|
| | country)<br>"AB" - All Barring services (applicable only for **<mode>=0**)<br>"AG" - All outGoing barring services (applicable only for **<mode>=0**)<br>"AC" - All inComing barring services (applicable only for **<mode>=0**)<br>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**)<br>"PN" - network Personalisation<br>"PU" - network subset Personalisation<br>**<mode>** - defines the operation to be done on the facility<br>0 - unlock facility<br>1 - lock facility<br>2 - query status<br>**<passwd>** - shall be the same as password specified for the facility from the **DTE** user interface or with command Change Password **+CPWD**<br>**<class>** - represents the class of information of the facility as sum of bits (default is 7)<br>1 - voice (telephony)<br>2 - data (refers to all bearer services)<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>Note: when **<mode>=2** and command successful, it returns:<br>**+CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2> [...]]**<br><br>where<br>**<status>** - the current status of the facility<br>0 - not active<br>1 - active<br>**<class*n*>** - class of information of the facility |
| **AT+CLCK=?** | Test command reports all the facilities supported by the device. |
| Reference | GSM 07.07 |
| Example | *Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:*<br><br>AT+CLCK =”A0”,2<br>+CLCK: <status>,1<br>+CLCK: <status>,2<br>+CLCK: <status>,4 |

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### 3.7.2.3.6 +CPWD - Change Facility Password

| **+CPWD - Change Facility Password** | |
|---|---|
| **AT+CPWD=<fac>, <oldpwd>, <newpwd>** | Execution command changes the password for the facility lock function defined by command Facility Lock **+CLCK** .<br><br>Parameters:<br>**<fac>** - facility<br>"SC" - SIM (PIN request)<br>"AB" - All barring services<br>"P2" - SIM PIN2<br>**<oldpwd>** - string type, it shall be the same as password specified for the facility from the **ME** user interface or with command **+CPWD**.<br>**<newpwd>** - string type, it is the new password<br><br>Note: parameter **<oldpwd>** is the old password while **<newpwd>** is the new one. |
| **AT+CPWD=?** | Test command returns a list of pairs (**<fac>**,**<pwdlength>**) which presents the available facilities and the maximum length of their password (**<pwdlength>**) |
| Reference | GSM 07.07 |

### 3.7.2.3.7 +CLIP - Calling Line Identification Presentation

| **+CLIP - Calling Line Identification Presentation** | |
|---|---|
| **AT+CLIP=[<n>]** | Set command enables/disables the presentation of the CLI (Calling Line Identity) at the **TE**. This command refers to the GSM supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call.<br><br>Parameters:<br>**<n>**<br>0 - disables CLI indication (factory default)<br>1 - enables CLI indication<br><br>If enabled the device reports after each RING the response:<br><br>**+CLIP: <number>,<type>,<subaddress>,<satype>,<alpha>, <CLI_validity>**<br>where:<br>**<number>** - calling line number<br>**<type>** - type of address octet in integer format<br>145 - international numbering scheme (contains the character "**+**")<br>129 - national numbering scheme<br>**<subaddress>** - string type subaddress of format specified by **<satype>** |

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| +CLIP - Calling Line Identification Presentation | |
|---|---|
| | **<satype>** - type of subaddress octet in integer format<br>**<alpha>** - 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**.<br>**<CLI_validity>**<br>0 - CLI valid<br>1 - CLI has been withheld by the originator.<br>2 - CLI is not available due to interworking problems or limitation or originating network. |
| **AT+CLIP?** | Read command returns the presentation status of the CLI in the format:<br><br>**+CLIP: <n>,<m>**<br>where:<br>**<n>**<br>0 - CLI presentation disabled<br>1 - CLI presentation enabled<br>**<m>** - status of the CLIP service on the GSM network<br>0 - CLIP not provisioned<br>1 - CLIP provisioned<br>2 - unknown (e.g. no network is present )<br><br>Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it. |
| **AT+CLIP=?** | Test command returns the supported values of parameter **<n>** |
| Reference | GSM 07.07 |
| Note | The command changes only the report behaviour of the device, it does not change CLI supplementary service setting on the network. |

### *3.7.2.3.8 +CLIR - Calling Line Identification Restriction*

| +CLIR - Calling Line Identification Restriction | |
|---|---|
| **AT+CLIR=[<n>]** | Set command overrides the CLIR subscription when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command. This command refers to CLIR-service (GSM 02.81) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.<br><br>Parameter:<br>**<n>** - facility status on the Mobile<br>0 - CLIR facility according to CLIR service network status<br>1 - CLIR facility active (CLI not sent) |

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| | |
|---|---|
| | 2 - CLIR facility not active (CLI sent) |
| **AT+CLIR?** | Read command gives the default adjustment for all outgoing calls (**<n>**) and also triggers an interrogation of the provision status of the CLIR service (**<m>**), where<br>**<n>** - facility status on the Mobile<br>0 - CLIR facility according to CLIR service network status<br>1 - CLIR facility active (CLI not sent)<br>2 - CLIR facility not active (CLI sent)<br>**<m>** - facility status on the Network<br>0 - CLIR service not provisioned<br>1 - CLIR service provisioned permanently<br>2 - unknown (e.g. no network present, etc.)<br>3 - CLI temporary mode presentation restricted<br>4 - CLI temporary mode presentation allowed |
| **AT+CLIR=?** | Test command reports the supported values of parameter **<n>**. |
| Reference | GSM 07.07 |
| Note | This command sets the default behaviour of the device in outgoing calls. |

### *3.7.2.3.9 +CCFC - Call Forwarding Number And Conditions*

| **+CCFC - Call Forwarding Number And Condition** | |
|---|---|
| **AT+CCFC= <reason>, <cmd>[,<number>[, <type>[,<class> [,,,<time>]]]** | Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.<br><br>Parameters:<br>**<reason>**<br>0 - unconditional<br>1 - mobile busy<br>2 - no reply<br>3 - not reachable<br>4 - all calls (not with query command)<br>5 - all conditional calls (not with query command)<br>**<cmd>**<br>0 - disable<br>1 - enable<br>2 - query status<br>3 - registration<br>4 - erasure<br>**<number>** - phone number of forwarding address in format specified by **<type>** parameter<br>**<type>** - type of address byte in integer format :<br>145 - international numbering scheme (contains the character "**+**")<br>129 - national numbering scheme<br>**<class>** - sum of integers each representing a class of information which the command refers; default 7 (**voice + data + fax**) |

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| **+CCFC - Call Forwarding Number And Condition** | |
|---|---|
| | 1 - voice (telephony)<br>2 - data<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br>**<time>** - time in *seconds* to wait before call is forwarded; it is valid only when **<reason>** "no reply" is enabled (**<cmd>**=1) or queried (**<cmd>**=2)<br>1..30 - automatically rounded to a multiple of 5 seconds (default is 20)<br><br>Note: when **<cmd>**=2 and command successful, it returns:<br><br>**+CCFC: <status>,<class1>[,<number>,<type>[,,,<time>]][<CR><LF>**<br>**+CCFC: <status>,<class2>[,<number>,<type>[,,,<time>]][ … ]]**<br><br>where:<br>**<status>** - current status of the network service<br>0 - not active<br>1 - active<br>**<class*n*>** - same as **<class>**<br>**<time>** - it is returned only when **<reason>**=2 (“no reply”) and **<cmd>**=2.<br><br>The other parameters are as seen before. |
| **AT+CCFC=?** | Test command reports supported values for the parameter **<reason>**. |
| Reference | GSM 07.07 |
| Note | When querying the status of a network service (**<cmd>**=2) the response line for 'not active' case (**<status>**=0) should be returned only if service is not active for any **<class>**. |

### *3.7.2.3.10 +CCWA - Call Waiting*

| **+CCWA - Call Waiting** | |
|---|---|
| **AT+CCWA=<br>[<n>[,<cmd>[,<class>]]]** | Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query are supported.<br><br>Parameters:<br>**<n>** - enables/disables the presentation of an unsolicited result code:<br>0 - disable<br>1 - enable<br>**<cmd>** - enables/disables or queries the service at network level:<br>0 - disable<br>1 - enable |

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| +CCWA - Call Waiting | |
|---|---|
| | 2 - query status<br>**<class>** - is a sum of integers each representing a class of information which the command refers to; default is 7 (**voice + data + fax**)<br>1 - voice (telephony)<br>2 - data<br>4 - fax (facsimile services)<br>8 - short message service<br>16 - data circuit sync<br>32 - data circuit async<br>64 - dedicated packet access<br>128 - dedicated PAD access<br><br>Note: the response to the query command is in the format:<br><br>**+CCWA: <status>,<class1>[<CR><LF>**<br>**+CCWA: <status>,<class2>[ … ]]**<br><br>where<br>**<status>** represents the status of the service:<br>0 - inactive<br>1 - active<br>**<class*n*>** - same as **<class>**<br><br>Note: the unsolicited result code enabled by parameter **<n>** is in the format::<br><br>**+CCWA: <number>,<type>,<class>,[<alpha>][,<cli_validity>]**<br>where:<br>**<number>** - string type phone number of calling address in format specified by **<type>**<br>**<type>** - type of address in integer format<br>**<class>** - see before<br>**<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with **+CSCS**.<br><br>**<cli_validity>**<br>0 - CLI valid<br>1 - CLI has been withheld by the originator<br>2 - CLI is not available due to interworking problems or limitations of originating network<br><br>Note: if parameter **<cmd>** is omitted then network is not interrogated.<br><br>Note: in the query command the class parameter must not be issued. |

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| **+CCWA - Call Waiting** | |
|---|---|
| | Note: the difference between call waiting report disabling (**AT+CCWA = 0,1,7**) and call waiting service disabling (**AT+CCWA = 0,0,7**) is that in the first case the call waiting indication is sent to the device by network but this last one does not report it to the **DTE**; instead in the second case the call waiting indication is not generated by the network. Hence the device results busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party.<br><br>Note: The command **AT+CCWA=1,0** has no effect a non sense and must not be issued.. |
| **AT+CCWA?** | Read command reports the current value of the parameter **<n>**. |
| **AT+CCWA=?** | Test command reports the supported values for the parameter **<n>**. |
| Reference | GSM 07.07 |

### *3.7.2.3.11 +CHLD - Call Holding Services*

| **+CHLD - Call Holding Services** | |
|---|---|
| **AT+CHLD=[<n>]** | Execution command controls the network call hold service. With this service it is possible to disconnect temporarily a call and keep it suspended while it is retained by the network, contemporary it is possible to connect another party or make a multiparty connection.<br><br>Parameter:<br>**<n>**<br>0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call. (only from version D)<br>1 - releases all active calls (if any exist), and accepts the other (held or waiting) call<br>1X - releases a specific active call X<br>2 - places all active calls (if any exist) on hold and accepts the other (held or waiting) call.<br>2X - places all active calls on hold except call X with which communication shall be supported (only from version D).<br>3 - adds an held call to the conversation<br><br>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number.<br><br>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation. |
| **AT+CHLD=?** | Test command returns the list of supported **<n>s**.<br><br>**+CHLD: (0,1,1X,2,2X,3)** |

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| **+CHLD - Call Holding Services** | |
|---|---|
| Reference | GSM 07.07 |
| Note | ONLY for VOICE calls |

### *3.7.2.3.12 +CUSD - Unstructured Supplementary Service Data*

| **+CUSD - Unstructured Supplementary Service Data** | |
|---|---|
| **AT+CUSD= [<n>[,<str> [,<dcs>]]]** | Set command allows control of the Unstructured Supplementary Service Data (USSD [GSM 02.90]).<br><br>Parameters:<br>**<n>** - is used to disable/enable the presentation of an unsolicited result code.<br>0 - disable the result code presentation in the **DTA**<br>1 - enable the result code presentation in the **DTA**<br><br>**<str>** - USSD-string (when **<str>** parameter is not given, network is not interrogated)<br>- If **<dcs>** indicates that GSM338 default alphabet is used **ME/TA** converts GSM alphabet into current TE character set (see **+CSCS**).<br>- If **<dcs>** indicates that 8-bit data coding scheme is used: **ME/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).<br><br>**<dcs>** - GSM 3.38 Cell Broadcast Data Coding Scheme in integer format (default is 0).<br><br>Note: the unsolicited result code enabled by parameter **<n>** is in the format:<br>**+CUSD: <m>[,<str>,<dcs>]** to the TE<br><br>where:<br><br>**<m>**:<br>0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation).<br>1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)<br>2 - USSD terminated by the network<br>3 - other local client has responded<br>4 - operation not supported<br>5 - network time out<br><br>Note: in case of successful mobile initiated operation, **DTA** waits the USSD response from the network and sends it to the **DTE** before the final result |

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| +CUSD - Unstructured Supplementary Service Data | |
|---|---|
| | code. This will block the **AT** command interface for the period of the operation. |
| **AT+CUSD?** | Read command reports the current value of the parameter **<n>** |
| **AT+CUSD=?** | Test command reports the supported values for the parameter **<n>** |
| Reference | GSM 07.07 |
| Note | Only mobile initiated operations are supported |

### *3.7.2.3.13 +CAOC - Advice Of Charge*

| +CAOC - Advice Of Charge | |
|---|---|
| **AT+CAOC=<br><mode>** | Set command refers to the Advice of Charge supplementary services, that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information.<br><br>Parameter:<br>**<mode>**<br>0 - query CCM value<br>1 - disables unsolicited CCM reporting<br>2 - enables unsolicited CCM reporting<br><br>Note: the unsolicited result code enabled by parameter **<mode>** is in the format:<br><br>**+CCCM: <ccm>**<br><br>where:<br>**<ccm>** - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. “00001E” indicates decimal value 30)<br><br>Note: the unsolicited result code **+CCCM** is sent when the CCM value changes, but not more than every 10 seconds. |
| **AT+CAOC?** | Read command reports the value of parameter **<mode>** in the format:<br><br>**+CAOC: <mode>** |
| **AT+CAOC=?** | Test command reports the supported values for **<mode>** parameter. |
| Reference | GSM 07.07 |
| Note | **+CAOC** command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI and AOCC supplementary services; it is not stored in the SIM. |

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### 3.7.2.3.14 +CLCC - List Current Calls

| **+CLCC - List Current Calls** | |
|---|---|
| **AT+CLCC** | Execution command returns the list of current calls and their characteristics in the format:<br><br>**[+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha>[<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha>[…]]]**<br><br>where:<br>**<id*n*>** - call identification number<br>**<dir>** - call direction<br>0 - mobile originated call<br>1 - mobile terminated call<br>**<stat>** - state of the call<br>0 - active<br>1 - held<br>2 - dialling (**MO** call)<br>3 - alerting (**MO** call)<br>4 - incoming (**MT** call)<br>5 - waiting (**MT** call)<br>**<mode>** - call type<br>0 - voice<br>1 - data<br>2 - fax<br>9 - unknown<br>**<mpty>** - multiparty call flag<br>0 - call is not one of multiparty (conference) call parties<br>**<number>** - phone number in format specified by **<type>**<br>**<type>** - type of phone number byte in integer format<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "**+**")<br>**<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with **+CSCS**.<br><br>Note: If no call is active then only **OK** message is sent. This command is useful in conjunction with command **+CHLD** to know the various call status for call holding.<br><br>Note: the implementation of **<alpha>** field in the output of **+CLCC** is currently under development. |
| **AT+CLCC=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

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### 3.7.2.3.15 +CSSN - SS Notification

| **+CSSN - SS Notification** | |
|---|---|
| **AT+CSSN=[<n> [,<m>]]** | It refers to supplementary service related network initiated notifications.<br>Set command enables/disables the presentation of notification result codes from **TA** to **TE**.<br><br>Parameters:<br>**<n>** - sets the **+CSSI** result code presentation status<br>0 - disable<br>1 - enable<br>**<m>** - sets the **+CSSU** result code presentation status<br>0 - disable<br>1 - enable<br><br>When **<n>**=1 and a supplementary service notification is received after a mobile originated call setup, an unsolicited code:<br><br>**+CSSI: <code1>**<br>is sent to **TE** before any other **MO** call setup result codes, where:<br>**<code1>**:<br>1 - some of the conditional call forwardings are active<br>2 - call has been forwarded<br>3 - call is waiting<br>5 - outgoing calls are barred<br>6 - incoming calls are barred<br><br>When **<m>=1** and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code:<br><br>**+CSSU: <code2>**<br>is sent to **TE**, where:<br>**<code2>**:<br>0 - this is a forwarded call (**MT** call setup)<br>2 - call has been put on hold (during a voice call)<br>3 - call has been retrieved (during a voice call). |
| **AT+CSSN?** | Read command reports the current value of the parameters. |
| **AT+CSSN=?** | Test command reports the supported range of values for parameters **<n>**, **<m>**. |
| Reference | GSM 07.07 |

### 3.7.2.3.16 +CCUG - Closed User Group Supplementary Service Control

| **+CCUG - Closed User Group Supplementary Service Control** | |
|---|---|
| **AT+CCUG=** | Set command allows control of the Closed User Group supplementary |

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| | |
|---|---|
| **[<n>[,<index>[,<info>]]]** | service [GSM 02.85].<br><br>Parameters:<br>**<n>**<br>0 - disable CUG temporary mode (factory default).<br>1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing calls.<br><br>**<index>**<br>0..9 - CUG index<br>10 - no index (preferential CUG taken from subscriber data) (default)<br><br>**<info>**<br>0 - no information (default)<br>1 - suppress Outgoing Access (OA)<br>2 - suppress preferential CUG<br>3 - suppress OA and preferential CUG |
| **AT+CCUG?** | Read command reports the current value of the parameters |
| **AT+CCUG=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

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## 3.7.2.4 Mobile Equipment Control

### *3.7.2.4.1 +CPAS - Phone Activity Status*

| **+CPAS - Phone Activity Status** | |
|---|---|
| **AT+CPAS** | Execution command reports the device status in the form:<br><br>**+CPAS: <pas>**<br><br>Where:<br>**<pas>** - phone activity status<br>0 - ready (device allows commands from **TA/TE**)<br>1 - unavailable (device does not allow commands from **TA/TE**)<br>2 - unknown (device is not guaranteed to respond to instructions)<br>3 - ringing (device is ready for commands from **TA/TE**, but the ringer is active)<br>4 - call in progress (device is ready for commands from **TA/TE**, but a call is in progress) |
| **AT+CPAS=?** | Test command reports the supported range of values for **<pas>**.<br><br>Note: although **+CPAS** is an execution command, ETSI 07.07 requires the Test command to be defined. |
| Example | `ATD03282131321;`<br>`OK`<br>`AT+CPAS`<br>`+CPAS: 4` *the called phone has answered to your call*<br><br>`OK`<br>`ATH`<br>`OK` |
| Reference | GSM 07.07 |

### *3.7.2.4.2 +CFUN - Set Phone Functionality*

| **+CFUN - Set Phone Functionality** | |
|---|---|
| **AT+CFUN= [<fun>[,<rst>]]** | Set command selects the level of functionality in the ME.<br><br>Parameters:<br>**<fun>** - is the power saving function mode<br>0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set **<fun>** level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event stops power saving and takes the ME back to full functionality level **<fun>=1**. |

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| +CFUN - Set Phone Functionality | |
|---|---|
| | 1 - mobile full functionality with power saving disabled (factory default)<br>2 - disabled TX<br>4 - disabled both TX and RX<br>5 - mobile full functionality with power saving enabled<br>**<rst>** - reset flag<br>0 - do not reset the ME before setting it to **<fun>** functionality level<br><br>Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity.<br><br>Note: to place the telephone in power saving mode, set the **<fun>** parameter at value = 5 and the line **DTR** (RS232) must be set to **OFF**. Once in power saving, the **CTS** line switch to the **OFF** status to signal that the telephone is really in power saving condition.<br>During the power saving condition, before sending any **AT** command on the serial line, the **DTR** must be enabled and it must be waited for the **CTS** (RS232) line to go in **ON** status.<br>Until the **DTR** line is **ON**, the telephone will not return back in the power saving condition.<br><br>Note: the power saving function does not affect the network behavior of the MODULE, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call incomes during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code |
| **AT+CFUN?** | Read command reports the current setting of **<fun>**. |
| **AT+CFUN=?** | Test command returns the list of supported values for **<fun>** and **<rst>**. |
| Reference | GSM 07.07 |

### *3.7.2.4.3 +CPIN - Enter PIN*

| +CPIN - Enter PIN | |
|---|---|
| **AT+CPIN=<pin> [,<newpin>]** | Set command sends to the device a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).<br>If the PIN required is SIM PUK or SIM PUK2, the **<newpin>** is required. This second pin, **<newpin>**,will replace the old pin in the SIM.<br>The command may be used to change the SIM PIN by sending it with both parameters **<pin>** and **<newpin>** when PIN request is pending; if no PIN request is pending the command will return an error code and to change the PIN the command **+CPWD** must be used instead.<br><br>Parameters:<br>**<pin>** - string type value<br>**<newpin>** - string type value. |

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| **+CPIN - Enter PIN** | |
|---|---|
| | To check the status of the PIN request use the command **AT+CPIN?**<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command. |
| **AT+CPIN?** | Read command reports the PIN/PUK/PUK2 request status of the device in the form:<br>**+CPIN: <code>**<br>where:<br>**<code>** - PIN/PUK/PUK2 request status code<br>READY - ME is not pending for any password<br>SIM PIN - ME is waiting SIM PIN to be given<br>SIM PUK - ME is waiting SIM PUK to be given<br>PH-SIM PIN - ME is waiting phone-to-SIM card password to be given<br>PH-FSIM PIN - ME is waiting phone-to-very first SIM card password to be given<br>PH-FSIM PUK - ME is waiting phone-to-very first SIM card unblocking password to be given<br>SIM PIN2 - ME is waiting SIM PIN2 to be given; this **<code>** is returned only when the last executed command resulted in PIN2 authentication failure (i.e. **+CME ERROR: 17**)<br>SIM PUK2 - ME is waiting SIM PUK2 to be given; this **<code>** is returned only when the last executed command resulted in PUK2 authentication failure (i.e. **+CME ERROR: 18**)<br>PH-NET PIN - ME is waiting network personalization password to be given<br>PH-NET PUK - ME is waiting network personalization unblocking password to be given<br>PH-NETSUB PIN - ME is waiting network subset personalization password to be given<br>PH-NETSUB PIN - ME is waiting network subset personalization unblocking password to be given<br>PH-SP PIN - ME is waiting service provider personalization password to be given<br>PH-SP PUK - ME is waiting service provider personalization unblocking password to be given<br>PH-CORP PIN - ME is waiting corporate personalization password to be given<br>PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given<br><br>Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the command **AT+CLCK=SC,<mode>,<pin>** |
| Example | `AT+CMEE=1`<br>`OK`<br>`AT+CPIN?`<br>`+CME ERROR: 10` *`error: you have to insert the SIM`* |

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| +CPIN - Enter PIN | |
|---|---|
| | AT+CPIN?<br>+CPIN: READY *you inserted the SIM and device is not waiting for PIN to be given*<br><br>OK |
| Note | What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK |

| | | | |
|---|---|---|---|
| **A** | **#SRP** | **#CAMOFF** | **+IPR** |
| **D** | **#CAP** | **#CAMEN** | **+ICF** |
| **H** | **#CODEC** | **#TPHOTO** | **+IFC** |
| **O** | **#CBC** | **#RPHOTO** | **+CMUX** |
| **E** | **#I2S1** | **#SELCAM** | **+CNMI** |
| **I** | **#STM** | **#CAMQUA** | **+CPAS** |
| **L** | **#SHFEC** | **#CMODE** | **+CCLK** |
| **M** | **#SHFSD** | **#CAMRES** | **+CALA** |
| **P** | **#HFMICG** | **#CAMTXT** | **+CRSM** |
| **Q** | **#HSMICG** | **#CAMZOOM** | **+CLIP** |
| **S** | **#GPIO** | **#CAMCOL** | **+DR** |
| **T** | **#SGPO** | **#OBJL** | **+DS** |
| **V** | **#GGPI** | **#OBJR** | **+MS** |
| **X** | **#ADC** | **#DIALMODE** | **+GCAP** |
| **Z** | **#QTEMP** | **#SEMAIL** | **+GCI** |
| **&C** | **#DAC** | **#EMAILD** | **+ILRR** |
| **&D** | **#RSEN** | **#EUSER** | **+CALM** |
| **&F** | **#RTCSTAT** | **#EPASSW** | **+CHUP** |
| **&K** | **#ACAL** | **#ESMTP** | **+FCLASS** |
| **&N** | **#PCT** | **#EADDR** | **+FMI** |
| **&P** | **#WAKE** | **#EMAILMSG** | **+FMM** |
| **&S** | **#SHDN** | **#ESAV** | **+FMR** |
| **&V** | **#JDR** | **#ERST** | **+FTS** |
| **&W** | **#CSURV** | **#QSS** | **+FRS** |
| **&Y** | **#CSURVC** | **#SSCTRACE** | **+FTM** |
| **&Z** | **#CSURVU** | **+CFUN** | **+FRM** |
| **%E** | **#CSURVUC** | **+CGMI** | **+FRH** |
| **%L** | **#CSURVF** | **+CGMM** | **+FTH** |
| **%Q** | **#CSURVNLF** | **+CGMR** | **+FLO** |
| **\K** | **#CSURVB** | **+GMI** | **+FPR** |
| **\Q** | **#CSURVBC** | **+GMM** | **+FDD** |
| **\R** | **#PASSW** | **+GMR** | **+CSNS** |
| **\V** | **#PKTSZ** | **+CGSN** | **+CRLP** |
| **#BND** | **#SKTSAV** | **+GSN** | **+CR** |
| **#AUTOBND** | **#SKTSET** | **+CRC** | **+CREG** |
| **#CGMI** | **#SKTOP** | **+CMEE** | **+CGREG** |
| **#CGMM** | **#SKTTO** | **+CPIN** | **+COPS** |

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| +CPIN - Enter PIN | |
|---|---|
| | <table><tr><td>#CGMR</td><td>#USERID</td><td>+CSQ</td><td>+CBC</td></tr><tr><td>#CGSN</td><td>#DSTO</td><td>+CSDH</td><td>+CIND</td></tr><tr><td>#MONI</td><td>#SKTCT</td><td>+CRSL</td><td>+CMER</td></tr><tr><td>#SERVINFO</td><td>#SKTRST</td><td>+CLVL</td><td></td></tr><tr><td>#SELINT</td><td>#FTPPUTPH</td><td>+CMUT</td><td></td></tr><tr><td>#SRS</td><td>#CAMON</td><td></td><td></td></tr></table><br>All the above commands, but the ones in the grayed cells, can be issued even if the SIM card is not inserted yet.<br><br>All the above commands, but **+CSDH** and **+CNMI**, can be issued even if ME is waiting for phone-To-SIM card password to be given |
| Reference | GSM 07.07 |

### *3.7.2.4.4 +CSQ - Signal Quality*

| +CSQ - Signal Quality | |
|---|---|
| **AT+CSQ** | Execution command reports received signal quality indicators in the form:<br><br>**+CSQ: <rssi>,<ber>**<br>where<br>**<rssi>** - received signal strength indication<br>0 - (-113) dBm or less<br>1 - (-111) dBm<br>2..30 - (-109)dBm..(-53)dBm / 2 dBm per step<br>31 - (-51)dBm or greater<br>99 - not known or not detectable<br>**<ber>** - bit error rate (in percent)<br>0 - less than 0.2%<br>1 - 0.2% to 0.4%<br>2 - 0.4% to 0.8%<br>3 - 0.8% to 1.6%<br>4 - 1.6% to 3.2%<br>5 - 3.2% to 6.4%<br>6 - 6.4% to 12.8%<br>7 - more than 12.8%<br>99 - not known or not detectable<br><br>Note: this command should be used instead of the **%Q** and **%L** commands, since GSM relevant parameters are the radio link ones and no line is present, hence **%Q** and **%L** have no meaning. |
| **AT+CSQ=?** | Test command returns the supported range of values of the parameters **<rssi>** and **<ber>**. |

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| | |
|---|---|
| | Note: although **+CSQ** is an execution command without parameters, ETSI 07.07 requires the Test command to be defined. |
| Reference | GSM 07.07 |

### *3.7.2.4.5 +CIND - Indicator Control*

| **+CIND - Indicator Control** | |
|---|---|
| **AT+CIND= [<state> [,<state>[,…]]]** | Set command is used to control the registration state of ME indicators, in order to automatically send the **+CIEV** URC, whenever the value of the associated indicator changes. The supported indicators (**<descr>**) and their order appear from test command **AT+CIND=?**<br><br>Parameter:<br>**<state>** - registration state<br>0 - the indicator is deregistered; there's no unsolicited result code (**+CIEV** URC) automatically sent by the ME to the application, whenever the value of the associated indicator changes; the value can be directly queried with **+CIND?**<br>1 - the indicator is registered: an unsolicited result code (**+CIEV** URC) is automatically sent by the ME to the application, whenever the value of the associated indicator changes; it is still possible to query the value through **+CIND?** (default) |
| **AT+CIND?** | Read command returns the current value of ME indicators, in the format:<br><br>**+CIND: <ind>[,<ind>[,…]]**<br><br>Note: the order of the values **<ind>s** is the same as that in which the associated indicators appear from test command **AT+CIND=?** |
| **AT+CIND=?** | Test command returns pairs, where string value **<descr>** is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format:<br><br>**+CIND: (<descr>, (list of supported <ind>s))[,(<descr>, (list of supported <ind>s))[,…]]**<br><br>where:<br>**<descr>** - indicator names as follows (along with their **<ind>** ranges)<br>"battchg" - battery charge level<br>**<ind>** - battery charge level indicator range<br>0..5<br>99 - not measurable<br><br>"signal" - signal quality<br>**<ind>** - signal quality indicator range<br>0..7<br>99 - not measurable |

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| +CIND - Indicator Control | |
|---|---|
| | "service" - service availability<br>**<ind>** - service availability indicator range<br>0 - not registered to any network<br>1 - registered to home network<br><br>"sounder" - sounder activity<br>**<ind>** - sounder activity indicator range<br>0 - there's no any sound activity<br>1 - there's some sound activity<br><br>"message" - message received<br>**<ind>** - message received indicator range<br>0 - there is no unread short message at memory location "SM"<br>1 - unread short message at memory location "SM"<br><br>"call" - call in progress<br>**<ind>** - call in progress indicator range<br>0 - there's no calls in progress<br>1 - at least a call has been established<br><br>"roam" - roaming<br>**<ind>** - roaming indicator range<br>0 - registered to home network or not registered<br>1 - registered to other network<br><br>"smsfull" - a short message memory storage in the MT has become full (1), or memory locations are available (0)<br>**<ind>** - short message memory storage indicator range<br>0 - memory locations are available<br>1 - a short message memory storage in the MT has become full.<br><br>"rssi" - received signal (field) strength<br>**<ind>** - received signal strength level indicator range<br>0 - signal strength ≤ 112 dBm<br>1..4 - signal strength in 15 dBm steps<br>5 - signal strength ≥ 51 dBm<br>99 - not measurable |
| Example | *Next command causes all the indicators to be registered*<br>AT+CIND=1,1,1,1,1,1,1,1,1<br>*Next command causes all the indicators to be de-registered*<br>AT+CIND=0,0,0,0,0,0,0,0,0<br>*Next command to query the current value of all indicators*<br>AT+CIND?<br>CIND: 4,0,1,0,0,0,0,0,2 |

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| **+CIND - Indicator Control** | |
|---|---|
| | OK |
| Note | See command **+CMER** |
| Reference | GSM 07.07 |

### *3.7.2.4.6 +CMER - Mobile Equipment Event Reporting*

| **+CMER - Mobile Equipment Event Reporting** | |
|---|---|
| **AT+CMER=<br>[<mode><br>[,<keyp><br>[,<disp><br>[,<ind><br>[,<bfr>]]]]]** | Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (n.b.: sending of URCs in the case of key pressings or display changes are currently not implemented).<br><br>Parameters:<br>**<mode>** - controls the processing of unsolicited result codes<br>0 - discard **+CIEV** Unsolicited Result Codes.<br>1 - discard **+CIEV** Unsolicited Result Codes when TA-TE link is reserved (e.g. on-line data mode); otherwise forward them directly to the TE.<br>2 - buffer **+CIEV** Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE.<br>3 - forward **+CIEV** Unsolicited Result Codes directly to the TE; when TA is in on-line data mode each **+CIEV** URC is replaced with a **Break** (100 ms), and is stored in a buffer; onche the ME goes into command mode (after **+++** was entered), all URCs stored in the buffer will be output.<br><br>**<keyp>** - keypad event reporting<br>0 - no keypad event reporting<br><br>**<disp>** - display event reporting<br>0 - no display event reporting<br><br>**<ind>** - indicator event reporting<br>0 - no indicator event reporting<br>2 - indicator event reporting<br><br>**<bfr>** - TA buffer clearing<br>0 - TA buffer of unsolicited result codes is cleared when <mode> 1..3 is entered |
| **AT+CMER?** | Read command returns the current setting of parameters, in the format:<br><br>**+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>** |
| **AT+CMER=?** | Test command returns the range of supported values for parameters **<mode>, <keyp>, <disp>, <ind>, <bfr>**, in the format: |

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| +CMER - Mobile Equipment Event Reporting | |
|---|---|
| | **+CMER: (list of supported <mode>s),(list of supported <keyp>s), (list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)** |
| Reference | GSM 07.07 |

### *3.7.2.4.7 +CPBS - Select Phonebook Memory Storage*

| +CPBS - Select Phonebook Memory Storage | |
|---|---|
| **AT+CPBS= <storage>** | Set command selects phonebook memory storage **<storage>**, which will be used by other phonebook commands.<br><br>Parameter:<br>**<storage>**<br>"SM" - SIM phonebook<br>"FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM)<br>"LD" - SIM last-dialling-phonebook **(+CPBW** and **+CPBF** are not applicable for this storage)<br>"MC" - device missed (unanswered received) calls list **(+CPBW** and **+CPBF** are not applicable for this storage)<br>"RC" - ME received calls list **(+CPBW** and **+CPBF** are not applicable for this storage). |
| **AT+CPBS?** | Read command returns the actual values of the parameter **<storage>**, the number of occupied records **<used>** and the maximum index number **<total>**, in the format:<br><br>**+CPBS: <storage>,<used>,<total>**<br><br>Note: For **<storage>="MC"**: if there are more than one missed calls from the same number the read command will return only the last call |
| **AT+CPBS=?** | Test command returns the supported range of values for the parameters **<storage>**. |
| Reference | GSM 07.07 |

### *3.7.2.4.8 +CPBR - Read Phonebook Entries*

| +CPBR - Read Phonebook Entries | |
|---|---|
| **AT+CPBR= <index1> [,<index2>]** | Execution command returns phonebook entries in location number range **<index1>..<index2>** from the current phonebook memory storage selected with **+CPBS**. If **<index2>** is omitted, only location **<index1>** is returned.<br><br>Parameters:<br>**<index1>** - integer type value in the range of location numbers of phonebook memory |

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| | |
|---|---|
| | **<index2>** - integer type value in the range of location numbers of phonebook memory<br><br>The response format is:<br>**+CPBR: <index>,<number>,<type>,<text>**<br><br>where:<br>**<index>** - the current position number of the PB index (to see the range of values use **+CPBR=?**)<br>**<number>** - the phone number stored in the format **<type>**<br>**<type>** - type of phone number byte in integer format<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "**+**")<br>**<text>** - the alphanumeric text associated to the number; used character set should be the one selected with command **+CSCS.**<br><br>Note: if "MC" is the current selected phonebook memory storage, all the missed calls coming from the same number will be saved as one missed call and **+CPBR** will show just one line of information.<br><br>Note: If all queried locations are empty (but available), no information text lines will be returned, while if listing fails in an **ME** error, **+CME ERROR: <err>** is returned. |
| **AT+CPBR=?** | Test command returns the supported range of values of the parameters in the form:<br><br>**+CPBR: (<minIndex>** - **<maxIndex>**),**<nlength>**,**<tlength>**<br><br>where:<br>**<minIndex>** - the minimum **<index>** number, integer type<br>**<maxIndex>**- the maximum **<index>** number, integer type<br>**<nlength>** - maximum **<number>** field length, integer type<br>**<tlength>** - maximum **<name>** field length, integer type |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |
| Reference | GSM 07.07 |

### *3.7.2.4.9 +CPBF - Find Phonebook Entries*

| **+CPBF - Find Phonebook Entries** | |
|---|---|
| **AT+CPBF= <findtext>** | Execution command issues a search for the phonebook records that have the **<findtext>** sub-string at the start of the **<text>** field<br><br>Parameter:<br>**<findtext>** - string type; used character set should be the one selected with command **+CSCS.** |

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| | |
|---|---|
| | The command returns a report in the form:<br><br>**+CPBF: <index1>,<number>,<type>,<text>[[…]<CR><LF>**<br>**+CPBF: <index*n*>,<number>,<type>,<text>]**<br><br>where **<index*n*>,<number>**,**<type>**, and **<text>** have the same meaning as in the command **+CPBR** report.<br><br>Note: if **<findtext>=""** the command returns all the phonebook records.<br><br>Note: if no PB records satisfy the search criteria then an **ERROR** message is reported. |
| **AT+CPBF=?** | Test command reports the maximum lengths of fields **<number>** and **<text>** in the PB entry in the form:<br><br>**+CPBF: [<max_number_length>],[<max_text_length>]** |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |
| Reference | GSM 07.07 |

### *3.7.2.4.10 +CPBW - Write Phonebook Entry*

| **+CPBW - Write Phonebook Entry** | |
|---|---|
| **AT+CPBW=**<br>**[<index>]**<br>**[,<number>**<br>**[,<type>**<br>**[,<text>]]]** | Execution command stores at the position **<index>** a phonebook record defined by **<number>**,**<type>** and **<text>** parameters<br><br>Parameters:<br>**<index>** - record position<br>**<number>** - string type, phone number in the format **<type>**<br>**<type>** - the type of number<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "**+**")<br>**<text>** - the text associated to the number, string type; used character set should be the one selected with command **+CSCS**.<br><br>Note: If record number **<index>** already exists, it will be overwritten.<br><br>Note: if only **<index>** is given, the record number **<index>** is deleted.<br><br>Note: if **<index>** is omitted, the number **<number>** is stored in the first free phonebook location. |
| **AT+CPBW=?** | Test command returns location range supported by the current storage as a compound value, the maximum length of **<number>** field supported number format of the storage and maximum length of **<name>** field. The format is: |

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| **+CPBW - Write Phonebook Entry** | |
|---|---|
| | **+CPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>]**<br><br>where:<br>**<nlength>** - integer type value indicating the maximum length of field **<number>**<br>**<tlength>** - integer type value indicating the maximum length of field **<text>** |
| Reference | GSM 07.07 |
| Note | Remember to select the PB storage with **+CPBS** command before issuing PB commands. |

### *3.7.2.4.11 +CCLK - Clock Management*

| **+CCLK - Clock Management** | |
|---|---|
| **AT+CCLK=<time>** | Set command sets the real-time clock of the **ME**.<br><br>Parameter:<br>**<time>** - current time as quoted string in the format:<br>"yy/MM/dd,hh:mm:ss±zz"<br>yy - year (two last digits are mandatory), range is 00..99<br>MM - month (two last digits are mandatory), range is 01..12<br>dd - day (two last digits are mandatory), range is 01..31 (if the month MM has less than 31 days, the clock will be set for the next month)<br>hh - hour (two last digits are mandatory), range is 00..23<br>mm - minute (two last digits are mandatory), range is 00..59<br>ss - seconds (two last digits are mandatory), range is 00..59<br>±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48 |
| **AT+CCLK?** | Read command returns the current setting of the real-time clock, in the format **<time>**.<br><br>Note: the three last characters of **<time>** are not returned by **+CCLK?** because the **ME** doesn't support time zone information. |
| **AT+CCLK=?** | Test command returns the **OK** result code. |
| Example | `AT+CCLK="02/09/07,22:30:00+00"`<br>`OK`<br>`AT+CCLK?`<br>`+CCLK: 02/09/07,22:30:25`<br><br>`OK` |
| Reference | GSM 07.07 |

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### 3.7.2.4.12 +CALA - Alarm Management

| **+CALA - Alarm Management** | |
|---|---|
| **AT+CALA=<time>[,<n>[,<type>[,<text>]]]** | Set command stores in the internal Real Time Clock the current alarm time and settings defined by the parameters **<time>**, **<n>**, **<type>**, and **<text>**. When the RTC time reaches the alarm time then the alarm starts, the behaviour of the MODULE depends upon the setting **<type>** and if the device was already ON at the moment when the alarm time had come.<br><br>Parameter:<br>**<time>** - current alarm time as quoted string in the same format as defined for **+CCLK** command: "yy/MM/dd,hh:mm:ss±zz"<br><br>**<n>** - index of the alarm<br>0 - The only value supported is 0.<br><br>**<type>** - alarm behaviour type<br>0 - reserved for other equipment use.<br>1 - the MODULE simply wakes up fully operative as if the ON/OFF button had been pressed. If the device is already ON at the alarm time, then it does nothing.<br>2 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s:<br>**+CALA: <text>**<br>where **<text>** is the **+CALA** optional parameter previously set.<br><br>The device keeps on sending the unsolicited code every 3s until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. (default)<br>3 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see command **#SRP**)<br>The device keeps on playing the alarm tone until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down.<br>4 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin GPIO6 high, provided its **<direction>** has been set to alarm output, and keeps it in this state until a **#WAKE** or **#SHDN** command is received or a 90s timeout occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down.<br>5 - the MODULE will make both the actions as for type=2 and **<type>=3**.<br>6 - the MODULE will make both the actions as for type=2 and **<type>=4**.<br>7 - the MODULE will make both the actions as for type=3 and **<type>=4**. |

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| +CALA - Alarm Management | |
|---|---|
| | **<text>** - unsolicited alarm code text string. It has meaning only if **<type>** is equal to 2 or 5 or 6.<br><br>Note: The "alarm mode" is indicated by hardware pin **CTS** to the **ON** status and **DSR** to the **OFF** status, while the "power saving" status is indicated by a **CTS** - **OFF** and **DSR** - **OFF** status. The normal operating status is indicated by **DSR** - **ON**.<br>During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state. |
| **AT+CALA?** | Read command reports the current alarm time stored in the internal Real Time Clock, if present, in the format:<br>**+CALA: <time>,<n>,<type>**[,**<text>**] |
| **AT+CALA=?** | Test command reports the list of supported **<n>**s, the list of supported **<type>**s, and **<text>** maximum length |
| Example | `AT+CALA="02/09/07,23:30:00+00"`<br>`OK` |
| Reference | GSM 07.07 |

### *3.7.2.4.13 +CRSM - Restricted SIM Access*

| +CRSM - Restricted SIM access | |
|---|---|
| **AT+CRSM= <command> [,<fileid> [,<P1>,<P2>,<P3> [,<data>]]]** | Execution command transmits to the **ME** the SIM **<command>** and its required parameters. **ME** handles internally all **SIM-ME** interface locking and file selection routines. As response to the command, **ME** sends the actual SIM information parameters and response data.<br><br>Parameters:<br>**<command>** - command passed on by the **ME** to the SIM<br>176 - READ BINARY<br>178 - READ RECORD<br>192 - GET RESPONSE<br>214 - UPDATE BINARY<br>220 - UPDATE RECORD<br>242 - STATUS<br>**<fileid>** - identifier of an elementary data file on SIM. Mandatory for every command except STATUS.<br>**<P1>**,**<P2>**,**<P3>** - parameter passed on by the **ME** to the SIM; they are mandatory for every command except GET RESPONSE and STATUS<br>0..255<br>**<data>** - information to be read/written to the SIM (hexadecimal character |

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| +CRSM - Restricted SIM access | |
|---|---|
| | format).<br><br>The response of the command is in the format:<br><br>**+CRSM: <sw1>,<sw2>[,<response>]**<br><br>where:<br>**<sw1>**,**<sw2>** - information from the SIM about the execution of the actual command either on successful or on failed execution.<br>**<response>** - on a successful completion of the command previously issued it gives the requested data (hexadecimal character format). It's not returned after a successful UPDATE BINARY or UPDATE RECORD command.<br><br>Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files.<br><br>Note: use only decimal numbers for parameters **<command>**, **<fileid>**, **<P1>**, **<P2>** and **<P3>**. |
| **AT+CRSM=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07, GSM 11.11 |

### *3.7.2.4.14 +CALM - Alert Sound Mode*

| +CALM - Alert Sound Mode | |
|---|---|
| **AT+CALM= <mode>** | Set command is used to select the general alert sound mode of the device.<br><br>Parameter:<br>**<mode>**<br>0 - normal mode<br>1 - silent mode; no sound will be generated by the device, except for alarm sound<br>2 - stealth mode; no sound will be generated by the device<br><br>Note: if silent mode is selected then incoming calls will not produce alerting sounds but only the unsolicited messages **RING** or **+CRING**. |
| **AT+CALM?** | Read command returns the current value of parameter **<mode>**. |
| **AT+CALM=?** | Test command returns the supported values for the parameter **<mode>** as compound value.<br><br>**+CALM: (0-2)** |
| Reference | GSM 07.07 |

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### 3.7.2.4.15 +CRSL - Ringer Sound Level

| **+CRSL - Ringer Sound Level** | |
|---|---|
| **AT+CRSL=<level>** | Set command is used to select the incoming call ringer sound level of the device.<br><br>Parameter:<br>**<level>** - ringer sound level<br>0 - Off<br>1 - low<br>2 - middle<br>3 - high<br>4 - progressive |
| **AT+CRSL?** | Read command reports the current **<level>** setting of the call ringer in the format:<br>**+CRSL: <level>** |
| **AT+CRSL=?** | Test command reports **<level>** supported values as compound value.<br><br>**+CRSL: (0-4)** |
| Reference | GSM 07.07 |

### 3.7.2.4.16 +CLVL - Loudspeaker Volume Level

| **+CLVL - Loudspeaker Volume Level** | |
|---|---|
| **AT+CLVL=<level>** | Set command is used to select the volume of the internal loudspeaker audio output of the device.<br><br>Parameter:<br>**<level>** - loudspeaker volume<br>0..*max* - the value of *max* can be read by issuing the Test command **AT+CLVL=?** |
| **AT+CLVL?** | Read command reports the current **<level>** setting of the loudspeaker volume in the format:<br>**+CLVL: <level>** |
| **AT+CLVL=?** | Test command reports **<level>** supported values range in the format:<br><br>**+CLVL: (0-*max*)** |
| Reference | GSM 07.07 |

### 3.7.2.4.17 +CMUT - Microphone Mute Control

| **+CMUT - Microphone Mute Control** | |
|---|---|
| **AT+CMUT=<n>** | Set command enables/disables the muting of the microphone audio line during a voice call. |

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| | |
|---|---|
| | Parameter:<br>**<n>**<br>0 - mute off, microphone active (factory default)<br>1 - mute on, microphone muted.<br><br>Note: this command mutes/activates both microphone audio paths, internal mic and external mic. |
| **AT+CMUT?** | Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format:<br><br>**+CMUT: <n>** |
| **AT+CMUT=?** | Test command reports the supported values for **<n>** parameter. |
| Reference | GSM 07.07 |

### *3.7.2.4.18 +CACM - Accumulated Call Meter*

| **+CACM - Accumulated Call Meter** | |
|---|---|
| **AT+CACM=<br>[<pwd>]** | Set command resets the Advice of Charge related Accumulated Call Meter stored in SIM (ACM): it contains the total number of home units for both the current and preceding calls.<br><br>Parameter:<br>**<pwd>** - to access this command PIN2 password is required |
| **AT+CACM?** | Read command reports the current value of the SIM ACM in the format:<br><br>**+CACM: <acm>**<br><br>where:<br>**<acm>** - accumulated call meter in home units, string type: three bytes of the ACM value in hexadecimal format (e.g. “00001E” indicates decimal value 30)<br><br>Note: the value **<acm>** is in units whose price and currency is defined with command **+CPUC** |
| **AT+CACM=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

### *3.7.2.4.19 +CAMM - Accumulated Call Meter Maximum*

| **+CAMM - Accumulated Call Meter Maximum** | |
|---|---|
| **AT+CAMM=<br>[<acmmax>,<br><pwd>]** | Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches **<acmmax>** value further calls are prohibited. |

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| | |
|---|---|
| | Parameter:<br>**<acmmax>** - ACMmax value, integer type: it is the maximum number of home units allowed to be consumed by the subscriber.<br>**<pwd>** - PIN2 password<br><br>Note: The **<acmmax>** = 0 value disables the feature. |
| **AT+CAMM?** | Read command reports the ACMmax value stored in SIM in the format:<br><br>**+CAMM : <acmm>**<br><br>where:<br>**<acmm>** - ACMmax value in home units, string type: three bytes of the ACMmax value in hexadecimal format (e.g. "00001E" indicates decimal value 30) |
| **AT+CAMM=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

### *3.7.2.4.20 +CPUC - Price Per Unit And Currency Table*

| **+CPUC - Price Per Unit And Currency Table** | |
|---|---|
| **AT+CPUC= <currency>, <ppu>,<pwd>** | Set command sets the values of Advice of Charge related Price per Unit and Currency Table stored in SIM (PUCT). The PUCT information can be used to convert the home units (as used in commands **+CAOC**, **+CACM** and **+CAMM**) into currency units.<br><br>Parameters:<br>**<currency>** - string type; three-character currency code (e.g. "LIT", "L. ", "USD", "DEM" etc..); used character set should be the one selected with command **+CSCS**.<br>**<ppu>** - price per unit, string type (dot is used as decimal separator) e.g. "1989.27"<br>**<pwd>** - SIM PIN2 is usually required to set the values |
| **AT+CPUC?** | Read command reports the current values of **<currency>** and **<ppu>** parameters in the format:<br>**+CACM : <currency>,<ppu>** |
| **AT+CPUC=?** | Test command returns the **OK** result code |
| Reference | GSM 07.07 |

### *3.7.2.4.21 +CLAC - Available AT Commands*

| **+CLAC - Available AT Commands** | |
|---|---|
| **AT+CLAC** | Execution command causes the ME to return the AT commands that are available for the user, in the following format: |

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| **+CLAC - Available AT Commands** | |
|---|---|
| | **<AT cmd1>[<CR><LF><AT cmd2>[…]]** |
| **AT+CLAC=?** | Test command returns **ERROR** result code |
| Reference | GSM 07.07 |

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## 3.7.2.5 Mobile Equipment Errors

### *3.7.2.5.1 +CMEE - Report Mobile Equipment Error*

| **+CMEE - Report Mobile Equipment Error** | |
|---|---|
| **AT+CMEE=[<n>]** | Set command enables/disables the report of result code:<br><br>**+CME ERROR: <err>**<br><br>as an indication of an error relating to the +**Cxxx** commands issued.<br><br>When enabled, device related errors cause the **+CME ERROR: <err>** final result code instead of the default ERROR final result code. **ERROR** is anyway returned normally when the error message is related to syntax, invalid parameters, or **DTE** functionality.<br><br>Parameter:<br>**<n>** - enable flag<br>0 - disable **+CME ERROR:<err>** reports, use only **ERROR** report.<br>1 - enable **+CME ERROR:<err>** reports, with **<err>** in numeric format<br>2 - enable **+CME ERROR: <err>** reports, with **<err>** in verbose format |
| **AT+CMEE?** | Read command returns the current value of subparameter **<n>**:<br><br>**+CMEE: <n>** |
| **AT+CMEE=?** | Test command returns the range of values for subparameter **<n>** |
| Note | **+CMEE** has no effect on the final result code **+CMS** |
| Reference | GSM 07.07 |

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## 3.7.2.6 Voice Control

### *3.7.2.6.1 +VTS - DTMF Tones Transmission*

| **+VTS - DTMF Tones Transmission** | |
|---|---|
| **AT+VTS= <dtmfstring> [,duration]** | Execution command allows the transmission of DTMF tones.<br><br>Parameters:<br>**<dtmfstring>** - string of **<dtmf>s,** i.e. ASCII characters in the set **(0-9), #,*,(A-D)**; the string can be at most 255 **<dtmf>s** long; it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through **+VTD** command.<br>**<duration>** - duration of a tone in 1/100 sec.; this parameter can be specified only if the length of first parameter is just one ASCII character<br>0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current **+VTD** setting is.<br>1..255 - a single DTMF tone will be transmitted for a time **<duration>** (in 10 ms multiples), no matter what the current **+VTD** setting is.<br><br>Note: this commands operates in voice mode only (see **+FCLASS**). |
| **AT+VTS=?** | Test command provides the list of supported **<dtmf>s** and the list of supported **<duration>s** in the format:<br><br>**(list of supported <dtmf>s)[,(list of supported <duration>s)]** |
| Reference | GSM 07.07 and TIA IS-101 |

### *3.7.2.6.2 +VTD - Tone Duration*

| **+VTD - Tone Duration** | |
|---|---|
| **AT+VTD= <duration>** | Set command sets the length of tones transmitted with **+VTS** command.<br><br>Parameter:<br>**<duration>** - duration of a tone<br>0 - the duration of every single tone is dependent on the network (factory default)<br>1..255 - duration of every single tone in 1/10 sec. |
| **AT+VTD?** | Read command reports the current Tone Duration, in the format:<br><br>**<duration>** |
| **AT+VTD=?** | Test command provides the list of supported **<duration>s** in the format:<br><br>**(list of supported <duration>s)** |
| Reference | GSM 07.07 and TIA IS-101 |

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## 3.7.2.7 Commands For GPRS

### *3.7.2.7.1 +CGCLASS - GPRS Mobile Station Class*

| **+CGCLASS - GPRS mobile station class** | |
|---|---|
| **AT+CGCLASS= [<class>]** | Set command sets the GPRS class according to **<class>** parameter.<br><br>Parameter:<br>**<class>** - GPRS class<br>"B" - GSM/GPRS (factory default)<br>"CG" - class C in GPRS only mode (GPRS only)<br>"CC" - class C in circuit switched only mode (GSM only)<br><br>Note: the setting is saved in NVM (and available on following reboot). |
| **AT+CGCLASS?** | Read command returns the current value of the GPRS class in the format:<br><br>**+CGLASS: <class>** |
| **AT+CGCLASS=?** | Test command reports the range for the parameter **<class>** |

### *3.7.2.7.2 +CGATT - GPRS Attach Or Detach*

| **+CGATT - GPRS Attach Or Detach** | |
|---|---|
| **AT+CGATT=[ <state>]** | Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter **<state>**.<br><br>Parameter:<br>**<state>** - state of GPRS attachment<br>0 - detached<br>1 - attached |
| **AT+CGATT?** | Read command returns the current GPRS service state. |
| **AT+CGATT=?** | Test command requests information on the supported GPRS service states. |
| Example | `AT+CGATT?`<br>`+CGATT: 0`<br><br>`OK`<br>`AT+CGATT=?`<br>`+CGATT: (0,1)`<br><br>`OK`<br>`AT+CGATT=1`<br>`OK` |
| Reference | GSM 07.07 |

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### 3.7.2.7.3 +CGREG - GPRS Network Registration Status

| **+CGREG - GPRS Network Registration Status** | |
|---|---|
| **AT+CGREG=[<n>]** | Set command controls the presentation of an unsolicited result code **+CGREG: (see format below)**.<br><br>Parameter:<br>**<n>** - result code presentation mode<br>0 - disable network registration unsolicited result code<br>1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code:<br><br>**+CGREG: <stat>**<br><br>where:<br>**<stat>** - registration status<br>0 - not registered, terminal is not currently searching a new operator to register to<br>1 - registered, home network<br>2 - not registered, but terminal is currently searching a new operator to register to<br>3 - registration denied<br>4 - unknown<br>5 - registered, roaming<br>2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code:<br><br>**+CGREG: <stat>[,<lac>,<ci>]**<br><br>where:<br>**<stat>** - registration status (see above for values)<br>**<lac>** - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)<br>**<ci>** - cell ID in hexadecimal format. |
| **AT+CGREG?** | Read command returns the status of result code presentation mode **<n>** and the integer **<stat>** which shows whether the network has currently indicated the registration of the terminal in the format:<br><br>**+CGREG: <n>,<stat>** |
| **AT+CGREG=?** | Test command returns supported values for parameter **<n>** |
| Reference | GSM 07.07 |

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### 3.7.2.7.4 +CGDCONT - Define PDP Context

| **+CGDCONT - Define PDP Context** | |
|---|---|
| **AT+CGDCONT=<br>[<cid><br>[,<PDP_type><br>[,<APN><br>[,<PDP_addr><br>[,<d_comp><br>[,<h_comp><br>[,<pd1><br>[,…[,pdN]]]]]]]]]** | Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, **<cid>**<br><br>Parameters:<br>**<cid>** - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition.<br>1..*max* - where the value of *max* is returned by the Test command<br>**<PDP_type>** - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol<br>"IP" - Internet Protocol<br>"PPP" - Point to Point Protocol<br>**<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.<br>**<PDP_addr>** - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the **+CGPADDR** command.<br>**<d_comp>** - numeric parameter that controls PDP data compression<br>0 - off (default if value is omitted)<br>1 - on<br>**<h_comp>** - numeric parameter that controls PDP header compression<br>0 - off (default if value is omitted)<br>1 - on<br>**<pd1>**, …, **<pdN>** - zero to N string parameters whose meanings are specific to the **<PDP_type>**<br><br>Note: a special form of the Set command, **+CGDCONT=<cid>**, causes the values for context number **<cid>** to become undefined. |
| **AT+CGDCONT?** | Read command returns the current settings for each defined context in the format:<br>**+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[,…[,pdN]]][<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[,…[,pdN]]][…]]** |
| **AT+CGDCONT=?** | Test command returns values supported as a compound value |
| Example | `AT+CGDCONT=1,"IP","APN","10.10.10.10",0,0`<br>`OK`<br>`AT+CGDCONT?`<br>`+CGDCONT: 1,"IP","APN","10.10.10.10",0,0`<br><br>`OK`<br>`AT+CGDCONT=?`<br>`+CGDCONT: (1-5),"IP",,,(0-1),(0-1)` |

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| +CGDCONT - Define PDP Context | |
|---|---|
| | OK |
| Reference | GSM 07.07 |

### 3.7.2.7.5 +CGQMIN - Quality Of Service Profile (Minimum Acceptable)

| +CGQMIN - Quality Of Service Profile (Minimum Acceptable) | |
|---|---|
| **AT+CGQMIN=<br>[<cid><br>[,<precedence><br>[,<delay><br>[,<reliability><br>[,<peak><br>[,<mean>]]]]]]** | Set command allows to specify a minimum acceptable profile which is checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message.<br><br>Parameters:<br>**<cid>** - PDP context identification (see **+CGDCONT** command).<br>**<precedence>** - precedence class<br>**<delay>** - delay class<br>**<reliability>** - reliability class<br>**<peak>** - peak throughput class<br>**<mean>** - mean throughput class<br><br>If a value is omitted for a particular class then this class is not checked.<br><br>Note: a special form of the Set command, **+CGQMIN=<cid>** causes the requested profile for context number **<cid>** to become undefined. |
| **AT+CGQMIN?** | Read command returns the current settings for each defined context in the format:<br><br>**+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[…]]**<br><br>If no PDP context has been defined, it has no effect and **OK** result code is returned. |
| **AT+CGQMIN=?** | Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:<br><br>**+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)**<br><br>Note: only the “IP” PDP_Type is currently supported. |
| Example | `AT+CGQMIN=1,0,0,3,0,0`<br>`OK`<br>`AT+CGQMIN?`<br>`+CGQMIN: 1,0,0,5,0,0`<br><br>`OK` |

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| +CGQMIN - Quality Of Service Profile (Minimum Acceptable) | |
|---|---|
| | AT+CGQMIN=?<br>+CGQMIN: “IP”,(0-3),(0-4),(0-5),(0-9),(0-19,31)<br><br>OK |
| Reference | GSM 07.07; GSM 03.60 |

### 3.7.2.7.6 +CGQREQ - Quality Of Service Profile (Requested)

| +CGQREQ - Quality Of Service Profile (Requested) | |
|---|---|
| **AT+CGQREQ=<br>[<cid><br>[,<precedence><br>[,<delay><br>[,<reliability><br>[,<peak><br>[,<mean>]]]]]]** | Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, **<cid>**.<br><br>Parameters:<br>**<cid>** - PDP context identification (see **+CGDCONT** command).<br>**<precedence>** - precedence class<br>**<delay>** - delay class<br>**<reliability>** - reliability class<br>**<peak>** - peak throughput class<br>**<mean>** - mean throughput class<br><br>If a value is omitted for a particular class then this class is not checked.<br><br>Note: a special form of the Set command, **+CGQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined. |
| **AT+CGQREQ?** | Read command returns the current settings for each defined context in the format:<br><br>**+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]]**<br><br>If no PDP context has been defined, it has no effect and **OK** result code is returned. |
| **AT+CGQREQ=?** | Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:<br><br>**+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)**<br><br>Note: only the “IP” PDP_Type is currently supported. |
| Example | AT+CGQREQ?<br>+CGQREQ: 1,0,0,3,0,0 |

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| +CGQREQ - Quality Of Service Profile (Requested) | |
|---|---|
| | OK<br>AT+CGQREQ=1,0,0,3,0,0<br>OK<br>AT+CGQREQ=?<br>+CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-19,31)<br><br>OK |
| Reference | GSM 07.07; GSM 03.60 |

### 3.7.2.7.7 +CGACT - PDP Context Activate Or Deactivate

| +CGACT - PDP Context Activate Or Deactivate | |
|---|---|
| **AT+CGACT=[<state>[,<cid>[,<cid>[,...]]]]** | Execution command is used to activate or deactivate the specified PDP context(s)<br><br>Parameters:<br>**<state>** - indicates the state of PDP context activation<br>0 - deactivated<br>1 - activated<br>**<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command)<br><br>Note: if no **<cid>**s are specified the activation/deactivation form of the command activates/deactivates all defined contexts. |
| **AT+CGACT?** | Read command returns the current activation state for all the defined PDP contexts in the format:<br>**+CGACT: <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>[...]]** |
| **AT+CGACT=?** | Test command reports information on the supported PDP context activation states parameters in the format:<br><br>**+CGACT: (0,1)** |
| Example | AT+CGACT=1,1<br>OK<br>AT+CGACT?<br>+CGACT: 1,1<br><br>OK |
| Reference | GSM 07.07 |

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### 3.7.2.7.8 +CGPADDR - Show PDP Address

| **+CGPADDR - Show PDP Address** | |
|---|---|
| **AT+CGPADDR= [<cid>[,<cid> [,…]]]** | Execution command returns a list of PDP addresses for the specified context identifiers in the format:<br><br>**+CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>, <PDP_addr>[…]]**<br><br>Parameters:<br>**<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). If no **<cid>** is specified, the addresses for all defined contexts are returned.<br>**<PDP_addr>** - a string that identifies the terminal 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** command 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_addr>** is omitted if none is available |
| **AT+CGPADDR=?** | Test command returns a list of defined **<cid>**s. |
| Example | `AT#GPRS=1`<br>`+IP: xxx.yyy.zzz.www`<br><br>`OK`<br>`AT+CGPADDR=1`<br>`+CGPADDR: 1,"xxx.yyy.zzz.www"`<br><br>`OK`<br>`AT+CGPADDR=?`<br>`+CGPADDR: (1)`<br><br>`OK` |
| Reference | GSM 07.07 |

### 3.7.2.7.9 +CGDATA - Enter Data State

| **+CGDATA - Enter Data State** | |
|---|---|
| **AT+CGDATA= [<L2P>,[<cid> [,<cid>[,…]]]]** | Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types.<br><br>Parameters:<br>**<L2P>** - string parameter that indicates the layer 2 protocol to be used<br>"PPP" - PPP Point-to-point protocol<br>**<cid>** - numeric parameter which specifies a particular PDP context |

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| **+CGDATA - Enter Data State** | |
|---|---|
| | definition (see **+CGDCONT** command).<br><br>Note: if parameter **<L2P>** is omitted, the layer 2 protocol is unspecified |
| **AT+CGDATA=?** | Test command reports information on the supported layer 2 protocols. |
| Example | `AT+CGDATA=?`<br>`+CGDATA: (”PPP”)`<br><br>`OK`<br>`AT+CGDATA=”PPP”,1`<br>`OK` |
| Reference | GSM 07.07 |

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## 3.7.2.8 Commands For Battery Charger

### *3.7.2.8.1 +CBC - Battery Charge*

| **+ CBC - Battery Charge** | |
|---|---|
| **AT+CBC** | Execution command returns the current Battery Charge status in the format:<br><br>**+CBC: <bcs>,<bcl>**<br><br>where:<br>**<bcs>** - battery status<br>0 - **ME** is powered by the battery<br>1 - **ME** has a battery connected, and charger pin is being powered<br>2 - **ME** does not have a battery connected<br>3 - Recognized power fault, calls inhibited<br>**<bcl>** - battery charge level<br>0 - battery is exhausted, or **ME** does not have a battery connected<br>25 - battery charge remained is estimated to be 25%<br>50 - battery charge remained is estimated to be 50%<br>75 - battery charge remained is estimated to be 75%<br>100 - battery is fully charged.<br><br>Note: **<bcs>**=1 indicates that the battery charger supply is inserted and the battery is being recharged if necessary with it. Supply for **ME** operations is taken anyway from **VBATT** pins.<br><br>Note: without battery/power connected on **VBATT** pins or during a power fault the unit is not working, therefore values **<bcs>=2** and **<bcs>=3** will never appear. |
| **AT+CBC=?** | Test command returns parameter values supported as a compound value.<br><br>**+CBC: (0-3),(0-100)**<br><br>Note: although **+CBC** is an execution command, ETSI 07.07 requires the Test command to be defined. |
| Example | `AT+CBC`<br>`+CBC: 0,75`<br>`OK` |
| Note | The **ME** does not make differences between being powered by a battery or by a power supply on the **VBATT** pins, so it is not possible to distinguish between these two cases. |
| Reference | GSM 07.07 |

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## 3.7.3 ETSI GSM 07.05 AT Commands for SMS and CB services

### 3.7.3.1 General Configuration

#### *3.7.3.1.1 +CSMS - Select Message Service*

| **+CSMS - Select Message Service** | |
|---|---|
| **AT+CSMS=<service>** | Set command selects messaging service **<service>**. It returns the types of messages supported by the **ME**:<br><br>Parameter:<br>**<service>**<br>0 - The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 version 4.7.0 (factory default)<br>1 - The syntax of SMS AT commands is compatible with GSM 07.05 Phase 2+.<br><br>Set command returns the types of messages supported by the **ME**:<br><br>**+CSMS: <mt>,<mo>,<bm>**<br><br>where:<br>**<mt>** - mobile terminated messages support<br>0 - type not supported<br>1 - type supported<br>**<mo>** - mobile originated messages support<br>0 - type not supported<br>1 - type supported<br>**<bm>** - broadcast type messages support<br>0 - type not supported<br>1 - type supported |
| **AT+CSMS?** | Read command reports current service setting along with supported message types in the format:<br><br>**+CSMS: <service>,<mt>,<mo>,<cb>**<br><br>where:<br>**<service>** - messaging service (see above)<br>**<mt>** - mobile terminated messages support (see above)<br>**<mo>** - mobile originated messages support (see above)<br>**<bm>** - broadcast type messages support (see above) |
| **AT+CSMS=?** | Test command reports the supported value of the parameter **<service>**. |
| Reference | GSM 07.05; GSM 03.40; GSM 03.41 |

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### 3.7.3.1.2 +CPMS - Preferred Message Storage

| **+CPMS - Preferred Message Storage** | |
|---|---|
| **AT+CPMS=<br><memr><br>[,<memw><br>[,<mems>]]** | Set command selects memory storages **<memr>**, **<memw>** and **<mems>** to be used for reading, writing, sending and storing SMs.<br><br>Parameters:<br>**<memr>** - memory from which messages are read and deleted<br>"SM" - SIM SMS memory storage<br>"ME" - **ME** internal storage (read only, no delete)<br>**<memw>** - memory to which writing and sending operations are made<br>"SM" - SIM SMS memory storage<br>**<mems>** - memory to which received SMs are preferred to be stored<br>"SM" - SIM SMS memory storage<br><br>The command returns the memory storage status in the format:<br><br>**+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals>**<br><br>where:<br>**<usedr>** - number of SMs stored into **<memr>**<br>**<totalr>** - max number of SMs that **<memr>** can contain<br>**<usedw>** - number of SMs stored into **<memw>**<br>**<totalw>** max number of SMs that **<memw>** can contain<br>**<useds>** - number of SMs stored into **<mems>**<br>**<totals>** - max number of SMS that **<mems>** can contain<br><br>Note: The only supported memory storage for writing and sending SMs is the SIM internal memory "SM", so **<memw>=<mems>="SM"**.<br><br>Note: the received class 0 SMS are stored in the "ME" memory regardless the **<mems>** setting and they are automatically deleted at power off. |
| **AT+CPMS?** | Read command reports the message storage status in the format:<br><br>**+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>,<mems>,<useds>,<totals>**<br><br>where **<memr>**, **<memw>** and **<mems>** are the selected storage memories for reading, writing and storing respectively. |
| **AT+CPMS=?** | Test command reports the supported values for parameters **<memr>**, **<memw>** and **<mems>** |
| Example | `AT+CPMS?`<br>`+CPMS: "SM",5,10,"SM",5,10,"SM",5,10`<br><br>`OK (you have 5 out of 10 SMS SIM positions occupied)` |
| Reference | GSM 07.05 |

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### 3.7.3.1.3 +CMGF - Message Format

| **+CMGF - Message Format** | |
|---|---|
| **AT+CMGF= [<mode>]** | Set command selects the format of messages used with send, list, read and write commands.<br><br>Parameter:<br>**<mode>**<br>0 - PDU mode, as defined in GSM 3.40 and GSM 3.41 (factory default)<br>1 - text mode |
| **AT+CMGF?** | Read command reports the current value of the parameter **<mode>**. |
| **AT+CMGF=?** | Test command reports the supported value of **<mode>** parameter. |
| Reference | GSM 07.05 |

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## 3.7.3.2 Message Configuration

### *3.7.3.2.1 +CSCA - Service Center Address*

| **+CSCA -Service Center Address** | |
|---|---|
| **AT+CSCA=<br><number><br>[,<type>]** | Set command sets the Service Center Address to be used for mobile originated SMS transmissions.<br><br>Parameter:<br>**<number>** - SC phone number in the format defined by **<type>**<br>**<type>** - the type of number<br>129 - national numbering scheme<br>145 - international numbering scheme (contains the character "**+**")<br><br>Note: to use the SM service, is mandatory to set a Service Center Address at which service requests will be directed.<br><br>Note: in Text mode, this setting is used by send and write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the **<pdu>** parameter equals zero. |
| **AT+CSCA?** | Read command reports the current value of the SCA in the format:<br><br>**+CSCA: <number>,<type>**<br><br>Note: if SCA is not present the device reports an error message. |
| **AT+CSCA=?** | Test command returns the **OK** result code. |
| Reference | GSM 07.05 |

### *3.7.3.2.2 +CSMP - Set Text Mode Parameters*

| **+CSMP - Set Text Mode Parameters** | |
|---|---|
| **AT+CSMP=<br>[<fo><br>[,<vp><br>[,<pid><br>[,<dcs>]]]]** | Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used (**AT+CMGF=1**)<br><br>Parameters:<br>**<fo>** - depending on the command or result code:<br>first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.<br>**<vp>** - depending on SMS-SUBMIT **<fo>** setting:<br>GSM 03.40 TP-Validity-Period either in integer format (default 167) or in quoted time-string format<br>**<pid>** - GSM 03.40 TP-Protocol-Identifier in integer format.<br>**<dcs>** - depending on the command or result code:<br>GSM 03.38 SMS Data Coding Scheme (default 0), or Cell |

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| **+CSMP - Set Text Mode Parameters** | |
|---|---|
| | Broadcast Data Coding Scheme |
| **AT+CSMP?** | Read command reports the current setting in the format:<br>**+CSMP: < fo>,<vp>,<pid>,<dcs>** |
| **AT+CSMP=?** | Test command returns the **OK** result code. |
| Example | *Set the parameters for an outgoing message with 24 hours of validity period and default properties:*<br><br>`AT+CSMP=17,167,0,0`<br>`OK` |
| Reference | GSM 07.05; GSM 03.40; GSM 03.38 |

### *3.7.3.2.3 +CSDH - Show Text Mode Parameters*

| **+CSDH - Show Text Mode Parameters** | |
|---|---|
| **AT+CSDH=**<br>**[<show>]** | Set command controls whether detailed header information is shown in text mode (**AT+CMGF=1**) result codes.<br><br>Parameter:<br>**<show>**<br>0 - do not show header values defined in commands **+CSCA** and **+CSMP** (**<sca>**, **<tosca>**, **<fo>**, **<vp>**, **<pid>** and **<dcs>**) nor **<length>**, **<toda>** or **<tooa>** in **+CMT**, **+CMGL**, **+CMGR** result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in **+CMGR** result code do not show **<pid>**, **<mn>**, **<da>**, **<toda>**, **<length>** or **<cdata>**<br>1 - show the values in result codes |
| **AT+CSDH?** | Read command reports the current setting in the format:<br><br>**+CSDH: <show>** |
| **AT+CSDH=?** | Test command reports the supported range of values for parameter **<show>** |
| Reference | GSM 07.05 |

### *3.7.3.2.4 +CSCB - Select Cell Broadcast Message Types*

| **+CSCB -Select Cell Broadcast Message Types** | |
|---|---|
| **AT+CSCB=**<br>**[<mode>[,<mids>**<br>**[,<dcss>]]]** | Set command selects which types of Cell Broadcast Messages are to be received by the device.<br><br>Parameters:<br>**<mode>**<br>0 - the message types defined by **<mids>** and **<dcss>** are accepted (factory default) |

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| +CSCB -Select Cell Broadcast Message Types | |
|---|---|
| | 1 - the message types defined by **<mids>** and **<dcss>** are rejected<br>**<mids>** - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string (“”).<br>**<dcss>** - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (“”). |
| **AT+CSCB?** | Read command reports the current value of parameters **<mode>**, **<mids>** and **<dcss>**. |
| **AT+CSCB=?** | Test command returns the range of values for parameter **<mode>**. |
| Example | AT+CSCB?<br>+CSCB: 1,"","" <br><br>OK *(all CBMs are accepted, none is rejected)*<br>AT+CSCB=0,"0,1,300-315,450","0-3"<br>OK |
| Reference | GSM 07.05, GSM 03.41, GSM 03.38. |

### *3.7.3.2.5 +CSAS - Save Settings*

| +CSAS - Save Settings | |
|---|---|
| **AT+CSAS [=<profile>]** | Execution command saves settings which have been made by the **+CSCA** **+CSMP** and **+CSCB** commands in local non volatile memory.<br><br>Parameter:<br>**<profile>**<br>0 - it saves the settings to NVM (factory default).<br>1..n - SIM profile number; the value of n depends on the SIM and its max is 3.<br><br>Note: certain settings may not be supported by the SIM and therefore they are always saved to NVM, regardless the value of **<profile>**.<br><br>Note: If parameter is omitted the settings are saved in the non volatile memory. |
| **AT+CSAS=?** | Test command returns the possible range of values for the parameter **<profile>**. |
| Reference | GSM 07.05 |

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### 3.7.3.2.6 +CRES - Restore Settings

| **+CRES - Restore Settings** | |
|---|---|
| **AT+CRES [=<profile>]** | Execution command restores message service settings saved by **+CSAS** command from either NVM or SIM.<br><br>Parameter:<br>**<profile>**<br>0 - it restores message service settings from NVM.<br>1..n - it restores message service settings from SIM. The value of n depends on the SIM and its max is 3.<br><br>Note: certain settings may not be supported by the SIM and therefore they are always restored from NVM, regardless the value of **<profile>**.<br><br>Note: If parameter is omitted the command restores message service settings from NVM. |
| **AT+CRES=?** | Test command returns the possible range of values for the parameter **<profile>**. |
| Reference | GSM 07.05 |

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### 3.7.3.3 Message Receiving And Reading

#### *3.7.3.3.1 +CNMI - New Message Indications To Terminal Equipment*

| **+CNMI - New Message Indications To Terminal Equipment** | |
|---|---|
| **AT+CNMI=[ <mode>[,<mt> [,<bm>[,<ds> [,<bfr>]]]]]** | Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**.<br><br>Parameter:<br>**<mode>** - unsolicited result codes buffering option<br>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.<br>1 - Discard indication and reject new received message unsolicited result codes when **TA-TE** link is reserved, otherwise forward them directly to the **TE**.<br>2 - Buffer unsolicited result codes in the TA in case the **DTE** is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE.<br>3 - if **<mt>** is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too.<br>**<mt>** - result code indication reporting for SMS-DELIVER<br>0 - No SMS-DELIVER indications are routed to the TE.<br>1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code:<br>**+CMTI: <memr>,<index>**<br>where:<br>**<memr>** - memory storage where the new message is stored<br>"SM"<br>"ME"<br>**<index>** - location on the memory where SMS is stored.<br>2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the TE using the following unsolicited result code:<br><br>**(PDU Mode)**<br>**+CMT: <alpha>,<length><CR><LF><pdu>**<br>where:<br>**<alpha>** - alphanumeric representation of originator/destination number corresponding to the entry found in MT phonebook; used character set should be the one selected with command **+CSCS**.<br>**<length>** - PDU length<br>**<pdu>** - PDU message |

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**+CNMI - New Message Indications To Terminal Equipment**

**(TEXT Mode)**

**+CMT:<oa>,<alpha>,<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data>** (the information written in italics will be present depending on **+CSDH** last setting)

where:

**<oa>** - originating address, string type converted in the currently selected character set (see **+CSCS**)

**<alpha>** - alphanumeric representation of **<oa>**; used character set should be the one selected with command **+CSCS**.

**<scts>** - arrival time of the message to the SC

***<tooa>***, ***<tosca>*** - type of number **<oa>** or ***<sca>***:

129 - number in national format

145 - number in international format (contains the "**+**")

***<fo>*** - first octet of GSM 03.40

***<pid>*** - Protocol Identifier

***<dcs>*** - Data Coding Scheme

**<sca>** - Service Centre address, string type, converted in the currently selected character set (see **+CSCS**)

***<length>*** - text length

**<data>** - TP-User-Data

- If **<dcs>** indicates that GSM03.38 default alphabet is used and **<fo>** indicates that GSM03.40 TP-User-Data-Header-Indication is not set (bit 6 of **<fo>** is 0), each character of GSM alphabet will be converted into current TE character set (see **+CSCS**)
- If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used or **<fo>** indicates that GSM03.40 TP-User-Data-Header-Indication is set (bit 6 of **<fo>** is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

Class 2 messages and messages in the message waiting indication group (stored message) result in indication as defined in **<mt>=1**.

3 - 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 reporting option

0 - Cell Broadcast Messages are not sent to the **DTE**

2 - New Cell Broadcast Messages are sent to the **DTE** with the unsolicited result code:

**(PDU Mode)**

**+CBM: <length><CR><LF><PDU>**

where:

**<length>** - PDU length

**<PDU>** - message PDU

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| +CNMI - New Message Indications To Terminal Equipment | |
|---|---|
| | **(TEXT Mode)**<br>**+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data>**<br>where:<br>**<sn>** - message serial number<br>**<mid>** - message ID<br>**<dcs>** - Data Coding Scheme<br>**<pag>** - page number<br>**<pags>** - total number of pages of the message<br>**<data>** - CBM Content of Message<br>• If **<dcs>** indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see **+CSCS**)<br>• If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)<br><br>**<ds>** - SMS-STATUS-REPORTs reporting option<br>0 - status report receiving is not reported to the **DTE**<br>1 - the status report is sent to the **DTE** with the following unsolicited result code:<br><br>**(PDU Mode)**<br>**+CDS: <length><CR><LF><PDU>**<br>where:<br>**<length>** - PDU length<br>**<PDU>** - message PDU<br><br>**(TEXT Mode)**<br>**+CDS: <fo>,<mr>,,,<scts>,<dt>,<st>**<br>where:<br>**<fo>** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br><br>2 - if a status report is stored, then the following unsolicited result code is sent:<br>**+CDSI: <memr>,<index>**<br><br>where:<br>**<memr>** - memory storage where the new message is stored "SM"<br>**<index>** - location on the memory where SMS is stored<br>**<bfr>** - buffered result codes handling method: |

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| +CNMI - New Message Indications To Terminal Equipment | |
|---|---|
| | 0 - **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)<br>1 - **TA** buffer of unsolicited result codes defined within this command is cleared when **<mode>=1..3** is entered.<br><br>Note: the implementation of **<alpha>** field in **+CMT** URC is currently under development. |
| **AT+CNMI?** | Read command returns the current parameter settings for **+CNMI** command in the form:<br><br>**+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** |
| **AT+CNMI=?** | Test command reports the supported range of values for the **+CNMI** command parameters. |
| Reference | GSM 07.05 |
| Note | **DTR** signal is ignored, hence the indication is sent even if the **DTE** is inactive ( **DTR** signal is **Low**). In this case the unsolicited result code may be lost so if MODULE remains active while **DTE** is not, at **DTE** startup is suggested to check whether new messages have reached the device meanwhile with command **AT+CMGL=0** that lists the new messages received. |

### *3.7.3.3.2 +CMGL - List Messages*

| +CMGL - List Messages | |
|---|---|
| **AT+CMGL [=<stat>]** | Execution command reports the list of all the messages with status value **<stat>** stored into **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>The parameter type and the command output depend on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>Parameter:<br>**<stat>**<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent<br>3 - stored message already sent<br>4 - all messages.<br><br>Each message to be listed is represented in the format:<br><br>**+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu>** |

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| +CMGL - List Messages | |
|---|---|
| | where:<br>**<index>** - message position in the memory storage list.<br>**<stat>** - status of the message<br>**<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command **+CSCS**.<br>**<length>** - length of the PDU in bytes<br>**<pdu>** - message in PDU format according to GSM 3.40<br><br>**(Text Mode)**<br>Parameter:<br>**<stat>**<br>"REC UNREAD" - new message<br>"REC READ" - read message<br>"STO UNSENT" - stored message not yet sent<br>"STO SENT" - stored message already sent<br>"ALL" - all messages.<br><br>Each message to be listed is represented in the format (the information written in italics will be present depending on **+CSDH** last setting):<br><br>**+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>*[,<tooa/toda>, <length>]*<CR><LF> <data>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<oa/da>** - originator/destination address, string type , represented in the currently selected character set (see **+CSCS**)<br>**<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command **+CSCS**.<br>**<scts>** - TP-Service Centre Time Stamp in Time String Format<br>***<tooa/toda>*** - type of number **<oa/da>**<br>129 - number in national format<br>145 - number in international format (contains the "**+**")<br>***<length>*** - text length<br>**<data>** - TP-User-Data<br>• If **<dcs>** indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see **+CSCS**)<br>• If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) |

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| **+CMGL - List Messages** | |
|---|---|
| | Each message delivery confirm is represented in the format**:**<br><br>**+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**<br><br>where<br>**<index>** - message position in the storage<br>**<stat>** - message status<br>**<fo>** - first octet of the message PDU<br>**<mr>** - message reference number<br>**<scts>** - arrival time of the message to the SC<br>**<dt>** - sending time of the message<br>**<st>** - message status as coded in the PDU<br><br>Note: **OK** result code is sent at the end of the listing.<br><br>Note: If parameter is omitted the command returns the list of sms with "**REC UNREAD**" status.<br><br>Note: the implementation of **<alpha>** field in the output of **+CMGL** is currently under development. |
| **AT+CMGL=?** | Test command returns a list of supported **<stat>**s |
| Reference | GSM 07.05 |

### *3.7.3.3.3 +CMGR - Read Message*

| **+CMGR - Read Message** | |
|---|---|
| **AT+CMGR= <index>** | Execution command reports the message with location value **<index>** from **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command **+CPMS**).<br><br>Parameter:<br>**<index>** - message index.<br><br>The output depends on the last settings of command **+CMGF** (message format to be used)<br><br>**(PDU Mode)**<br>The output has the following format:<br><br>**+CMGR: <stat>,<alpha>,<length><CR><LF><pdu>**<br><br>where<br>**<stat>** - status of the message |

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**+CMGR - Read Message**

0 - new message
1 - read message
2 - stored message not yet sent
3 - stored message already sent

**<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command **+CSCS**.
**<length>** - length of the PDU in bytes.
**<pdu>** - message in PDU format according to GSM 3.40.

The status of the message and entire message data unit **<pdu>** is returned.

**(Text Mode)**

*Output format for received messages* (the information written in italics will be present depending on **+CSDH** last setting)*:*
**+CMGR: <stat>,<oa>,<alpha>,<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data>**

*Output format for sent messages:*
**+CMGR: <stat>,<da>,<alpha>*[,<toda>,<fo>,<pid>,<dcs>,,<sca>,<tosca>,<length>]*<CR><LF><data>**

*Output format for message delivery confirm:*
**+CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st>**

where:
**<stat>** - status of the message
"REC UNREAD" - new received message unread
"REC READ" - received message read
"STO UNSENT" - message stored not yet sent
"STO SENT" - message stored already sent
***<fo>*** - first octet of the message PDU
**<mr>** - message reference number
**<scts>** - arrival time of the message to the SC
**<dt>** - sending time of the message
**<st>** - message status as coded in the PDU
***<pid>*** - Protocol Identifier
***<dcs>*** - Data Coding Scheme
**<oa>** - Originator address, string type represented in the currently selected character set (see **+CSCS**)
**<da>** - Destination address, string type represented in the currently selected character set (see **+CSCS**)
**<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command **+CSCS**.

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| **+CMGR - Read Message** | |
|---|---|
| | ***<sca>*** - Service Centre number<br>***<tooa>***,***<toda >***,***<tosca>*** - type of number **<oa>**,**<da>**,***<sca>***<br>129 - number in national format<br>145 - number in international format (contains the "**+**")<br>***<length>*** - text length<br>**<data>** - TP-User_data<br>• If **<dcs>** indicates that GSM03.38 default alphabet is used , each character of GSM alphabet will be converted into current TE character set (see **+CSCS**)<br>• If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)<br><br>Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.<br><br>Note: an error result code is sent on empty record **<index>**.<br><br>Note: the implementation of **<alpha>** field in the output of **+CMGR** is currently under development. |
| **AT+CMGR=?** | Test command returns the **OK** result code |
| Reference | GSM 07.05 |

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## 3.7.3.4 Message Sending And Writing

### *3.7.3.4.1 +CMGS - Send Message*

| **+CMGS - Send Message** | |
|---|---|
| *(PDU Mode)*<br>**AT+CMGS=**<br>**<length>** | **(PDU Mode)**<br>Execution command sends to the network a message.<br><br>Parameter:<br>**<length>** - length of the PDU to be sent in bytes (excluding the SMSC address octets).<br>7..164<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>and waits for the specified number of bytes.<br><br>Note: the **DCD** signal shall be in **ON** state while PDU is given.<br><br>Note: the echoing of given characters back from the TA is controlled by echo command **E**<br><br>Note: the **PDU** shall be hexadecimal format (each octet of the **PDU** is given as two IRA character long hexadecimal number) and given in one line.<br><br>Note: when the length octet of the SMSC address (given in the **PDU**) equals zero, the SMSC address set with command **+CSCA** is used; in this case the SMSC Type-of-Address octet shall not be present in the **PDU**.<br><br>To send the message issue **Ctrl-Z** char (**0x1A** hex).<br>To exit without sending the message issue **ESC** char (**0x1B** hex).<br><br>If message is successfully sent to the network, then the result is sent in the format:<br><br>**+CMGS: <mr>**<br><br>where<br>**<mr>** - message reference number.<br><br>Note: if message sending fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are |

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| +CMGS - Send Message | |
|---|---|
| | issued. |
| *(Text Mode)*<br>**AT+CMGS=<da> [,<toda>]** | **(Text Mode)**<br>Execution command sends to the network a message.<br><br>Parameters:<br>**<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**).<br>**<toda>** - type of destination address<br>129 - number in national format<br>145 - number in international format (contains the "**+**")<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>After this prompt text can be entered; the entered text should be formatted as follows:<br><br>- if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used.<br>- if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**)<br><br>Note: the **DCD** signal shall be in **ON** state while text is entered.<br><br>Note: the echoing of entered characters back from the TA is controlled by echo command **E**<br><br>To send the message issue **Ctrl-Z** char (**0x1A** hex).<br>To exit without sending the message issue **ESC** char (**0x1B** hex).<br><br>If message is successfully sent to the network, then the result is sent in the format:<br><br>**+CMGS: <mr>**<br><br>where<br>**<mr>** - message reference number. |

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| +CMGS - Send Message | |
|---|---|
| | Note: if message sending fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.<br><br>Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if GSM 03.38 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used |
| **AT+CMGS=?** | Test command resturns the **OK** result code. |
| Note | To avoid malfunctions is suggested to wait for the **+CMGS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands. |
| Reference | GSM 07.05 |

### *3.7.3.4.2 +CMSS - Send Message From Storage*

| +CMSS - Send Message From Storage | |
|---|---|
| **AT+CMSS= <index>[,<da> [,<toda>]]** | Execution command sends to the network a message which is already stored in the **<memw>** storage (see **+CPMS**) at the location **<index>**.<br><br>Parameters:<br>**<index>** - location value in the message storage **<memw>** of the message to send<br>**<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**); if it is given it shall be used instead of the one stored with the message.<br>**<toda>** - type of destination address<br>129 - number in national format<br>145 - number in international format (contains the "**+**")<br><br>If message is successfully sent to the network then the result is sent in the format:<br><br>**+CMSS: <mr>**<br>where:<br>**<mr>** - message reference number.<br><br>If message sending fails for some reason, an error code is reported:<br><br>**+CMS ERROR:<err>**<br><br>Note: to store a message in the **<memw>** storage see command **+CMGW.** |

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| +CMSS - Send Message From Storage | |
|---|---|
| | Note: care must be taken to ensure that during the command execution, which may take several seconds, no other **SIM** interacting commands are issued. |
| **AT+CMSS=?** | Test command resturns the **OK** result code. |
| Note | To avoid malfunctions is suggested to wait for the **+CMSS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands. |
| Reference | GSM 07.05 |

### *3.7.3.4.3 +CMGW - Write Message To Memory*

| +CMGW - Write Message To Memory | |
|---|---|
| *(PDU Mode)*<br>**AT+CMGW=**<br>**<length>**<br>**[,<stat>]** | **(PDU Mode)**<br>Execution command writes in the **<memw>** memory storage a new message.<br><br>Parameter:<br>**<length>** - length in bytes of the PDU to be written.<br>7..164<br>**<stat>** - message status.<br>0 - new message<br>1 - read message<br>2 - stored message not yet sent (default)<br>3 - stored message already sent<br><br>The device responds to the command with the prompt '>' and waits for the specified number of bytes.<br><br>To write the message issue **Ctrl-Z** char (**0x1A** hex).<br>To exit without writing the message issue **ESC** char (**0x1B** hex).<br><br>If message is successfully written in the memory, then the result is sent in the format:<br><br>**+CMGW: <index>**<br><br>where:<br>**<index>** - message location index in the memory **<memw>**.<br><br>If message storing fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. |
| *(Text Mode)*<br>**AT+CMGW[=<da>**<br>**[,<toda>** | **(Text Mode)**<br>Execution command writes in the **<memw>** memory storage a new message. |

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| +CMGW - Write Message To Memory | |
|---|---|
| **[,<stat>]]]** | Parameters:<br>**<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**).<br>**<toda>** - type of destination address.<br>129 - number in national format<br>145 - number in international format (contains the "**+**")<br>**<stat>** - message status.<br>"REC UNREAD" - new received message unread<br>"REC READ" - received message read<br>"STO UNSENT" - message stored not yet sent (default)<br>"STO SENT" - message stored already sent<br><br>After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt:<br><br>**<CR><LF><greather_than><space> (IRA 13, 10, 62, 32)**<br><br>After this prompt text can be entered; the entered text should be formatted as follows:<br><br>- if current **<dcs>** (see **+CSMP**) indicates that GSM03.38 default alphabet is used and current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM alphabet, according to GSM 07.05, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used.<br>- if current **<dcs>** (see **+CSMP**) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see **+CSMP**) indicates that GSM 03.40 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**)<br><br>Note: the **DCD** signal shall be in ON state while text is entered.<br><br>Note: the echoing of entered characters back from the TA is controlled by echo command **E**<br><br>To write the message issue **Ctrl-Z** char (**0x1A** hex).<br><br>To exit without writing the message issue **ESC** char (**0x1B** hex).<br><br>If message is successfully written in the memory, then the result is sent in the format:<br><br>**+CMGW: <index>** |

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| +CMGW - Write Message To Memory | |
|---|---|
| | where:<br>**<index>** - message location index in the memory **<memw>**.<br><br>If message storing fails for some reason, an error code is reported.<br><br>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued.<br><br>Note: it is possible to save a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if GSM 03.38 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used |
| **AT+CMGW=?** | Test command returns the **OK** result code. |
| Reference | GSM 07.05 |
| Note | To avoid malfunctions is suggested to wait for the **+CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands. |

### *3.7.3.4.4 +CMGD - Delete Message*

| +CMGD - Delete Message | |
|---|---|
| **AT+CMGD=<br><index><br>[,<delflag>]** | Execution command deletes from memory **<memr>** the message(s).<br><br>Parameter:<br>**<index>** - message index in the selected storage **<memr>**<br><br>**<delflag>** - an integer indicating multiple message deletion request.<br>0 (or omitted) - delete message specified in **<index>**<br>1 - delete all read messages from **<memr>** storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched<br>2 - delete all read messages from **<memr>** storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched<br>3 - delete all read messages from **<memr>** storage, sent and unsent mobile originated messages, leaving unread messages untouched<br>4 - delete all messages from **<memr>** storage.<br><br>Note: if **<delflag>** is present and not set to 0 then **<index>** is ignored and ME shall follow the rules for **<delflag>** shown above.<br><br>Note: if the location to be deleted is empty, an error message is reported. |
| **AT+CMGD=?** | Test command shows the valid memory locations and optionally the supported values of **<delflag>**.<br><br>**+CMGD: (supported <index>s list)[,(supported <delflag>s list)]** |

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| | |
|---|---|
| Example | AT+CMGD=?<br>+CMGD: (1,2,3,6,7,17,18,19,20,37,38,39,47),(0-4)<br><br>OK |
| Reference | GSM 07.05 |

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# 3.7.4 FAX Class 1 AT Commands

## 3.7.4.1 General Configuration

NOTE: All the test command results are without command echo

### *3.7.4.1.1 +FMI - Manufacturer ID*

| **+FMI - Manufacturer ID** | |
|---|---|
| **AT+FMI?** | Read command reports the manufacturer ID. The output depends on the choice made through **#SELINT** command. |
| Example | `AT+FMI?`<br>`Telit`<br>`OK` |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.7.4.1.2 +FMM - Model Id*

| **+FMM - Model ID** | |
|---|---|
| **AT+FMM?** | Read command reports the model ID |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.7.4.1.3 +FMR - Revision ID*

| **+FMR - Revision ID** | |
|---|---|
| **AT+FMR?** | Read command reports the software revision ID |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.7.4.2 Transmission/Reception Control

### *3.7.4.2.1 +FTS - Stop Transmission And Pause*

| **+FTS - Stop Transmission And Pause** | |
|---|---|
| **AT+FTS=<time>** | Execution command causes the modem to terminate a transmission and wait for **<time>** 10ms intervals before responding with **OK** result.<br><br>Parameter:<br>**<time>** - duration of the pause, expressed in 10ms intervals.<br>0..255 |
| **AT+FTS=?** | Test command returns all supported values of the parameter **<time>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.7.4.2.2 +FRS - Wait For Receive Silence*

| **+FRS - Wait For Receive Silence** | |
|---|---|
| **AT+FRS=<time>** | Execution command causes the modem to listen and report **OK** when silence has been detected for the specified period of time.<br>This command will terminate when the required silence period is detected or when the **DTE** sends another character other than **XON** or **XOFF**.<br><br>Parameter:<br>**<time>** - amount of time, expressed in 10ms intervals.<br>..0..255 |
| **AT+FRS=?** | Test command returns all supported values of the parameter **<time>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.7.4.2.3 +FTM - Transmit Data Modulation*

| **+FTM - Transmit Data** | |
|---|---|
| **AT+FTM=<mod>** | Execution command causes the module to transmit facsimile data using the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>24 - V27ter/2400 bps<br>48 - V27ter/4800 bps<br>72 - V29/7200 bps<br>96 - V29/9600 bps |
| **AT+FTM=?** | Test command returns all supported values of the parameter **<mod>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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### 3.7.4.2.4 +FRM - Receive Data Modulation

| **+FRM - Receive Data Modulation** | |
|---|---|
| **AT+FRM=<mod>** | Execution command causes the module to receive facsimile data using the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>24 - V27ter/2400 bps<br>48 - V27ter/4800 bps<br>72 - V29/7200 bps<br>96 - V29/9600 bps |
| **AT+FRM=?** | Test command returns all supported values of the parameter **<mod>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### 3.7.4.2.5 +FTH - Transmit Data With HDLC Framing

| **+FTH - Transmit Data With HDLC Framing** | |
|---|---|
| **AT+FTH=<mod>** | Execution command causes the module to transmit facsimile data using HDLC protocol and the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>3 - V21/300 bps |
| **AT+FTH=?** | Test command returns all supported values of the parameter **<mod>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### 3.7.4.2.6 +FRH - Receive Data With HDLC Framing

| **+FRH - Receive Data Data With HDLC Framing** | |
|---|---|
| **AT+FRH=<mod>** | Execution command causes the module to receive facsimile data using HDLC protocol and the modulation defined by the parameter **<mod>**.<br><br>Parameter:<br>**<mod>** - carrier modulation<br>3 - V21/300 bps |
| **AT+FRH=?** | Test command returns all supported values of the parameter **<mod>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.7.4.3 Serial Port Control

### *3.7.4.3.1 +FLO - Select Flow Control Specified By Type*

| **+FLO - Select Flow Control Specified By Type** | |
|---|---|
| **AT+FLO=<type>** | Set command selects the flow control behaviour of the serial port in both directions: from **DTE** to **DTA** and from **DTA** to **DTE**.<br><br>Parameter:<br>**<type>** - flow control option for the data on the serial port<br>0 - flow control None<br>1 - flow control Software (**XON-XOFF**)<br>2 - flow control Hardware (**CTS-RTS**) – (factory default)<br><br>Note: This command is a shortcut of the **+IFC** command.<br><br>Note: **+FLO's** settings are functionally a subset of **&K's** ones. |
| **AT+FLO?** | Read command returns the current value of parameter **<type>** |
| **AT+FLO=?** | Test command returns all supported values of the parameter **<type>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.7.4.3.2 +FPR - Select Serial Port Rate*

| **+FPR - Select Serial Port Rate** | |
|---|---|
| **AT+FPR=<rate>** | Set command selects the the serial port speed in both directions, from **DTE** to **DTA** and from **DTA** to **DTE**. When autobauding is selected, then the speed is detected automatically.<br><br>Parameter:<br>**<rate>** - serial port speed selection<br>0 - autobauding |
| **AT+FPR?** | Read command returns the current value of parameter **<rate>** |
| **AT+FPR=?** | Test command returns all supported values of the parameters **<rate>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

### *3.7.4.3.3 +FDD - Double Escape Character Replacement Control*

| **+FDD - Double Escape Character Replacement Control** | |
|---|---|
| **AT+FDD=<mode>** | Set command concerns the use of the **<DLE><SUB>** pair to encode consecutive escape characters (**<10h><10h>**) in user data.<br><br>Parameter<br>**<mode>**<br>0 - currently the only available value. The **DCE** decode of **<DLE><SUB>** is |

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| **+FDD - Double Escape Character Replacement Control** | |
|---|---|
| | either **<DLE><DLE>** or discard. The DCE encode of **<10h><10h>** is **<DLE><DLE><DLE><DLE>** |
| **AT+FDD?** | Read command returns the current value of parameter **<mode>** |
| **AT+FDD=?** | Test command returns all supported values of parameter **<mode>**. |
| Reference | ITU T.31 and TIA/EIA-578-A specifications |

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## 3.7.5 Custom AT Commands

### 3.7.5.1 General Configuration AT Commands

#### *3.7.5.1.1 #CGMI - Manufacturer Identification*

| **#CGMI - Manufacturer Identification** | |
|---|---|
| **AT#CGMI** | Execution command returns the device manufacturer identification code with command echo. The output depends on the choice made through **#SELINT** command. |
| **AT#CGMI=?** | Test command returns the OK result code. |

#### *3.7.5.1.2 #CGMM - Model Identification*

| **#CGMM - Model Identification** | |
|---|---|
| **AT#CGMM** | Execution command returns the device model identification code with command echo. |
| **AT#CGMM=?** | Test command returns the OK result code. |

#### *3.7.5.1.3 #CGMR - Revision Identification*

| **#CGMR - Revision Identification** | |
|---|---|
| **AT#CGMR** | Execution command returns device software revision number with command echo. |
| **AT#CGMR=?** | Test command returns the OK result code. |

#### *3.7.5.1.4 #CGSN - Product Serial Number Identification*

| **#CGSN - Product Serial Number Identification** | |
|---|---|
| **AT#CGSN** | Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo. |
| **AT#CGSN=?** | Test command returns the OK result code. |

#### *3.7.5.1.5 #CIMI - International Mobile Subscriber Identity (IMSI)*

| **#CIMI - International Mobile Subscriber Identity (IMSI)** | |
|---|---|
| **AT#CIMI** | Execution command returns the international mobile subscriber identity, identified as the IMSI number, with command echo. |
| **AT#CIMI=?** | Test command returns the OK result code. |

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### 3.7.5.1.6 #CCID - Read ICCID (Integrated Circuit Card Identification)

| #CCID - Read ICCID | |
|---|---|
| **AT#CCID** | Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM) |
| **AT#CCID=?** | Test command returns the **OK** result code. |

### 3.7.5.1.7 #CAP - Change Audio Path

| #CAP - Change Audio Path | |
|---|---|
| **AT#CAP=[<n>]** | Set command switches the active audio path depending on parameter **<n>**<br><br>Parameter:<br>**<n>** - audio path<br>0 - audio path follows the Axe input (factory default):<br>if Axe is low, handsfree is enabled;<br>if Axe is high, internal path is enabled<br>1 - enables handsfree external mic/ear audio path<br>2 - enables internal mic/ear audio path<br><br>Note: The audio path are mutually exclusive, enabling one disables the other.<br><br>Note: when changing the audio path, the volume level is set at the previously stored value for that audio path (see **+CLVL**). |
| **AT#CAP?** | Read command reports the active audio path in the format:<br><br>**#CAP: <n>**. |
| **AT#CAP=?** | Test command reports the supported values for the parameter **<n>**. |

### 3.7.5.1.8 #SRS - Select Ringer Sound

| #SRS - Select Ringer Sound | |
|---|---|
| **AT#SRS= [<n>,<tout>]** | Set command sets the ringer sound.<br><br>Parameters:<br>**<n>** - ringing tone<br>0 - current ringing tone<br>1..*max* - ringing tone number, where *max* can be read by issuing the Test command **AT#SRS=?**.<br>**<tout>** - ringing tone playing time-out in seconds.<br>0 - ringer is stopped (if present) and current ringer sound is set.<br>1..60 - ringer sound playing for **<tout>** seconds and, if **<n> > 0,** ringer sound **<n>** is set as default ringer sound.<br><br>Note: when the command is issued with **<n> > 0** and **<tout> > 0**, the **<n>** |

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| #SRS - Select Ringer Sound | |
|---|---|
| | ringing tone is played for **<tout>** seconds and stored as default ringing tone.<br><br>Note: if command is issued with **<n> > 0** and **<tout> = 0**, the playing of the ringing is stopped (if present) and **<n>** ringing tone is set as current.<br><br>Note: if command is issued with **<n> = 0** and **<tout> > 0** then the current ringing tone is played.<br><br>Note: if both **<n>** and **<tout>** are **0** then the default ringing tone is set as current and ringing is stopped.<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command |
| **AT#SRS?** | Read command reports current selected ringing and its status in the form:<br><br>**#SRS: <n>,<status>**<br><br>where:<br>**<n>** - ringing tone number<br>1..*max*<br><br>**<status>** - ringing status<br>0 - selected but not playing<br>1 - currently playing |
| **AT#SRS=?** | Test command reports the supported values for the parameters **<n>** and **<tout>** |

### *3.7.5.1.9 #SRP -Select Ringer Path*

| #SRP - Select Ringer Path | |
|---|---|
| **AT#SRP=[<n>]** | Set command selects the ringer path towards whom sending ringer sounds and all signalling tones.<br><br>Parameter:<br>**<n>** - ringer path number<br>0 - sound output towards current selected audio path (see command **#CAP**)<br>1 - sound output towards handsfree<br>2 - sound output towards handset<br>3 - sound output towards Buzzer Output pin GPIO7<br><br>Note: In order to use the Buzzer Output an external circuitry must be added to drive it properly from the GPIO7 pin, furthermore the GPIO7 pin direction must be set to Buzzer output (Alternate function); see command **#GPIO**. |

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| | |
|---|---|
| **AT#SRP?** | Read command reports the selected ringer path in the format:<br><br>**#SRP: <n>**. |
| **AT#SRP=?** | Test command reports the supported values for the parameter **<n>**. |
| Example | AT#SRP=?<br>#SRP: (0-3)<br><br>OK<br>AT#SRP=3<br>OK |

### *3.7.5.1.10 #STM - Signalling Tones Mode*

| **#STM - Signalling Tones Mode** | |
|---|---|
| **AT#STM= [<mode>]** | Set command enables/disables the signalling tones output on the audio path selected with **#SRP** command<br><br>Parameter:<br>**<mode>** - signalling tones status<br>0 - signalling tones disabled<br>1 - signalling tones enabled<br><br>Note: **AT#STM=0** has the same effect as **AT+CALM=2**; **AT#STM=1** has the same effect as **AT+CALM=0**. |
| **AT#STM?** | Read command reports whether the current signaling tones status is enabled or not, in the format:<br><br>**#STM: <mode>** |
| **AT#STM=?** | Test command reports supported range of values for parameter **<mode>**. |

### *3.7.5.1.11 #PCT - Display PIN Counter*

| **#PCT - Display PIN Counter** | |
|---|---|
| **AT#PCT** | Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on **+CPIN** requested password in the format:<br><br>**#PCT: <n>**<br>where:<br>**<n>** - remaining attempts<br>0 - the SIM is blocked.<br>1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given.<br>1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given. |
| **AT#PCT=?** | Test command returns the OK result code. |

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### 3.7.5.1.12 #SHDN - Software Shut Down

| #SHDN - Software Shutdown | |
|---|---|
| **AT#SHDN** | Execution command causes device detach from the network and shut down. Before definitive shut down an **OK** response is returned.<br><br>Note: after the issuing of this command any previous activity is terminated and the device will not respond to any further command.<br><br>Note: to turn it on again Hardware pin ON/OFF must be tied low. |
| **AT#SHDN=?** | Test command returns the OK result code. |

### 3.7.5.1.13 #WAKE - Wake From Alarm Mode

| #WAKE - Wake From Alarm Mode | |
|---|---|
| **AT#WAKE= [<opmode>]** | Execution command stops any eventually present alarm activity and, if the module is in **alarm mode**, it exits the **alarm mode** and enters the **normal operating mode**.<br><br>Parameter:<br>**<opmode>** - operating mode<br>0 - normal operating mode; the module exits the **alarm mode**, enters the **normal operating mode**, any alarm activity is stopped (e.g. alarm tone playing) and an **OK** result code is returned.<br><br>Note: the **alarm mode** is indicated by status **ON** of hardware pin **CTS** and by status **ON** of pin **DSR**; the **power saving** status is indicated by a **CTS - OFF** and **DSR - OFF** status; the **normal operating status** is indicated by **DSR - ON**.<br><br>Note: during the **alarm mode** the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SM, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state. |
| **AT#WAKE?** | Read command returns the **operating status** of the device in the format:<br><br>**#WAKE: <status>**<br>where:<br>**<status>**<br>0 - normal operating mode<br>1 - alarm mode or normal operating mode with some alarm activity. |

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### 3.7.5.1.14 #QTEMP -Query Temperature Overflow

| #QTEMP - Query Temperature Overflow | |
|---|---|
| **AT#QTEMP= [<mode>]** | Set command has currently no effect. The interpretation of parameter **<mode>** is currently not implemented: any value assigned to it will simply have no effect. |
| **AT#QTEMP?** | Read command queries the device internal temperature sensor for over temperature and reports the result in the format:<br><br>**#QTEMP: <temp>**<br>where<br>**<temp>** - over temperature indicator<br>0 - the device temperature is in the working range<br>1 - the device temperature is out of the working range |
| **#QTEMP=?** | Test command reports supported range of values for parameter **<mode>**. |
| Note | The device should not be operated out of its working temperature range, elsewhere proper functioning of the device is not ensured. |

### 3.7.5.1.15 #GPIO - General Purpose Input/Output Pin Control

| #GPIO - General Purpose Input/Output Pin Control | |
|---|---|
| **AT#GPIO=[<pin>, <mode>[,<dir>]]** | Execution command sets the value of the general purpose output pin **GPIO<pin>** according to **<dir>** and **<mode>** parameter.<br>Not all configuration for the three parameters are valid.<br><br>Parameters:<br>**<pin>** - GPIO pin number; supported range is from 1 to a value that depends on the hardware, but **GPIO1** is input only and **GPIO2** is output only.<br>**<mode>** - its meaning depends on **<dir>** setting:<br>0 - no meaning if **<dir>=0** - INPUT<br>- output pin cleared to 0 (LOW) if **<dir>=1** - OUTPUT<br>- no meaning if **<dir>=2** - ALTERNATE FUNCTION<br>1 - no meaning if **<dir>=0** - INPUT<br>- output pin set to 1 (HIGH) if **<dir>=1** - OUTPUT<br>- no meaning if **<dir>=2** - ALTERNATE FUNCTION<br>2 - Reports the read value from the input pin if **<dir>=0** - INPUT<br>- Reports the read value from the input pin if **<dir>=1** - OUTPUT<br>- Reports a no meaning value if **<dir>=2** - ALTERNATE FUNCTION<br>**<dir>** - GPIO pin direction<br>0 - pin direction is INPUT<br>1 - pin direction is OUTPUT<br>2 - pin direction is ALTERNATE FUNCTION (see Note).<br><br>Note: when **<mode>=2** (and **<dir>** is omitted) the command reports the |

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| #GPIO - General Purpose Input/Output Pin Control | |
|---|---|
| | direction and value of pin **GPIO<pin>** in the format:<br><br>**#GPIO: <dir>,<stat>**<br>where<br>**<dir>** - current direction setting for the **GPIO<pin>**<br>**<stat>**<br>• logic value read from pin **GPIO<pin>** in the case the pin **<dir>** is set to input;<br>• logic value present in output of the pin **GPIO<pin>** in the case the pin **<dir>** is currently set to output;<br>• no meaning value for the pin **GPIO<pin>** in the case the pin **<dir>** is set to alternate function.<br><br>Note: (valid only for **GPIO1**) since the reading is done after the insulating transistor, the reported value is the opposite of the logic status of the **GPIO1** input pin<br><br>Note: "ALTERNATE FUNCTION" value is valid only for following pins:<br>• **GPIO5** - alternate function is “RF Transmission Monitor”<br>• **GPIO6** - alternate function is "Alarm Output" (see **+CALA**)<br>• **GPIO7** - alternate function is "Buzzer Output" (see **#SRP**)<br><br>Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.<br><br>Note: The **GPIO2** is an OPEN COLLECTOR output, the command sets the transistor base level, hence the open collector output is negated |
| **AT#GPIO?** | Read command reports the read direction and value of all **GPIO** pins, in the format:<br><br>**#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[…]]**<br>where<br>**<dir>** - as seen before<br>**<stat>** - as seen before |
| **AT#GPIO=?** | Test command reports the supported range of values of the command parameters **<pin>**, **<mode>** and **<dir>**. |
| Example | `AT#GPIO=3,0,1`<br>`OK`<br>`AT#GPIO=3,2`<br>`#GPIO: 1,0`<br>`OK`<br>`AT#GPIO=4,1,1`<br>`OK`<br>`AT#GPIO=5,0,0`<br>`OK`<br>`AT#GPIO=6,2` |

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| #GPIO - General Purpose Input/Output Pin Control | |
|---|---|
| | `#GPIO: 0,1`<br>`OK` |

### 3.7.5.1.16 #I2S1 - Set PCM Output For Channel 1

| #I2S1 - Set PCM Output For Channel 1 | |
|---|---|
| **AT#I2S1=**<br>**[<mode>**<br>**[,<clockmode>,**<br>**<clockrate>]]** | Set command sets the type of operation.<br><br>Parameters:<br>**<mode>**<br>0 - PCM1 is not enabled; audio is forwarded to the analog line; PCM pins can be used as UART1 and GPIO.<br>1 - PCM1 is enabled; audio is forwarded to the PCM block; PCM pin cannot be used for UART1; any service on UART1 is suspended<br>2 - PCM1 is enabled; audio is forwarded both to the PCM block and to the analog line; PCM pins cannot be used for UART1; any service on UART1 is suspended<br>**<clockmode>**<br>0 - PCM acts as slave<br>1 - PCM acts as master<br>**<clockrate>**<br>64 - 64 kHz.<br>128 - 128 kHz.<br>256 - 256 kHz.<br>512 - 512 kHz<br>1024 - 1024 kHz<br>2048 - 2048 kHz |
| **AT#I2S1?** | Read command reports the last setting, in the format:<br><br>**#I2S1: <mode>,<clockmode>,<clockrate>** |
| **AT#I2S1=?** | Reports the range of supported values for parameters **<mode>, <clockmode>** and **<clockrate>** |

### 3.7.5.1.17 #E2SMSRI - SMS Ring Indicator

| #E2SMSRI - SMS Ring Indicator | |
|---|---|
| **AT#E2SMSRI=**<br>**[<n>]** | Set command enables/disables the Ring Indicator pin response to an incoming SMS message. If enabled, a negative going pulse is generated on receipt of an incoming SMS message. The duration of this pulse is determined by the value of **<n>**.<br><br>Parameter:<br>**<n>** - RI enabling |

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| #E2SMSRI - SMS Ring Indicator | |
|---|---|
| | 0 - disables RI pin response for incoming SMS messages (factory default)<br>50..1150 - enables RI pin response for incoming SMS messages. The value of **<n>** is the duration in ms of the pulse generated on receipt of an incoming SM.<br><br>Note: if **+CNMI=3,1** command is issued and the module is in a GPRS connection, a 100 ms break signal is sent and a 1 sec. pulse is generated on RI pin, no matter if the RI pin response is either enabled or not. |
| **AT#E2SMSRI?** | Read command reports the duration in ms of the pulse generated on receipt of an incoming SM, in the format:<br><br>**#E2SMSRI: <n>**<br><br>Note: as seen before, the value **<n>=0** means that the RI pin response to an incoming SM is disabled. |
| **AT#E2SMSRI=?** | Reports the range of supported values for parameter **<n>** |

### *3.7.5.1.18 #ADC - Read Analog/Digital Converter input*

| #ADC - Read Analog/Digital Converter input | |
|---|---|
| **AT#ADC= [<adc>,<mode> [,<dir>]]** | Execution command reads pin**<adc>** voltage, converted by ADC, and outputs it in the format:<br><br>**#ADC: <value>**<br><br>where:<br>**<value>** - pin**<adc>** voltage, expressed in mV<br><br>Parameters:<br>**<adc>** - index of pin<br>1 - available for GM862-QUAD, GM862-QUAD-PY, GM862-GPS, GE863-QUAD, GE863-PY, GE863-GPS, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br>2 - available only for GE863-QUAD, GE863-PY, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br>3 - available only for GE863-QUAD, GE863-PY, GE864-QUAD, GE864-PY, GC864-QUAD and GC864-PY<br><br>**<mode>** - required action<br>2 - query ADC value<br>**<dir>** - direction; its interpretation is currently not implemented<br>0 - no effect.<br><br>Note: The command returns the last valid measure. |
| **AT#ADC?** | Read command reports all pins voltage, converted by ADC, in the format: |

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| | |
|---|---|
| | **#ADC: <value>[<CR><LF>#ADC: <value>[…]]** |
| **AT#ADC=?** | Test command reports the supported range of values of the command parameters **<adc>**, **<mode>** and **<dir>**. |

### *3.7.5.1.19 #DAC - Digital/Analog Converter control*

| **#DAC - Digital/Analog Converter control** | |
|---|---|
| **AT#DAC=<br>[<enable><br>[,<value>]]** | Set command enables/disables the DAC_OUT pin.<br><br>Parameters:<br>**<enable>** - enables/disables DAC output.<br>0 - disables pin; it is in high impedance status (factory default)<br>1 - enables pin; the corresponding output is driven<br>**<value>** - scale factor of the integrated output voltage; it must be present if **<enable>=1**<br>0..1023 - 10 bit precision<br><br>Note: **integrated output voltage = MAX_VOLTAGE * value / 1023** |
| **AT#DAC?** | Read command reports whether the DAC_OUT pin is currently enabled or not, along with the integrated output voltage scale factor, in the format:<br><br>**#DAC: <enable>,<value>** |
| **AT#DAC=?** | Test command reports the range for the parameters **<enable>** and **<value>**. |
| Example | *Enable the DAC out and set its integrated output to the 50% of the max value:*<br><br>AT#DAC=1,511<br>OK<br><br>*Disable the DAC out:*<br>AT#DAC=0<br>OK |
| Note | With this command the DAC frequency is selected internally.<br>D/A converter must not be used during POWERSAVING.<br><br>DAC_OUT line must be integrated (for example with a low band pass filter) in order to obtain an analog voltage.<br>For a more in depth description of the integration filter refer to the hardware user guide. |

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### 3.7.5.1.20 #VAUX - Auxiliary Voltage Output Control

| #VAUX- Auxiliary Voltage Output Control | |
|---|---|
| **AT#VAUX= [<n>,<stat>]** | Set command enables/disables Auxiliary Voltage pins output.<br><br>Parameters:<br>**<n>** - VAUX pin index<br>1 - there is currently just one VAUX pin<br>**<stat>**<br>0 - output off<br>1 - output on<br>2 - query current value of VAUX pin<br><br>Note: when **<stat>=2** and command is successful, it returns:<br><br>**#VAUX: <value>**<br><br>where:<br>**<value>** - power output status<br>0 - output off<br>1 - output on<br><br>Note: for the GPS product (GE863-GPS): if the Auxiliary Voltage pins output is disabled while GPS or camera is powered on they'll both also be turned off. |
| **AT#VAUX?** | Read command reports the current status of all auxiliary voltage output pins, in the format:<br><br>**#VAUX: <value>[<CR><LF>#VAUX: <value>[...]]** |
| **AT#VAUX=?** | Test command reports the supported range of values for parameters **<n>**, **<stat>**. |

### 3.7.5.1.21 #CBC - Battery And Charger Status

| #CBC- Battery And Charger Status | |
|---|---|
| **AT#CBC** | Execution command returns the current Battery and Charger state in the format:<br><br>**#CBC: <ChargerState>,<BatteryVoltage>**<br><br>where:<br>**<ChargerState>** - battery charger state<br>0 - charger not connected<br>1 - charger connected and charging<br>2 - charger connected and charge completed |

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| #CBC- Battery And Charger Status | |
|---|---|
| | **<BatteryVoltage>** - battery voltage in millivolt: it is the real battery voltage only if charger is not connected; if the charger is connected this value depends on the charger voltage. |
| **AT#CBC=?** | Test command returns the **OK** result code. |

### *3.7.5.1.22 #AUTOATT – GPRS Auto-Attach Property*

| #AUTOATT - Auto-Attach Property | |
|---|---|
| **AT#AUTOATT= [<auto>]** | Set command enables/disables the TE GPRS auto-attach property.<br><br>Parameter:<br>**<auto>**<br>0 - disables GPRS auto attach property<br>1 - enables GPRS auto attach property (factory default): after the command **#AUTOATT=1** has been issued (and at every following start-up) the terminal will automatically try to attach to the GPRS service. |
| **AT#AUTOATT?** | Read command reports whether the auto-attach property is currently enabled or not, in the format:<br><br>**#AUTOATT: <auto>** |
| **AT#AUTOATT=?** | Test command reports available values for parameter **<auto>**. |

### *3.7.5.1.23 #MSCLASS - Multislot Class Control*

| #MSCLASS - Multislot Class Control | |
|---|---|
| **AT#MSCLASS= [<class>, <autoattach>]** | Set command sets the multislot class<br><br>Parameters:<br>**<class>** - multislot class; take care: class 7 is not supported.<br>1..6 - GPRS class<br>8..10 - GPRS class<br>**<autotattach>**<br>0 - the new multislot class is enabled only at the next detach/attach or after a reboot.<br>1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure.<br><br>Note: the **<class>** range for former GM862 family products is 1..8, excluding class 7. |
| **AT#MSCLASS?** | Read command reports the current value of the multislot class in the format:<br>**#MSCLASS: <class>** |
| **AT#MSCLASS=?** | Test command reports the range of available values for parameter **<class>**. |

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### 3.7.5.1.24 #MONI - Cell Monitor

| #MONI - Cell Monitor | |
|---|---|
| **AT#MONI[=[<number>]]** | Set command sets one cell out of seven, in a neighbour of the serving cell including it, from which extract GSM-related informations.<br><br>Parameter:<br>**<number>**<br>0..6 - it is the ordinal number of the cell, in a neighbour of the serving cell (default 0, serving cell).<br>7 - it is a special request to obtain GSM-related informations from the whole set of seven cells in the neighbour of the serving cell.<br><br>Note: issuing **AT#MONI<CR>** reports the following GSM-related informations for selected cell and dedicated channel (if exists).<br><br>a) When extracting data for the serving cell and the network name is known the format is:<br>**#MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>**<br><br>b) When the network name is unknown, the format is:<br>**#MONI: Cc:<cc> Nc:<nc> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>**<br><br>c) When extracting data for an adjacent cell, the format is:<br>**#MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn> PWR:<dBm> dBm**<br><br>where:<br>**<netname>** - name of network operator<br>**<cc>** - country code<br>**<nc>** - network operator code<br>**<n>** - progressive number of adjacent cell<br>**<bsic>** - base station identification code<br>**<qual>** - quality of reception<br>0..7<br>**<lac>** - localization area code<br>**<id>** - cell identifier<br>**<arfcn>** - assigned radio channel<br>**<dBm>** - received signal strength in dBm<br>**<timadv>** = timing advance<br><br>Note: TA: **<timadv>** is reported only for the serving cell.<br><br>When the last setting done is **AT#MONI=7**, then the Read command reports the above informations for each of the cells in the neighbour of the serving cell, formatting them in a sequence of **<CR><LF>-terminated** strings. |

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| #MONI - Cell Monitor | |
|---|---|
| **AT#MONI=?** | Test command reports the maximum number of cells, in a neighbour of the serving cell excluding it, from which we can extract GSM-related informations, along with the ordinal number of the current selected cell, in the format:<br><br>**#MONI: (<MaxCellNo>,<CellSet>)**<br><br>where:<br>**<MaxCellNo>** - maximum number of cells, in a neighbour of the serving cell and excluding it, from which we can extract GSM-related informations. This value is always **6**.<br>**<CellSet>** - the last setting done with command **#MONI**. |
| Note | The refresh time of the measures is preset to 3 sec.<br>The timing advance value is meaningful only during calls or GPRS transfers active. |

### *3.7.5.1.25 #SERVINFO - Serving Cell Information*

| #SERVINFO - Serving Cell Information | |
|---|---|
| **AT#SERVINFO** | Execution command reports informations about serving cell, in the format:<br><br>**#SERVINFO: <B-ARFCN>,<dBM>,<NetNameAsc>,<NetCode>, ,<BSIC>,<LAC>,<TA>,<GPRS>[,[<PB-ARFCN>],[<NOM>], <RAC>,[PAT]]**<br><br>where:<br>**<B-ARFCN>** - BCCH ARFCN of the serving cell<br>**<dBM>** - received signal strength in dBm<br>**<NetNameAsc>** - operator name, quoted string type<br>**<NetCode>** - country code and operator code, hexadecimal representation<br>**<BSIC>** - Base Station Identification Code<br>**<LAC>** - Localization Area Code<br>**<TA>** - Time Advance: it's available only if a GSM or GPRS is running<br>**<GPRS>** - GPRS supported in the cell<br>0 - not supported<br>1 - supported<br><br>The following informations will be present only if GPRS is supported in the cell<br>**<PB-ARFCN>** - PBCCH ARFCN of the serving cell; it'll be printed only if PBCCH is supported by the cell, otherwise the label **"hopping"** will be printed<br>**<NOM>** - Network Operation Mode |

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| #SERVINFO - Serving Cell Information | |
|---|---|
| | ..”I”<br>“II”<br>..”III”<br>**<RAC>** - Routing Area Color Code<br>**<PAT>** - Priority Access Threshold<br>..0<br>..3..6 |

### *3.7.5.1.26 #QSS - Query SIM Status*

| #QSS - Query SIM Status | |
|---|---|
| **AT#QSS=<br>[<mode>]** | Set command enables/disables the Query SIM Status unsolicited indication in the ME.<br><br>Parameter:<br>**<mode>** - type of notification<br>0 - disabled (factory default); it’s possible only to query the current SIM status through Read command **AT#QSS?**<br>1 - enabled; the ME informs at every SIM status change through the following unsolicited indication:<br><br>**#QSS: <status>**<br><br>where:<br>**<status>** - current SIM status<br>0 - SIM NOT INSERTED<br>1 - SIM INSERTED<br><br>Note: issuing **AT#QSS<CR>** is the same as issuing the Read command.<br><br>Note: issuing **AT#QSS=<CR>** is the same as issuing the command **AT#QSS=0<CR>**. |
| **AT#QSS?** | Read command reports whether the unsolicited indication **#QSS** is currently enabled or not, along with the SIM status, in the format:<br><br>**#QSS: <mode>,<status>**<br>(**<mode>** and **<status>** are described above) |
| **AT#QSS=?** | Test command returns the supported range of values for parameter **<mode>**. |

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### 3.7.5.1.27 #DIALMODE - ATD Dialling Mode

| #DIALMODE - ATD Dialling Mode | |
|---|---|
| **AT#DIALMODE= [<mode>]** | Set command sets voice call **ATD** modality.<br><br>Parameter:<br>**<mode>**<br>0 - **OK** result code is received as soon as it starts remotely ringing (factory default)<br>1 - **OK** result code is received only after the called party answers. Any character typed aborts the call and **NO CARRIER** result code is received.<br>2 - the following custom result codes are received, monitoring step by step the call status:<br>**DIALLING** (MO in progress)<br>**RINGING** (remote ring)<br>**CONNECTED** (remote call accepted)<br>**RELEASED** (after **ATH**)<br>**DISCONNECTED** (remote hang-up)<br><br>Note: **AT#DIALMODE=2** is available also for data calls.<br><br>Note: The setting is saved in NVM and available on following reboot. |
| **AT#DIALMODE?** | Read command returns current **ATD** dialling mode in the format:<br><br>**#DIALMODE: <mode>** |
| **AT#DIALMODE=?** | Test command returns the range of values for parameter **<mode>** |

### 3.7.5.1.28 #ACAL - Automatic Call

| #ACAL - Automatic Call | |
|---|---|
| **AT#ACAL= [<mode>]** | Set command enables/disables the automatic call function.<br><br>Parameter:<br>**<mode>**<br>0 - disables the automatic call function (factory default)<br>1 - enables the automatic call function. If enabled (and **&D2** has been issued), the transition **OFF/ON** of **DTR** causes an automatic call to the first number (position 0) stored in the internal phonebook.<br><br>Note: type of call depends on the last issue of command **+FCLASS**. |
| **AT#ACAL?** | Read command reports whether the automatic call function is currently enabled or not, in the format:<br><br>**#ACAL: <mode>** |
| **AT#ACAL=?** | Test command returns the supported range of values for parameter **<mode>**. |

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| | |
|---|---|
| Note | See **&Z** to write and **&N** to read the number on module internal phonebook. |

### *3.7.5.1.29 #ECAM - Extended Call Monitoring*

| **#ECAM - Extended Call Monitoring** | |
|---|---|
| **AT#ECAM= [<onoff>]** | This command enables/disables the call monitoring function in the ME.<br><br>Parameter:<br>**<onoff>**<br>0 - disables call monitoring function (factory default)<br>1 - enables call monitoring function; the ME informs about call events, such as incoming call, connected, hang up etc. using the following unsolicited indication:<br><br>**#ECAM: <ccid>,<ccstatus>,<calltype>,,, [<number>,<type>]**<br><br>where<br>**<ccid>** - call ID<br>**<ccstatus>** - call status<br>0 - idle<br>1 - calling (MO)<br>2 - connecting (MO)<br>3 - active<br>4 - hold<br>5 - waiting (MT)<br>6 - alerting (MT)<br>7 - busy<br>**<calltype>** - call type<br>1 - voice<br>2 - data<br>**<number>** - called number (valid only for **<ccstatus>=1**)<br>**<type>** - type of **<number>**<br>129 - national number<br>145 - international number<br><br>Note: the unsolicited indication is sent along with usual codes (**OK**, **NO CARRIER**, **BUSY**...). |
| **AT#ECAM?** | Read command reports whether the extended call monitoring function is currently enabled or not, in the format:<br><br>**#ECAM: <onoff>** |
| **AT#ECAM=?** | Test command returns the list of supported values for **<onoff>** |

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### 3.7.5.1.30 #SMOV - SMS Overflow

| #SMOV - SMS Overflow | |
|---|---|
| **AT#SMOV= [<mode>]** | Set command enables/disables the SMS overflow signalling function.<br><br>Parameter:<br>**<mode>**<br>0 - disables SMS overflow signaling function (factory default)<br>1 - enables SMS overflow signalling function; when the maximum storage capacity has reached, the following network initiated notification is send:<br><br>**#SMOV: <memo>** |
| **AT#SMOV?** | Read command reports whether the SMS overflow signalling function is currently enabled or not, in the format:<br><br>**#SMOV: <mode>** |
| **AT#SMOV=?** | Test command returns the supported range of values of parameter **<mode>**. |

### 3.7.5.1.31 #CODEC - Audio Codec

| #CODEC - Audio Codec | |
|---|---|
| **AT#CODEC= [<codec>]** | Set command sets the audio codec mode.<br><br>Parameter:<br>**<codec>**<br>0 - all the codec modes are enabled (factory default)<br>1..31 - value obtained as sum of the following values, each of them representing a specific codec mode:<br><br>1 - **FR**, full rate mode enabled<br>2 - **EFR**, enhanced full rate mode enabled<br>4 - **HR**, half rate mode enabled<br>8 - **AMR-FR**, AMR full rate mode enabled<br>16 - **AMR-HR**, AMR half rate mode enabled<br><br>Note: the setting 0 is equivalent to the setting 31.<br><br>Note: The codec setting is saved in the profile parameters. |
| **AT#CODEC?** | Read command returns current audio codec mode in the format:<br><br>**#CODEC: <codec>** |
| **AT#CODEC=?** | Test command returns the range of available values for parameter **<codec>** |
| Example | AT#CODEC=14<br>OK |

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| | |
|---|---|
| | *sets the codec modes HR (4), EFR (2) and AMR-FR (8)* |

### 3.7.5.1.32 #SHFEC - Handsfree Echo Canceller

| **#SHFEC - Handsfree Echo Canceller** | |
|---|---|
| **AT#SHFEC= [<mode>]** | Set command enables/disables the echo canceller function on audio handsfree output.<br><br>Parameter:<br>**<mode>**<br>0 - disables echo canceller for handsfree mode (factory default)<br>1 - enables echo canceller for handsfree mode<br><br>Note: This setting returns to default after power off. |
| **AT#SHFEC?** | Read command reports whether the echo canceller function on audio handsfree output is currently enabled or not, in the format:<br>**#SHFEC: <mode>** |
| **AT#SHFEC=?** | Test command returns the supported range of values of parameter **<mode>**. |

### 3.7.5.1.33 #HFMICG - Handsfree Microphone Gain

| **#HFMICG - Handsfree Microphone Gain** | |
|---|---|
| **AT#HFMICG= [<level>]** | Set command sets the handsfree microphone input gain<br><br>Parameter:<br>**<level>**: handsfree microphone input gain<br>0..7 - handsfree microphone gain (+6dB/step) |
| **AT#HFMICG?** | Read command returns the current handsfree microphone input gain, in the format:<br><br>**#HFMICG: <level>** |
| **AT#HFMICG=?** | Test command returns the supported range of values of parameter **<level>**. |

### 3.7.5.1.34 #HSMICG - Handset Microphone Gain

| **#HSMICG - Handset Microphone Gain** | |
|---|---|
| **AT#HSMICG= [<level>]** | Set command sets the handset microphone input gain<br><br>Parameter:<br>**<level>**: handset microphone input gain |

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| | |
|---|---|
| | 0..7 - handset microphone gain (+6dB/step) |
| **AT#HSMICG?** | Read command returns the current handset microphone input gain, in the format:<br><br>**#HSMICG: <level>** |
| **AT#HSMICG=?** | Test command returns the supported range of values of parameter **<level>**. |

### *3.7.5.1.35 #SHFSD - Set Headset Sidetone*

| **#SHFSD - Set Headset Sidetone** | |
|---|---|
| **AT#SHFSD=<br>[<mode>]** | Set command enables/disables the sidetone on headset audio output.<br><br>Parameter:<br>**<mode>**<br>0 - disables the headset sidetone (factory default)<br>1 - enables the headset sidetone.<br><br>Note: This setting returns to default after power off. |
| **AT#SHFSD?** | Read command reports whether the headset sidetone is currently enabled or not, in the format:<br><br>**#SHFSD: <mode>** |
| **AT#SHFSD=?** | Test command returns the supported range of values of parameter **<mode>**. |

### *3.7.5.1.36 #/ - Repeat Last Command*

| **#/ - Repeat Last Command** | |
|---|---|
| **AT#/** | Execute command is used to execute again the last received command. |

### *3.7.5.1.37 #NITZ - Network Timezone*

| **#NITZ - Network Timezone** | |
|---|---|
| **AT#NITZ=<br>[<val><br>[,<mode>]]** | Set command enables/disables automatic date/time updating and Network Timezone unsolicited indication.<br>Date and time information may be sent by the network after GSM registration or after GPRS attach.<br><br>Parameters:<br>**<val>** |

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| #NITZ - Network Timezone | |
|---|---|
| | 0 - disables automatic set (factory default)<br>1 - enables automatic set<br>**<mode>**<br>0 - disables unsolicited message (factory default)<br>1 - enables unsolicited message; after date and time updating the following unsolicited indication is sent:<br><br>**#NITZ: "yy/MM/dd,hh:mm:ss"**<br><br>where:<br>**yy** - year<br>**MM** - month (in digits)<br>**dd** - day<br>**hh** - hour<br>**mm** - minute<br>**ss** - second |
| **AT#NITZ?** | Read command reports whether automatic date/time updating is currently enabled or not, and whether Network Timezone unsolicited indication is enabled or not, in the format:<br><br>**#NITZ: <val>,<mode>** |
| **AT#NITZ=?** | Test command returns supported values of parameters **<val>** and **<mode>**. |

### *3.7.5.1.38 #BND - Select Band*

| #BND - Select Band | |
|---|---|
| **AT#BND=<br>[<band>]** | Set command selects the current band.<br><br>Parameter<br>**<band>**:<br>0 - GSM 900MHz + DCS 1800MHz<br>1 - GSM 900MHz + PCS 1900MHz<br>2 - GMS 850MHz + PCS 1800MHz (available only on quadri-band modules)<br>3 - GMS 850MHz + PCS 1900MHz (available only on quadri-band modules)<br><br>Note: This setting is maintained even after power off. |
| **AT#BND?** | Read command returns the current selected band in the format:<br><br>**#BND: <band>** |
| **AT#BND=?** | Test command returns the supported range of values of parameter **<band>**.<br><br>Note: the range of values differs between triband modules and quadric-band |

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| | |
|---|---|
| | modules |

### 3.7.5.1.39 #AUTOBND - Automatic Band Selection

| **#AUTOBND - Automatic Band Selection** | |
|---|---|
| **AT#AUTOBND= [<value>]** | Set command enables/disables the automatic band selection at power-on.<br><br>Parameter:<br>**<value>**:<br>0 - disables automatic band selection at power-on (factory default)<br>1 - enables automatic band selection at power-on; **+COPS=0** is necessary condition to effectively have automatic band selection at next power-on; the automatic band selection stops as soon as a GSM cell is found.<br><br>Note: if automatic band selection is enabled the band changes every about 90 seconds through available bands until a GSM cell is found. |
| **AT#AUTOBND?** | Read command returns whether the automatic band selection is enabled or not in the form:<br><br>**#AUTOBND: <value>** |
| **AT#AUTOBND=?** | Test command returns the range of supported values for parameter **<value>**. |

### 3.7.5.1.40 #SKIPESC - Skip Escape Sequence

| **#SKIPESC - Skip Escape Sequence** | |
|---|---|
| **AT#SKIPESC= [<mode>]** | Set command enables/disables skipping the escape sequence **+++** while transmitting during a data connection.<br><br>Parameter:<br>**<mode>**<br>0 - doesn't skip the escape sequence; its transmission is enabled (factory default).<br>1 - skips the escape sequence; its transmission is not enabled.<br><br>Note: in case of an FTP connection, the escape sequence is not transmitted, regardless of the command setting. |
| **AT#SKIPESC?** | Read command reports whether escape sequence skipping is currently enabled or not, in the format:<br><br>**#SKIPESC: <mode>** |
| **AT#SKIPESC=?** | Test command reports supported range of values for parameter **<mode>**. |

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### 3.7.5.1.41 #E2ESC - Escape Sequence Guard Time

| #E2ESC - Escape Sequence Guard Time | |
|---|---|
| **AT#E2ESC= [<gt>]** | Set command sets a guard time in seconds for the escape sequence in GPRS to be considered a valid one (and return to on-line command mode).<br><br>Parameter:<br>**<gt>**<br>0 - no guard time (factory default)<br>1..10 - guard time in seconds<br><br>Note: if the Escape Sequence Guard Time is set to a value different from zero, it overrides the one set with **S12**. |
| **AT#E2ESC?** | Read command returns current value of the escape sequence guard time, in the format:<br><br>**#E2ESC: <gt>** |
| **AT#E2ESC=?** | Test command returns the **OK** result code. |

### 3.7.5.1.42 #GAUTH - PPP-GPRS Connection Authentication Type

| #GAUTH - PPP-GPRS Connection Authentication Type | |
|---|---|
| **AT#GAUTH= [<type>]** | Set command sets the PPP-GPRS connection authentication type.<br><br>Parameter<br>**<type>**<br>0 - no authentication<br>1 - PAP authentication (factory default)<br>2 - CHAP authentication<br><br>Note: for GSM connection **<type>** is fixed to PAP |
| **AT#GAUTH?** | Read command reports the current PPP-GPRS connection authentication type, in the format:<br><br>**#GAUTH: <type>** |
| **AT#GAUTH=?** | Test command returns the range of supported values for parameter **<type>**. |

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### 3.7.5.1.43 #RTCSTAT - RTC Status

| #RTCSTAT - RTC Status | |
|---|---|
| **AT#RTCSTAT= [<status>]** | Set command resets the RTC status flag.<br><br>Parameter:<br>**<status>**<br>0 - Set RTC Status to **RTC HW OK**<br><br>Note: the initial value of RTC status flag is **RTC HW Error** and it doesn't change until a command **AT#RTCSTAT=0** is issued.<br><br>Note: if a power failure occurs and the buffer battery is down the RTC status flag is set to **1**. It doesn't change until command **AT#RTCSTAT=0** is issued. |
| **AT#RTCSTAT?** | Read command reports the current value of RTC status flag, in the format:<br><br>**#RTCSTAT: <status>** |
| **AT#RTCSTAT=?** | Test command returns the range of supported values for parameter **<status>** |

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## 3.7.5.2 FTP AT Commands

### *3.7.5.2.1 #FTPTO - FTP Time-Out*

| **#FTPTO - FTP timeout** | |
|---|---|
| **AT#FTPTO=<br>[<tout>]** | Set command sets time-out for FTP operations.<br><br>Parameter:<br>**<tout>** - time-out in 100 ms units<br>100..5000 - hundreds of ms (factory default is 100)<br><br>Note: The parameter is not saved in NVM. |
| **AT#FTPTO?** | Read command returns the current FTP operations time-out, in the format:<br><br>**#FTPTO: <tout>** |
| **AT#FTPTO=?** | Test command returns the range of supported values for parameter **<tout>** |

### *3.7.5.2.2 #FTPOPEN - FTP Open*

| **#FTPOPEN - FTP Open** | |
|---|---|
| **AT#FTPOPEN=<br>[<server:port>,<br><username>,<br><password>,<br><mode>]** | Execution command opens an FTP connection toward the FTP server.<br><br>Parameters:<br>**<server:port>** - string type, address and port of FTP server (factory default port 21).<br>**<username>** - string type, authentication user identification string for FTP.<br>**<password>** - string type, authentication password for FTP.<br>**<mode>**<br>0 - active mode (factory default)<br>1 - passive mode<br><br>Note: Before opening FTP connection the GPRS must been activated with **AT#GPRS=1** |
| **AT#FTPOPEN=?** | Test command returns the OK result code. |

### *3.7.5.2.3 #FTPCLOSE - FTP Close*

| **#FTPCLOSE - FTP Close** | |
|---|---|
| **AT#FTPCLOSE** | Execution command closes an FTP connection. |
| **AT#FTPCLOSE=?** | Test command returns the OK result code. |

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### 3.7.5.2.4 #FTPPUT - FTP Put

| #FTPPUT - FTP Put | |
|---|---|
| **AT#FTPPUT= [<filename>]** | Execution command, issued during an FTP connection, opens a data connection and starts sending **<filename>** file to the FTP server.<br><br>If the data connection succeeds, a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent.<br><br>Parameter:<br>**<filename>** - string type, name of the file.<br><br>Note: use the escape sequence **+++** to close the data connection.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| **AT#FTPPUT=?** | Test command returns the OK result code. |

### 3.7.5.2.5 #FTPPUTPH - FTP Put Photo

| #FTPPUTPH - FTP Put Photo | |
|---|---|
| **AT#FTPPUTPH= [<filename>]** | Execution command, issued during an FTP connection, opens a data connection and starts sending to the FTP server the last photo taken issuing **#TPHOTO**.<br><br>Parameter:<br>**<filename>** - string type, name of the file on the FTP server side.<br><br>Note: the file transfer type has to be binary in order to send the photo the right way (see command **#FTPTYPE**).<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| **AT#FTPPUTPH=?** | Test command returns the **OK** result code. |
| Example | `at#gprs=1`<br>`+IP: ###.###.###.###`<br><br>`OK`<br>`at#camon`<br>`OK`<br>`at#tphoto`<br>`OK`<br>`at#ftpopen="xxx.xxx.xxx.xxx",<usern.>,<passw.>,0`<br>`OK`<br>`at#ftptype=0` |

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| #FTPPUTPH - FTP Put Photo | |
|---|---|
| | OK<br>at#ftpputph="photo.jpg"<br>OK<br>at#ftpclose<br>OK |

### 3.7.5.2.6 #FTPGET - FTP Get

| #FTPGET - FTP Get | |
|---|---|
| **AT#FTPGET= [<filename>]** | Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server.<br>If the data connection succeeds a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent.<br>The file is received on the serial port.<br><br>Parameter:<br>**<filename>** - file name, string type.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| **AT#FTPGET=?** | Test command returns the OK result code. |

### 3.7.5.2.7 #FTPTYPE - FTP Type

| #FTPTYPE - FTP Type | |
|---|---|
| **AT#FTPTYPE= [<type>]** | Set command, issued during an FTP connection, sets the file transfer type.<br><br>Parameter:<br>**<type>** - file transfer type:<br>0 - binary<br>1 - ascii<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| **#FTPTYPE?** | Read command returns the current file transfer type, in the format:<br><br>**#FTPTYPE: <type>** |
| **#FTPTYPE=?** | Test command returns the range of available values for parameter **<type>**:<br><br>**#FTPTYPE: (0,1)** |

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### 3.7.5.2.8 #FTPMSG - FTP Read Message

| #FTPMSG - FTP Read Message | |
|---|---|
| **AT#FTPMSG** | Execution command returns the last response from the server. |
| **AT#FTPMSG=?** | Test command returns the OK result code. |

### 3.7.5.2.9 #FTPDELE - FTP Delete

| #FTPDELE - FTP Delete | |
|---|---|
| **AT#FTPDELE= [<filename>]** | Execution command, issued during an FTP connection, deletes a file from the remote working directory.<br><br>Parameter:<br>**<filename>** - string type, it's the name of the file to delete.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| **AT#FTPDELE=?** | Test command returns the OK result code. |

### 3.7.5.2.10 #FTPPWD - FTP Print Working Directory

| #FTPPWD - FTP Print Working Directory | |
|---|---|
| **AT#FTPPWD** | Execution command, issued during an FTP connection, shows the current working directory on FTP server.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| **AT#FTPPWD=?** | Test command returns the OK result code. |

### 3.7.5.2.11 #FTPCWD - FTP Change Working Directory

| #FTPCWD - FTP Change Working Directory | |
|---|---|
| **AT#FTPCWD= [<dirname>]** | Execution command, issued during an FTP connection, changes the working directory on FTP server.<br><br>Parameter:<br>**<dirname>** - string type, it's the name of the new working directory.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. |
| **AT#FTPCWD=?** | Test command returns the OK result code. |

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### *3.7.5.2.12 #FTPLIST - FTP List*

| **#FTPLIST - FTP List** | |
|---|---|
| **AT#FTPLIST[=[<name>]]** | Execution command, issued during an FTP connection, opens a data connection and starts getting from the server the list of contents of the specified directory or the properties of the specified file.<br><br>Parameter:<br>**<name>** - string type, it's the name of the directory or file.<br><br>Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.<br><br>Note: issuing **AT#FTPLIST<CR>** opens a data connection and starts getting from the server the list of contents of the working directory. |
| **AT#FTPLIST=?** | Test command returns the OK result code. |

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## 3.7.5.3 Enhanced Easy GPRS® Extension AT Commands

### *3.7.5.3.1 #USERID - Authentication User ID*

| **#USERID - Authentication User ID** | |
|---|---|
| **AT#USERID= [<user>]** | Set command sets the user identification string to be used during the authentication step.<br><br>Parameter:<br>**<user>** - string type, it's the authentication User Id; the max length for this value is the output of Test command, **AT#USERID=?** (factory default is the empty string “”). |
| **AT#USERID?** | Read command reports the current user identification string, in the format:<br><br>**#USERID: <user>** |
| **AT#USERID=?** | Test command returns the maximum allowed length of the string parameter **<user>**. |
| Example | `AT#USERID="myName"`<br>`OK`<br>`AT#USERID?`<br>`#USERID: "myName"`<br><br>`OK` |

### *3.7.5.3.2 #PASSW - Authentication Password*

| **#PASSW - Authentication Password** | |
|---|---|
| **AT#PASSW= [<pwd>]** | Set command sets the user password string to be used during the authentication step.<br><br>Parameter:<br>**<pwd>** - string type, it's the authentication password; the max length for this value is the output of Test command, **AT#PASSW=?** (factory default is the empty string “”). |
| **AT#PASSW=?** | Test command returns the maximum allowed length of the string parameter **<pwd>**. |
| Example | `AT#PASSW="myPassword"`<br>`OK` |

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### 3.7.5.3.3 #PKTSZ - Packet Size

| #PKTSZ - Packet Size | |
|---|---|
| **AT#PKTSZ= [<size>]** | Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending.<br><br>Parameter:<br>**<size>** - packet size in bytes<br>0 - automatically chosen by the device<br>1..512 - packet size in bytes (factory default is 300) |
| **AT#PKTSZ?** | Read command reports the current packet size value.<br><br>Note: after issuing command **AT#PKTSZ=0**, the Read command reports the value automatically chosen by the device. |
| **AT#PKTSZ=?** | Test command returns the allowed values for the parameter **<size>**. |
| Example | `AT#PKTSZ=100`<br>`OK`<br>`AT#PKTSZ?`<br>`#PKTSZ: 100`<br><br>`OK`<br>`AT#PKTSZ=0`<br>`OK`<br>`AT#PKTSZ?`<br>`#PKTSZ: 300  ->value automatically chosen by device`<br><br>`OK` |

### 3.7.5.3.4 #DSTO - Data Sending Time-Out

| #DSTO -Data Sending Time-Out | |
|---|---|
| **AT#DSTO= [<tout>]** | Set command sets the maximum time that the module awaits before sending anyway a packet whose size is less than the default one.<br><br>Parameter:<br>**<tout>** - packet sending time-out in 100ms units (factory default is 50)<br>0 - no time-out, wait forever for packets to be completed before send.<br>1..255 hundreds of ms<br><br>Note: In order to avoid low performance issues, it is suggested to set the data sending time-out to a value greater than 5.<br><br>Note: this time-out applies to data whose size is less than packet size and whose sending would have been delayed for an undefined time until new data to be sent had been received and full packet size reached. |
| **AT#DSTO?** | Read command reports the current data sending time-out value. |

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| #DSTO -Data Sending Time-Out | |
|---|---|
| **AT#DSTO=?** | Test command returns the allowed values for the parameter **<tout>**. |
| Example | `AT#DSTO=10  ->1 sec. time-out`<br>`OK`<br>`AT#DSTO?`<br>`#DSTO: 10`<br><br>`OK` |

### 3.7.5.3.5 #SKTTO - Socket Inactivity Time-Out

| #SKTTO - Socket Inactivity Time-Out | |
|---|---|
| **AT#SKTTO=<br>[<tout>]** | Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket and deactivating the GPRS context.<br><br>Parameter:<br>**<tout>** - socket inactivity time-out in seconds units<br>0 - no timeout.<br>1..65535 - time-out in sec. units (factory default is 90).<br><br>Note: this time-out applies when no data is exchanged in the socket for a long time and therefore the socket connection has to be automatically closed and the GPRS context deactivated. |
| **AT#SKTTO?** | Read command reports the current socket inactivity time-out value. |
| **AT#SKTTO=?** | Test command returns the allowed values for parameter **<tout>**. |
| Example | `AT#SKTTO=30  ->(30 sec. time-out)`<br>`OK`<br>`AT#SKTTO?`<br>`#SKTTO: 30`<br><br>`OK` |

### 3.7.5.3.6 #SKTSET - Socket Definition

| #SKTSET - Socket Definition | |
|---|---|
| **AT#SKTSET=<br>[<socket type>,<br><remote port>,<br><remote addr>,<br>[<closure type>],<br>[<local port>]]** | Set command sets the socket parameters values.<br><br>Parameters:<br>**<socket type>** - socket protocol type<br>0 - TCP (factory default)<br>1 - UDP<br>**<remote port>** - remote host port to be opened<br>0..65535 - port number (factory default is 0) |

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| | |
|---|---|
| | **<remote addr>** - address of the remote host, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host name>**<br>(factory default is the empty string “”)<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br>**<local port>** - local host port to be used on UDP socket<br>0..65535 - port number<br><br>Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused.<br><br>Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused.<br><br>Note: The resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTSET** command, then an error message will be issued.<br><br>Note: the DNS Query to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**)<br>- the GPRS coverage is enough to permit a connection. |
| **AT#SKTSET?** | Read command reports the socket parameters values, in the format:<br>**AT#SKTSET: <socket type>,<remote port>,<remote addr>, <closure type>,<local port>** |
| **AT#SKTSET=?** | Test command returns the allowed values for the parameters. |
| Example | `AT#SKTSET=0,1024,"123.255.020.001"`<br>`OK`<br>`AT#SKTSET=0,1024,"www.telit.net"`<br>`OK` |

### *3.7.5.3.7 #SKTOP - Socket Open*

| **#SKTOP - Socket Open** | |
|---|---|
| **AT#SKTOP** | Execution command activates the context number 1, proceeds with the authentication with the user ID and password previously set by **#USERID** and **#PASSW** commands, and opens a socket connection with the host specified in the **#SKTSET** command. Eventually, before opening the socket connection, it issues automatically a DNS query to solve the IP address of the host name.<br><br>If the connection succeeds a **CONNECT** indication is sent, otherwise a **NO** |

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| | |
|---|---|
| | **CARRIER** indication is sent. |
| **AT#SKTOP=?** | Test command returns the **OK** result code. |
| Example | AT#SKTOP<br>*..GPRS context activation, authentication and socket open..*<br>CONNECT |

### 3.7.5.3.8 #QDNS - Query DNS

| **#QDNS - Query DNS** | |
|---|---|
| **AT#QDNS=<br>[<host name>]** | Execution command executes a DNS query to solve the host name into an IP address.<br><br>Parameter:<br>**<host name>** - host name, string type.<br><br>If the DNS query is successful then the IP address will be reported in the result code:<br><br>**#QDNS:"<host name>",<IP address>**<br><br>Note: the command has to activate the GPRS context if it was not previously activated. In this case the context is deactivated after the DNS query.<br><br>Note: **<IP address>** is in the format: **xxx.xxx.xxx.xxx** |
| **AT#QDNS=?** | Test command returns the **OK** result code. |
| Note | This command requires that the authentication parameters are correctly set and that the GPRS network is present. |

### 3.7.5.3.9 #SKTCT - Socket TCP Connection Time-Out

| **#SKTCT - Socket TCP Connection Time-Out** | |
|---|---|
| **AT#SKTCT=<br>[<tout>]** | Set command sets the TCP connection time-out for the first **CONNECT** answer from the TCP peer to be received.<br><br>Parameter:<br>**<tout>** - TCP first **CONNECT** answer time-out in 100ms units<br>10..1200 - hundreds of ms (factory default value is 600).<br><br>Note: this time-out applies only to the time that the TCP stack waits for the **CONNECT** answer to its connection request.<br><br>Note: The time for activate the GPRS and resolving the name with the DNS |

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| | |
|---|---|
| | query (if the peer was specified by name and not by address) is not counted in this timeout. |
| **AT#SKTCT?** | Read command reports the current TCP connection time-out. |
| **AT#SKTCT=?** | Test command returns the allowed values for parameter **<tout>**. |
| Example | AT#SKTCT=600<br>OK<br>*socket first connection answer timeout has been set to 60 s.* |

### 3.7.5.3.10 #SKTSAV - Socket Parameters Save

| **#SKTSAV - Socket Parameters Save** | |
|---|---|
| **AT#SKTSAV** | Execution command saves the actual socket parameters in the NVM of the device.<br><br>The socket parameters to store are:<br>- User ID<br>- Password<br>- Packet Size<br>- Socket Inactivity Time-Out<br>- Data Sending Time-Out<br>- Socket Type (UDP/TCP)<br>- Remote Port<br>- Remote Address<br>- TCP Connection Time-Out |
| **AT#SKTSAV=?** | Test command returns the **OK** result code. |
| Example | AT#SKTSAV<br>OK<br>*socket parameters have been saved in NVM* |
| Note | If some parameters have not been previously specified then a default value will be stored. |

### 3.7.5.3.11 #SKTRST - Socket Parameters Reset Command

| **#SKTRST - Socket Parameters Reset Command** | |
|---|---|
| **AT#SKTRST** | Execution command resets the actual socket parameters in the NVM of the device to the default ones.<br><br>The socket parameters to reset are:<br>- User ID<br>- Password<br>- Packet Size<br>- Socket Inactivity Timeout |

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| | |
|---|---|
| | - Data Sending Timeout<br>- Socket Type<br>- Remote Port<br>- Remote Address<br>- TCP Connection Time-Out |
| **AT#SKTRST=?** | Test command returns the **OK** result code. |
| Example | AT#SKTRST<br>OK<br>*socket parameters have been reset* |

### *3.7.5.3.12 #GPRS - GPRS Context Activation*

| **#GPRS - GPRS Context Activation** | |
|---|---|
| **AT#GPRS=<br>[<mode>]** | Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with **#PASSW** and **#USERID**.<br><br>Parameter:<br>**<mode>** - GPRS context activation mode<br>0 - GPRS context deactivation request<br>1 - GPRS context activation request<br><br>In the case that the GPRS context has been activated, the result code **OK** is preceded by the intermediate result code:<br><br>**+IP: <ip_address_obtained>**<br><br>reporting the local IP address obtained from the network. |
| **AT#GPRS?** | Read command reports the current status of the GPRS context, in the format:<br><br>**#GPRS: <status>**<br><br>where:<br>**<status>**<br>0 - GPRS context deactivated<br>1 - GPRS context activated<br>2 - GPRS context activation pending. |
| **AT#GPRS=?** | Test command returns the allowed values for parameter **<mode>**. |
| Example | AT#GPRS=1<br>+IP: 129.137.1.1<br>OK<br>*Now GPRS Context has been activated and our IP is 129.137.1.1*<br><br>AT#GPRS=0 |

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| #GPRS - GPRS Context Activation | |
|---|---|
| | OK<br>*Now GPRS context has been deactivated, IP is lost.* |

### 3.7.5.3.13 #SKTD - Socket Dial

| #SKTD - Socket Dial | |
|---|---|
| **AT#SKTD=<br>[<socket type>,<br><remote port>,<br><remote addr>,<br>[<closure type>],<br>[<local port>]]** | Set command opens the socket towards the peer specified in the parameters.<br><br>Parameters:<br>**<socket type>** - socket protocol type<br>0 - TCP (factory default)<br>1 - UDP<br>**<remote port>** - remote host port to be opened<br>0..65535 - port number (factory default is 0)<br>**<remote addr>** - address of the remote host, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host name>**<br>(factory default is the empty string “”)<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br>**<local port>** - local host port to be used on UDP socket<br>0..65535 - port number<br><br>Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused.<br><br>Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused.<br><br>Note: the resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTD** command, then an error message will be issued.<br><br>Note: the command to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**) the GPRS coverage is enough to permit a connection<br>- the GPRS has been activated with **AT#GPRS=1**<br><br>Note: If all parameters are omitted then the behaviour of Set command is the same as Read command. |

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| #SKTD - Socket Dial | |
|---|---|
| **AT#SKTD?** | Read command reports the socket dial parameters values, in the format:<br><br>**AT#SKTD: <socket type>,<remote port>,<remote addr>, <closure type>,<local port>** |
| **AT#SKTD=?** | Test command returns the allowed values for the parameters. |
| Example | `AT#SKTD=0,1024,"123.255.020.001",255`<br>`CONNECT`<br><br>`AT#SKTD=1,1024,"123.255.020.001", ,1025`<br>`CONNECT`<br>*In this way my local port 1025 is opened to the remote port 1024*<br><br>`AT#SKTD=0,1024,"www.telit.net", 255`<br>`CONNECT` |
| Note | The main difference between this command and **#SKTOP** is that this command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **#SKTD** is closed the context (and hence the local IP address) is maintained. |

### *3.7.5.3.14 #SKTL - Socket Listen*

| #SKTL - Socket Listen | |
|---|---|
| **AT#SKTL =[<mode>, <socket type>, <input port>, [<closure type>]]** | Execution command opens/closes the socket listening for connection requests.<br><br>Parameters:<br>**<mode>** - socket mode<br>0 - closes socket listening<br>1 - starts socket listening<br>**<socket type>** - socket protocol type<br>0 - TCP<br>**<input port>** - local host input port to be listened<br>0..65535 - port number<br>**<closure type>** - socket closure behaviour for TCP<br>0 - local host closes immediately when remote host has closed (default)<br>255 - local host closes after an escape sequence (**+++**)<br><br>Command returns the **OK** result code if successful.<br><br>Note: the command to be successful requests that:<br>- the GPRS context 1 is correctly set with **+CGDCONT**<br>- the authentication parameters are set (**#USERID**, **#PASSW**)<br>- the GPRS coverage is enough to permit a connection |

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| #SKTL - Socket Listen | |
|---|---|
| | - the GPRS has been activated with **AT#GPRS=1**<br><br>When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command **#FRWL**), an unsolicited code is reported:<br><br>**+CONN FROM: <remote addr>**<br><br>Where:<br>**<remote addr>** - host address of the remote machine that contacted the device.<br><br>When the connection is established the **CONNECT** indication is given and the modem goes into data transfer mode.<br><br>On connection close or when context is closed with **#GPRS=0** the socket is closed and no listen is anymore active.<br><br>If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported:<br><br>**#SKTL: ABORTED** |
| **AT#SKTL?** | Read command returns the current socket listening **status** and the last settings of parameters **<input port>** and **<closure type>**, in the format:<br><br>**#SKTL: <status>,<input port>,<closure type>**<br>Where<br>**<status>** - socket listening status<br>0 - socket not listening<br>1 - socket listening |
| **AT#SKTL=?** | Test command returns the allowed values for parameters **<mode>**, **<socket type>**, **<input port>** and **<closure type>**. |
| Example | *Activate GPRS*<br>AT#GPRS=1<br>+IP: ###.###.###.###<br><br>OK<br>*Start listening*<br>AT#SKTL=1,0,1024<br>OK<br>or<br>AT#SKTL=1,0,1024,255<br>OK<br><br>*Receive connection requests*<br>+CONN FROM: 192.164.2.1 |

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| #SKTL - Socket Listen | |
|---|---|
| | CONNECT<br><br>*exchange data with the remote host*<br><br>*send escape sequence*<br>+++<br>NO CARRIER<br>*Now listen is not anymore active*<br><br>*to stop listening*<br>AT#SKTL=0,0,1024, 255<br>OK |
| Note | The main difference between this command and **#SKTD** is that **#SKTL** does not contact any peer, nor does any interaction with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **#SKTL** is closed the context (and hence the local IP address) is maintained. |

### *3.7.5.3.15 #E2SLRI - Socket Listen Ring Indicator*

| #E2SLRI - Socket Listen Ring Indicator | |
|---|---|
| **AT#E2SLRI=[<n>]** | Set command enables/disables the Ring Indicator pin response to a Socket Listen connect and, if enabled, the duration of the negative going pulse generated on receipt of connect.<br><br>Parameter:<br>**<n>** - RI enabling<br>0 - RI disabled for Socket Listen connect (factory default)<br>50..1150 - RI enabled for Socket Listen connect; a negative going pulse is generated on receipt of connect and **<n>** is the duration in ms of this pulse. |
| **AT#E2SLRI?** | Read command reports whether the Ring Indicator pin response to a Socket Listen connect is currently enabled or not, in the format:<br><br>**#E2SLRI: <n>** |
| **AT#E2SLRI=?** | Test command returns the allowed values for parameter **<status>.** |

### *3.7.5.3.16 #FRWL - Firewall Setup*

| #FRWL - Firewall Setup | |
|---|---|
| **AT#FRWL=<br>[<action>,<br><ip_address>,<br><net mask>]** | Execution command controls the internal firewall settings.<br><br>Parameters:<br>**<action>** - command action<br>0 - remove selected chain |

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| #FRWL - Firewall Setup | |
|---|---|
| | 1 - add an **ACCEPT** chain<br>2 - remove all chains (**DROP** everything); **<ip_addr>** and **<net_mask>** has no meaning in this case.<br>**<ip_addr>** - remote address to be added into the **ACCEPT** chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx<br>**<net_mask>** - mask to be applied on the **<ip_addr>**; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx<br><br>Command returns **OK** result code if successful.<br><br>Note: the firewall applies for incoming (listening) connections only.<br><br>Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded.<br><br>When a packet comes from the IP address **incoming_IP**, the firewall chain rules will be scanned for matching with the following criteria:<br><br>**incoming_IP & <net_mask> = <ip_addr> & <net_mask>**<br><br>If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped. |
| **AT#FRWL?** | Read command reports the list of all **ACCEPT** chain rules registered in the Firewall settings in the format:<br><br>**#FRWL: <ip_addr>,<net_mask>**<br>**#FRWL: <ip_addr>,<net_mask>**<br>**....**<br>**OK** |
| **AT#FRWL=?** | Test command returns the allowed values for parameter **<action>.** |
| Example | *Let assume we want to accept connections only from our devices which are on the IP addresses ranging from 197.158.1.1 to 197.158.255.255*<br><br>*We need to add the following chain to the firewall:*<br>`AT#FRWL=1,"197.158.1.1","255.255.0.0"`<br>`OK` |
| Note | For outgoing connections made with **#SKTOP** and **#SKTD** the remote host is dynamically inserted into the **ACCEPT** chain for all the connection duration. Therefore the **#FRWL** command shall be used only for defining the **#SKTL** behaviour, deciding which hosts are allowed to connect to the local device.<br><br>Rules are not saved in NVM, at start-up the rules list will be empty. |

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## 3.7.5.4 Easy Camera® Management AT Commands

### *3.7.5.4.1 #CAMEN - Camera ON/OFF*

| **#CAMEN - Camera ON/OFF** | |
|---|---|
| **AT#CAMEN= [<status>]** | Execution command turns camera **ON/OFF**.<br><br>Parameter:<br>**<status>** - camera status<br>0 - turns camera **OFF**<br>1 - turns camera **ON**<br><br>Note: for the GPS product (GE863-GPS) if the camera is turned off while GPS or VAUX pin is enabled they'll both also be powered off. |
| **AT#CAMEN?** | Read command reports the current camera status and, if the camera is **ON**, the current camera model, in the format:<br><br>**#CAMEN: 0** *if camera is **OFF***<br><br>**#CAMEN: 1,<cam>** *if camera is **ON***<br><br>where:<br>**<cam>** - camera model<br>2 - TRANSCHIP camera |
| **AT#CAMEN=?** | Test command returns the allowed values for parameter **<status>.** |

### *3.7.5.4.2 #SELCAM - Camera Model*

| **#SELCAM - Camera Model** | |
|---|---|
| **AT#SELCAM= [<cam>]** | Set command selects current camera model<br><br>Parameter:<br>**<cam>** - camera model<br>0 - automatic detection (factory default)<br>2 - TRANSCHIP camera<br>3 - reserved for future us<br>4 - reserved for future use<br>5 - reserved for future use<br><br>Note: If GPS is present it's not possible to set **AT#SELCAM=1** |
| **AT#SELCAM?** | Read command reports the current camera model in the format:<br><br>**#SELCAM: <cam>** |
| **AT#SELCAM=?** | Test command returns the allowed values for parameter **<cam>** |

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### 3.7.5.4.3 #CAMRES - Camera Resolution

| #CAMRES - Camera Resolution | |
|---|---|
| **AT#CAMRES= [<res>]** | Set command sets current camera resolution<br><br>Parameter:<br>**<res>** - camera resolution<br>0 - VGA photo output,640x480 (factory default)<br>1 - QVGA photo output, 320x240<br>2 - QQVGA photo output, 160x120<br>3 - reserved for future use<br>4 - reserved for future use |
| **AT#CAMRES?** | Read command reports the current value of the parameter **<res>** in format:<br><br>**#CAMRES:<res>** |
| **AT#CAMRES=?** | Test command returns the allowed values for parameter **<res>**. |

### 3.7.5.4.4 #CAMCOL - Camera Colour Mode

| #CAMCOL - Camera Colour Mode | |
|---|---|
| **AT#CAMCOL= [<col>]** | Set command sets current colour mode<br><br>Parameter:<br>**<col>** - camera colour mode<br>0 - colour mode (factory default)<br>1 - Black&White mode |
| **AT#CAMCOL?** | Read command reports the current colour mode, in the format:<br><br>**#CAMCOL: <col>**. |
| **AT#CAMCOL=?** | Test command returns the allowed values for parameter **<col>**. |

### 3.7.5.4.5 #CAMQUA - Camera Photo Quality

| #CAMQUA - Camera Photo Quality | |
|---|---|
| **AT#CAMQUA= [<qual>]** | Set command sets the quality of the photo.<br><br>Parameter:<br>**<qual>** - photo quality<br>0 - low quality of picture, high Jpeg compression<br>1 - medium quality of picture, medium Jpeg compression<br>2 - high quality of picture, low Jpeg compression (factory default)<br><br>Note: increasing the photo quality increases its size. |
| **AT#CAMQUA?** | Read command reports the current photo quality, in the format: |

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| #CAMQUA - Camera Photo Quality | |
|---|---|
| | **#CAMQUA: <qual>** |
| **AT#CAMQUA=?** | Test command returns the allowed values for parameter **<qual>**. |

### 3.7.5.4.6 #CMODE - Camera Exposure

| #CMODE - Camera Exposure | |
|---|---|
| **AT#CMODE= [<mode>]** | Set command sets the camera exposure.<br><br>Parameter:<br>**<exp>** - camera exposure<br>0 - daylight mode, short exposure (factory default)<br>1 - nightlight mode, long exposure |
| **AT#CMODE?** | Read command reports the current camera exposure in the format:<br><br>**#CMODE: <exp>** |
| **AT#CMODE=?** | Test command returns the allowed values for parameter **<exp>**. |

### 3.7.5.4.7 #CAMZOOM - Camera Zoom

| #CAMZOOM - Camera Zoom | |
|---|---|
| **AT#CAMZOOM= [<zoom>]** | Set command sets current zoom.<br><br>Parameter:<br>**<zoom>** - camera zoom<br>0 - no zoom, x1 (factory default)<br>1 - zoom, x2<br>2 - zoom, x4<br>3 - reserved for future use |
| **AT#CAMZOOM?** | Read command reports the current zoom setting, in the format:<br>**#CAMZOOM: <zoom>** |
| **AT#CAMZOOM=?** | Test command returns the allowed values for parameter **<zoom>**. |

### 3.7.5.4.8 #CAMTXT - Camera Time/Date Overprint

| #CAMTXT - Camera Time/Date Overprint | |
|---|---|
| **AT#CAMTXT= [<ov>]** | Set command sets time/date overprinting.<br><br>Parameter:<br>**<ov>** - time/date overprinting mode<br>0 - no overprinting (factory default)<br>1 - time info printed at the bottom of picture |

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| | |
|---|---|
| | 2 - date info printed at the bottom of picture<br>3 - time&date info printed at the bottom of picture<br>4 - reserved for future use |
| **AT#CAMTXT?** | Read command reports the current time/date overprinting mode, in the format:<br><br>**#CAMTXT: <ov>** |
| **AT#CAMTXT=?** | Test command returns the allowed values for parameter **<ov>**. |

### *3.7.5.4.9 #TPHOTO - Camera Take Photo*

| **#TPHOTO - Camera Take Photo** | |
|---|---|
| **AT#TPHOTO** | Execution command is used to take the photo and to store it in the MODULE memory. |
| **AT#TPHOTO=?** | Test command returns the **OK** result code. |
| Example | AT#TPHOTO<br>OK<br>… the camera has taken the photo and it is now stored on the MODULE memory. |
| Note | The photo is kept in the MODULE RAM memory, therefore after a power off it is lost.<br>There's only 1 position for the photo, every photo will overwrite the previous.<br>The photo is taken during IDLE time, if the mobile is busy on network operations, (e.g. during a call) the photo cannot be taken. |

### *3.7.5.4.10 #RPHOTO - Camera Read Photo*

| **#RPHOTO - Camera Read Photo** | |
|---|---|
| **AT#RPHOTO** | Execution command is used to flushing the photo stored in the MODULE RAM memory to the serial line, ending it with the sequence:<br><br>**<CR><LF>OK<CR><LF>** |
| **AT#RPHOTO=?** | Test command returns the **OK** result code. |
| Example | AT#RPHOTO<br>xxxxxxxxxxxx *(binary digits of the JPEG image)*<br>**<cr><lf>**OK**<cr><lf>**<br>*the photo has been flushed to the serial line* |
| Note | The photo is flushed as hexadecimal characters in the format selected.<br>The baudrate is fixed at 115200, using hardware flow control. |

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### 3.7.5.4.11 #OBJL - Object List

| #OBJL- Object List | |
|---|---|
| **AT#OBJL** | Execution command reports the list of the objects stored in the MODULE memory.<br><br>The output format is:<br><br>**#OBJL: <filename>,<size>**<br><br>where:<br>**<filename>** - name of the object; it is always “Snapshot”<br>**<size>** - size of the object in bytes |
| **AT#OBJL=?** | Test command returns the **OK** result code. |
| Example | `AT#OBJL`<br>`#OBJL: Snapshot,47224`<br><br>`OK` |

### 3.7.5.4.12 #OBJR - Object Read

| #OBJR - Object Read | |
|---|---|
| **AT#OBJR= [<obj>, "Snapshot"]** | Execution command is used to flushing the photo stored in the MODULE RAM memory to the serial line.<br><br>The difference between this command and **#RPHOTO** is that **#OBJR** output ends without the sequence:<br><br>**<CR><LF>OK<CR><LF>**<br><br>Parameter:<br>**<obj>** - type of objects to be listed, string type<br>“IMG” - Image object<br><br>Note: **"Snapshot"** is the only name of the object. |
| **AT#OBJR=?** | Test command returns the **OK** result code. |
| Example | `AT#OBJR="IMG","Snapshot"`<br>`xxxxxxxxxxxx (binary digits of the JPEG image)`<br>`… the photo has been flushed to the serial line.` |
| Note | The photo is flushed as hexadecimal characters in the format selected. The baudrate is fixed at 115200, using hardware flow control. |

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## 3.7.5.5 Email Management AT Commands

### *3.7.5.5.1 #ESMTP - E-mail SMTP Server*

| **#ESMTP - E-mail SMTP Server** | |
|---|---|
| **AT#ESMTP= [<smtp>]** | Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name.<br><br>Parameter:<br>**<smtp>** - SMTP server address, string type. This parameter can be either:<br>- any valid IP address in the format: xxx.xxx.xxx.xxx<br>- any host name to be solved with a DNS query in the format: **<host name>**<br>(factory default is the empty string “”)<br><br>Note: the max length for **<smtp>** is the output of Test command. |
| **AT#ESMTP?** | Read Command reports the current SMTP server address, in the format:<br><br>**#ESMTP: <smtp>** |
| **AT#ESMTP=?** | Test command returns the max length for the parameter **<smtp>.** |
| Example | `AT#ESMTP="smtp.mydomain.com"`<br>`OK` |
| Note | The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the email. |

### *3.7.5.5.2 #EADDR - E-mail Sender Address*

| **#EADDR - E-mail Sender Address** | |
|---|---|
| **AT#EADDR= [<e-add>]** | Set command sets the sender address string to be used for sending the e-mail.<br><br>Parameter:<br>**<e-addr>** - sender address, string type.<br>- any string value up to max length reported in the Test command.<br>(factory default is the empty string “”) |
| **AT#EADDR?** | Read command reports the current sender address, in the format:<br><br>**#EADDR: <e-addr>** |
| **AT#EADDR=?** | Test command returns the maximum allowed length of the string parameter **<e-addr>.** |
| Example | `AT#EADDR="me@email.box.com"`<br>`OK`<br>`AT#EADDR?`<br>`#EADDR: "me@email.box.com"` |

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| #EADDR - E-mail Sender Address | |
|---|---|
| | OK |

### 3.7.5.5.3 #EUSER - E-mail Authentication User Name

| #EUSER - E-mail Authentication User Name | |
|---|---|
| **AT#EUSER= [<e-user>]** | Set command sets the user identification string to be used during the authentication step of the SMTP.<br><br>Parameter:<br>**<e-user>** - email authentication User ID, string type.<br>- any string value up to max length reported in the Test command. (factory default is the empty string “”)<br><br>Note: if no authentication is required then the **<e-user>** parameter shall be empty "". |
| **AT#EUSER?** | Read command reports the current user identification string, in the format:<br><br>**#EUSER: <e-user>** |
| **AT#EUSER=?** | Test command returns the maximum allowed length of the string parameter **<e-user>**. |
| Example | AT#EUSER="myE-Name"<br>OK<br>AT#EUSER?<br>#EUSER: "myE-Name"<br><br>OK |
| Note | It is a different user field than the one used for GPRS authentication (see **#USERID**). |

### 3.7.5.5.4 #EPASSW - E-mail Authentication Password

| #EPASSW - E-mail Authentication Password | |
|---|---|
| **AT#EPASSW= [<e-pwd>]** | Set command sets the password string to be used during the authentication step of the SMTP.<br><br>Parameter:<br>**<e-pwd>** - email authentication password, string type.<br>- any string value up to max length reported in the Test command. (factory default is the empty string “”)<br><br>Note: if no authentication is required then the **<e-pwd>** parameter shall be empty "". |

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| #EPASSW - E-mail Authentication Password | |
|---|---|
| **AT#EPASSW=?** | Test command returns the maximum allowed length of the string parameter **<e-pwd>**. |
| Example | `AT#EPASSW="myPassword"`<br>`OK` |
| Note | It is a different password field than the one used for GPRS authentication (see **#PASSW**). |

### *3.7.5.5.5 #SEMAIL - E-mail Sending With GPRS Context Activation*

| #SEMAIL - E-mail Sending With GPRS Context Activation | |
|---|---|
| **AT#SEMAIL=<br>[<da>,<subj>,<br><att><br>[,<filename>]]** | Execution command activates a GPRS context, if not previously activated by **#EMAILACT**, and sends an e-mail message. The GPRS context is deactivated when the e-mail is sent.<br><br>Parameters:<br>**<da>** - destination address, string type.<br>**<subj>** - subject of the message, string type.<br>**<att>** - attached image flag<br>0 - don't attach any image<br>1 - attach the last snapshot taken<br>**<filename>** - image name (default is “snapshot.jpg”)<br><br>The device responds to the command with the prompt **'>'** and awaits for the message body text.<br><br>To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex).<br><br>If e-mail message is successfully sent, then the response is **OK**.<br>If message sending fails for some reason, an error code is reported<br><br>Note: Care must be taken to ensure that during the command execution, no other commands are issued.<br><br>To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands.<br><br>Note: if GPRS context was previously activated by **#GPRS** it’s not possible to successfully send the e-mail message and the response is the result code **activation failed**.<br><br>Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute. |
| **AT#SEMAIL=?** | Test command returns the **OK** result code. |
| Example | `AT#SEMAIL="me@myaddress.com","subject of the mail",1` |

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| #SEMAIL - E-mail Sending With GPRS Context Activation | |
|---|---|
| | >message body… this is the text of the mail message…<br>CTRL-Z<br><br>*..wait..*<br>OK<br><br>*Message has been sent.* |

### 3.7.5.5.6 #EMAILACT - E-mail GPRS Context Activation

| #EMAILACT - E-mail GPRS Context Ativation | |
|---|---|
| **AT#EMAILACT=<br>[<mode>]** | Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with **#PASSW** and **#USERID**.<br><br>Parameter:<br>**<mode>** - GPRS context activation mode<br>0 - GPRS context deactivation request<br>1 - GPRS context activation request |
| **AT#EMAILACT?** | Read command reports the current status of the GPRS context for the e-mail, in the format:<br><br>**#EMAILACT: <status>**<br><br>where:<br>**<status>**<br>0 - GPRS context deactivated<br>1 - GPRS context activated |
| **AT#EMAILACT=?** | Test command returns the allowed values for parameter **<mode>**. |
| Example | AT#EMAILACT=1<br>OK<br>*Now GPRS Context has been activated*<br><br>AT# EMAILACT=0<br>OK<br>*Now GPRS context has been deactivated.* |

### 3.7.5.5.7 #EMAILD - E-mail Sending

| #EMAILD - E-mail Sending | |
|---|---|
| **AT#EMAILD=<br>[<da>,<br><subj>,<att><br>[,<filename>]]** | Execution command sends an e-mail message if GPRS context has already been activated with **AT#EMAILACT=1**.<br><br>Parameters: |

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| #EMAILD - E-mail Sending | |
|---|---|
| | **<da>** - destination address, string type.<br>**<subj>** - subject of the message, string type<br>**<att>** - attached image flag<br>0 - don't attach any image<br>1 - attach the last snapshot taken<br>**<filename>** - image name (default is “snapshot.jpg”)<br><br>The device responds to the command with the prompt '**>**' and awaits for the message body text.<br><br>To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex).<br><br>If e-mail message is successfully sent, then the response is **OK**.<br>If message sending fails for some reason, an error code is reported<br><br>Note: Care must be taken to ensure that during the command execution, no other commands are issued.<br><br>To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands.<br><br>Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute. |
| **AT#EMAILD=?** | Test command returns the **OK** result code. |
| Example | `AT#EMAILD=”me@myaddress.com”,”subject of the mail”,1`<br>`>message body… this is the text of the mail message…`<br>`CTRL-Z`<br><br>*`..wait..`*<br>`OK`<br>*`Message has been sent.`* |
| Note | The only difference between this command and the **#SEMAIL** is that this command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the **#EMAILACT** setting, thus, when the connection made with **#EMAILD** is closed, the context status is maintained. |

### *3.7.5.5.8 #ESAV - Email Parameters Save*

| #ESAV - Email Parameters Save | |
|---|---|
| **AT#ESAV** | Execution command saves the actual e-mail parameters in the NVM of the device.<br><br>The values stored are:<br>- E-mail User Name |

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| | |
|---|---|
| | - E-mail Password<br>- E-mail Sender Address<br>- E-mail SMTP server |
| **AT#ESAV=?** | Test command returns the **OK** result code. |
| Note | If some parameters have not been previously specified then a default value will be taken. |

### *3.7.5.5.9 #ERST - E-mail Parameters Reset*

| **#ERST - E-mail Parameters Reset** | |
|---|---|
| **AT#ERST** | Execution command resets the actual e-mail parameters in the NVM of the device to the default ones.<br><br>The values reset are:<br>- E-mail User Name<br>- E-mail Password<br>- E-mail Sender Address<br>- E-mail SMTP server |
| **AT#ERST=?** | Test command returns the OK result code. |

### *3.7.5.5.10 #EMAILMSG -SMTP Read Message*

| **#EMAILMSG - SMTP Read Message** | |
|---|---|
| **AT#EMAILMSG** | Execution command returns the last response from SMTP server. |
| **AT#EMAILMSG=?** | Test command returns the OK result code. |

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## 3.7.5.6 Easy Scan® Extension AT Commands

### *3.7.5.6.1 #CSURV - Network Survey*

| **#CSURV - Network Survey** | |
|---|---|
| **AT#CSURV[=[<s>,<e>]]**<br><br>**AT*CSURV[=[<s>,<e>]]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through channels belonging to the band selected by last **#BND** command issue, starting from channel **<s>** to channel **<e>**. Issuing **AT#CSURV<CR>**, a full band scan is performed.<br><br>Parameters:<br>**<s>** - starting channel<br>**<e>** - ending channel<br><br>After issuing the command the device responds with the string:<br><br>**Network survey started…**<br><br>and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:<br><br>**(For BCCH-Carrier)**<br>**arfcn: <arfcn> bsic: <bsic> rxLev: <rxLev> ber: <ber> mcc: <mcc> mnc: <mnc> lac: <lac> cellId: <cellId> cellStatus: <cellStatus> numArfcn: <numArfcn> arfcn: [<arfcn1> ..[ <arfcn64>]] [numChannels: <numChannels> array: [<ba1> ..[<ba32>]] [pbcch: <pbcch> [nom: <nom> rac: <rac> spgc: <spgc> pat: <pat> nco: <nco> t3168: <t3168> t3192: <t3192> drxmax: <drxmax> ctrlAck: <ctrlAck> bsCVmax: <bsCVmax> alpha: <alpha> pcMeasCh: <pcMeasCh>]]]**<br>**<CR><LF><CR><LF><CR><LF>**<br><br>where:<br>**<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel)<br>**<bsic>** - base station identification code; if **#CSURVF** last setting is 0, **<bsic>** is a decimal number, else it is a 2-digits octal number<br>**<rxLev>** - decimal number; it is the receiption level (in dBm)<br>**<ber>** - decimal number; it is the bit error rate (in %)<br>**<mcc>** - hexadecimal 3-digits number; it is the mobile country code<br>**<mnc>** - hexadecimal 2-digits number; it is the mobile network code<br>**<lac>** - location area code; if **#CSURVF** last setting is 0, **<lac>** is a decimal number, else it is a 4-digits hexadecimal number<br>**<cellId>** - cell identifier; if **#CSURVF** last setting is 0, **<cellId>** is a decimal number, else it is a 4-digits hexadecimal number<br>**<cellStatus>** - string type; it is the cell status<br>..CELL_SUITABLE - C0 is a suitable cell.<br>CELL_LOW_PRIORITY - the cell is low priority based on the received |

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**#CSURV - Network Survey**

system information.
CELL_FORBIDDEN - the cell is forbidden.
CELL_BARRED - the cell is barred based on the received system information.
CELL_LOW_LEVEL - the cell **<rxLev>** is low.
CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available…etc.

**<numArfcn>** - number of valid channels in the Cell Channel Description

**<arfcn*n*>** - arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)

**<numArfcn>** - decimal number; it is the number of valid channels in the Cell Channel Description

**<arfcn*n*>** - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)

**<numChannels>** - decimal number; it is the number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting:

7. if **#CSURVEXT=0** this information is displayed only for serving cell
8. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier.

**<ba*n*>** - decimal number; it is the arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting:

8. if **#CSURVEXT=0** this information is displayed only for serving cell
9. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier.

*(The following informations will be printed only if GPRS is supported in the cell)*

**<pbcch> -**
0
1

**<nom>** - network operation mode
1
2
3

**<rac>** - routing area code
0..255 -

**<spgc>** - SPLIT_PG_CYCLE support
..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell
..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell

**<pat>** - priority access threshold
0 -
3..6 -

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| #CSURV - Network Survey | |
|---|---|
| | **<nco>** - network control order<br>0..2 -<br>**<t3168>** - timer 3168<br>**<t3192>** - timer 3192<br>**<drxmax>** - discontinuous reception max time (in seconds)<br>**<ctrlAck>** - packed control ack<br>**<bsCVmax> -** blocked sequenc countdown max value<br>**<alpha> -** alpha parameter for power control<br>**<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control<br>0 - BCCH<br>1 - PDCH<br><br>**(For non BCCH-Carrier)**<br>**arfcn: <arfcn> rxLev: <rxLev>**<br><br>where:<br>**<arfcn>** - decimal number; it is the RF channel<br>**<rxLev>** - decimal number; it is the receiption level (in dBm)<br><br>The last string received from **#CSURV** depends on the last **#CSURVF** setting:<br><br>if **#CSURVF=0** or **#CSURVF=1**<br>The output ends with the string:<br>**Network survey ended**<br><br>if **#CSURVF=2**<br>the output ends with the string:<br>**Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)**<br>where<br>**<NoARFCN**> - number of scanned frequencies<br>**<NoBCCH**> - number of found BCCh |
| Example | AT#CSURV<br><br>`Network survey started…`<br><br>`arfcn: 48 bsic: 24 rxLev: -52 ber: 0.00 mcc: 610 mnc: 1 lac: 33281 cellId: 3648 cellStatus: CELL_SUITABLE numArfcn: 2 arfcn: 30 48 numChannels: 5 array: 14 19 22 48 82`<br><br>`arfcn: 14 rxLev: 8` |

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| #CSURV - Network Survey | |
|---|---|
| | `Network survey ended`<br><br>`OK` |
| Note | The command is executed within max. 2 minute. |

### 3.7.5.6.2 #CSURVC - Network Survey (Numeric Format)

| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| **AT#CSURVC[=[<s>,<e>]]**<br><br>**AT*CSURVC[=[=<s>,<e>]]**<br><br>*(both syntax are possible)* | Execution command allows to perform a quick survey through channels belonging to the band selected by last **#BND** command issue, starting from channel **<s>** to channel **<e>**. Issuing **AT#CSURVC<CR>**, a full band scan is performed.<br><br>Parameters:<br>**<s>** - starting channel<br>**<e>** - ending channel<br><br>After issuing the command the device responds with the string:<br><br>**Network survey started…**<br><br>and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format:<br><br>**(For BCCH-Carrier)**<br>**<arfcn>,<bsic>,<rxLev>,<ber>,<mcc>,<mnc>,<lac>,<cellId>, <cellStatus>,<numArfcn>[,<arfcn1> ..[ <arfcn64>]] [,<numChannels>[,<ba1> ..[<ba32>]] [<pbcch> [<nom> <rac> <spgc> <pat> <nco> <t3168> <t3192> <drxmax> <ctrlAck> <bsCVmax> <alpha> <pcMeasCh>]]]**<br>**<CR><LF><CR><LF><CR><LF>**<br><br>where:<br>**<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel)<br>**<bsic>** - base station identification code; if **#CSURVF** last setting is 0, **<bsic>** is a decimal number, else it is a 2-digits octal number<br>**<rxLev>** - decimal number; it is the receiption level (in dBm)<br>**<ber>** - decimal number; it is the bit error rate (in %)<br>**<mcc>** - hexadecimal 3-digits number; it is the mobile country code<br>**<mnc>** - hexadecimal 2-digits number; it is the mobile network code<br>**<lac>** - location area code; if **#CSURVF** last setting is 0, **<lac>** is a decimal number, else it is a 4-digits hexadecimal number<br>**<cellId>** - cell identifier; if **#CSURVF** last setting is 0, **<cellId>** is a decimal number, else it is a 4-digits hexadecimal number |

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| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| | **<cellStatus>** - string type; it is the cell status<br>..0 - C0 is a suitable cell (CELL_SUITABLE).<br>1 - the cell is low priority based on the received system information (CELL_LOW_PRIORITY).<br>2 - the cell is forbidden (CELL_FORBIDDEN).<br>3 - the cell is barred based on the received system information (CELL_BARRED).<br>4 - the cell **<rxLev>** is low (CELL_LOW_LEVEL).<br>5 - none of the above e.g. exclusion timer running, no BCCH available…etc.. (CELL_OTHER).<br>**<numArfcn>** - decimal number; it is the number of valid channels in the Cell Channel Description<br>**<arfcn*n*>** - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**)<br>**<numChannels>** - decimal number; it is the number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last **#CSURVEXT** setting:<br>9. if **#CSURVEXT=0** this information is displayed only for serving cell<br>10. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier.<br>**<ba*n*>** - decimal number; it is the arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last **#CSURVEXT** setting:<br>10. if **#CSURVEXT=0** this information is displayed only for serving cell<br>11. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier.<br>*(The following informations will be printed only if GPRS is supported in the cell)*<br>**<pbcch> -**<br>0<br>1<br>**<nom>** - network operation mode<br>1<br>2<br>3<br>**<rac>** - routing area code<br>0..255 -<br>**<spgc>** - SPLIT_PG_CYCLE support<br>..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell<br>..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell<br>**<pat>** - priority access threshold<br>0 -<br>3..6 - |

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| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| | **<nco>** - network control order<br>0..2 -<br>**<t3168>** - timer 3168<br>**<t3192>** - timer 3192<br>**<drxmax>** - discontinuous reception max time (in seconds)<br>**<ctrlAck>** - packed control ack<br>**<bsCVmax> -** blocked sequenc countdown max value<br>**<alpha> -** alpha parameter for power control<br>**<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control<br>0 - BCCH<br>1 - PDCH<br><br>**(For non BCCH-Carrier)**<br>**<arfcn>,<rxLev>**<br><br>where:<br>**<arfcn>** - decimal number; it is the RF channel<br>**<rxLev>** - decimal number; it is the receiption level (in dBm)<br><br>The last string received from **#CSURVC** depends on the last **#CSURVF** setting:<br><br>if **#CSURVF=0** or **#CSURVF=1**<br>The output ends with the string:<br>**Network survey ended**<br><br>if **#CSURVF=2**<br>the output ends with the string:<br>**Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)**<br>where<br>**<NoARFCN**> - number of scanned frequencies<br>**<NoBCCH**> - number of found BCCh |
| Example | AT#CSURVC<br><br>`Network survey started…`<br><br>`48,24,-52,0.00,610,1,33281,3648,0,2,30 48,5,14 19 22 48 82`<br><br>`14,8`<br><br>`Network survey ended` |

| #CSURVC - Network Survey (Numeric Format) | |
|---|---|
| | OK |
| Note | The command is executed within max. 2 minute.<br><br>The information provided by **#CSURVC** is the same as that provided by **#CSURV**. The difference is that the output of **#CSURVC** is in numeric format only. |

### *3.7.5.6.3 #CSURVU - Network Survey Of User Defined Channels*

| #CSURVU - Network Survey Of User Defined Channels | |
|---|---|
| **AT#CSURVU=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br><br>**AT*CSURVU=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br>*(both syntax are possible)* | Execution command allows to perform a quick survey through the given channels. The range of available channels depends on the last **#BND** issue.<br><br>The result format is like command **#CSURV**.<br><br>Parameters:<br>**<ch*n*>** - channel number (arfcn)<br><br>Note: the **<ch*n*>** must be in a increasing order. |
| Example | `AT#CSURVU=59,110`<br><br>`Network survey started…`<br><br>`arfcn: 59 bsic: 16 rxLev: -76 ber: 0.00 mcc: 546 mnc: 1 lac: 54717 cellId: 21093 cellStatus: CELL_SUITABLE numArfcn 2 arfcn: 36 59`<br><br>`arfcn: 110 rxLev: -107`<br><br>`Network survey ended`<br><br>`OK` |
| Note | The command is executed within max. 2 minute. |

### *3.7.5.6.4 #CSURVUC - Network Survey Of User Defined Channels (Numeric Format)*

| #CSURVUC - Network Survey Of User Defined Channels (Numeric Format) | |
|---|---|
| **AT#CSURVUC=[ <ch1>[,<ch2>[,…** | Execution command allows to perform a quick survey through the given channels. The range of available channels depends on the last **#BND** |

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| #CSURVUC - Network Survey Of User Defined Channels (Numeric Format) | |
|---|---|
| **[,<ch10>]]]]**<br><br>**AT*CSURVUC=[ <ch1>[,<ch2>[,… [,<ch10>]]]]**<br>*(both syntax are possible)* | issue.<br><br>The result format is like command **#CSURVC**.<br><br>Parameters:<br>**<ch*n*>** - channel number (arfcn)<br><br>Note: the **<ch*n*>** must be in a increasing order. |
| Example | `AT#CSURVUC=59,110`<br><br>`Network survey started…`<br><br>`59,16,-76,0.00,546,1,54717,21093,0,2,36 59`<br><br>`110,-107`<br><br>`Network survey ended`<br><br>`OK` |
| Note | The command is executed within max. 2 minute.<br><br>The information provided by **#CSURVUC** is the same as that provided by **#CSURVU**. The difference is that the output of **#CSURVUC** is in numeric format only. |

### *3.7.5.6.5 #CSURVB - BCCH Network Survey*

| #CSURVB - BCCH Network Survey | |
|---|---|
| **AT#CSURVB= [<n>]** | Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found.<br><br>The result format is like command **#CSURV**.<br><br>Parameter:<br>**<n>** - number of desired BCCH carriers<br>1..M |
| **AT#CSURVB=?** | Test command reports the range of values for parameter **<n>** in the format:<br><br>**(1-M)**<br><br>where **M** is the maximum number of available frequencies depending on last selected band. |

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### 3.7.5.6.6 #CSURVBC - BCCH Network Survey (Numeric Format)

| #CSURVBC - BCCH Network Survey (Numeric Format) | |
|---|---|
| **AT#CSURVBC= [<n>]** | Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found.<br><br>The result is given in numeric format and is like command **#CSURVC**.<br><br>Parameter:<br>**<n>** - number of desired BCCH carriers<br>1..M |
| **AT#CSURVBC=?** | Test command reports the range of values for parameter **<n>** in the format:<br><br>**(1-M)**<br><br>where **M** is the maximum number of available frequencies depending on last selected band. |

### 3.7.5.6.7 #CSURVF - Network Survey Format

| #CSURVF - Network Survey Format | |
|---|---|
| **AT#CSURVF= [<format>]** | Set command controls the format of the numbers output by all the Easy Scan®<br><br>Parameter:<br>**<format>** - numbers format<br>0 - Decimal<br>1 - Hexadecimal values, no text<br>2 - Hexadecimal values with text |
| **AT#CSURVF?** | Read command reports the current number format, as follows:<br><br>**#CSURVF: <format>** |
| **AT#CSURVF=?** | Test command reports the supported range of values for the parameter **<format>**. |

### 3.7.5.6.8 #CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family

| #CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family | |
|---|---|
| **AT#CSURVNLF= [<value>]** | Set command enables/disables the automatic **<CR><LF>** removing from each information text line.<br><br>Parameter: |

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| #CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family | |
|---|---|
| | **<value>**<br>0 - disables **<CR><LF>** removing; they'll be present in the information text (factory default)<br>1 - remove **<CR><LF>** from imformation text<br><br>Note: if parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT#CSURVNLF?** | Read command reports whether automatic **<CR><LF>** removing is currently enabled or not, in the format:<br><br>**<value>** |
| **AT#CSURVNLF=?** | Test command reports the range of values for parameter **<value>.** |

### *3.7.5.6.9 #CSURVEXT - Extended Network Survey*

| #CSURVEXT - Extended Network Survey | |
|---|---|
| **AT#CSURVEXT [=<value>]** | Set command enables/disables extended network survey.<br><br>Parameter:<br>**<value>**<br>0 - disables extended network survey (factory default)<br>1 - enables extended network survey; all the network survey execution commands (**#CSURV**, **#CSURVC**, **#CSURVU**, **#CSURVUC**, **#CSURVB**, **#CSURVBC**) display the BAList for every valid scanned BCCh carrier<br>2 - enables extended network survey; all the network survey execution commands (**#CSURV**, **#CSURVC**, **#CSURVU**, **#CSURVUC**, **#CSURVB**, **#CSURVBC**) display the BAList for every valid scanned BCCh carrier and, if GPRS is supported in the cell, they report some GPRS informations carried by the System Information 13 of the BCCh<br><br>Note: if parameter is omitted the behaviour of Set command is the same as Read command. |
| **AT#CSURVEXT?** | Read command reports whether extended network survey is currently enabled or not, in the format:<br><br>**<value>** |
| **AT#CSURVEXT=?** | Test command reports the range of values for parameter **<value>.** |

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## 3.7.5.7 Jammed Detect & Report AT Commands

### *3.7.5.7.1 #JDR - Jammed Detect & Report*

| **#JDR - Jammed Detect & Report** | |
|---|---|
| **AT#JDR=<br>[<mode><br>[,<MNPL>,<br><DCMN>]]** | Set command allows to control the Jammed Detect & Report feature.<br><br>The MODULE can detect if a communication Jammer is active in its range and give indication to the user of this condition either on the serial line with an unsolicited code or on a dedicated GPIO by rising it.<br><br>The MODULE can also report to the network the Jammed status condition, even if normal communications are inhibited by the Jammer, by using a unique message.<br><br>Parameters:<br>**<mode>** - behaviour mode of the Jammed Detect & Report<br>0 - disables Jammed Detect & Report (factory default)<br>1 - enables the Jammed Detect; the Jammed condition is reported on pin GPIO2/JDR<br>GPIO2/JDR **LOW** - Normal Operating Condition<br>GPIO2/JDR **HIGH** - Jammed Condition.<br>2 - enables the Jammed Detect; the Jammed condition is reported with a single unsolicited result code on serial line, in the format:<br><br>**#JDR: <status>**<br>where:<br>**<status>**<br>JAMMED - Jammed condition detected<br>OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.<br>3 - enables the Jammed Detect; the MODULE will make both the actions as for **<mode>=1** and **<mode>=2**.<br>4 - enables the Jammed Detect; the Jammed condition is reported with an unsolicited code every 3s on serial line, in the format:<br><br>**#JDR: <status>**<br>where:<br>**<status>**<br>JAMMED - Jammed condition detected<br>OPERATIVE - Normal Operating condition restored. This code will be shown only after a jammed condition has occurred.<br>5 - enables the Jammed Detect; the MODULE will make both the actions as for **<mode>=1** and **<mode>=4**.<br>**<MNPL>** - Maximum Noise Power Level<br>0..127<br>**<DCMN>** - Disturbed Channel Minimum Number |

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| #JDR - Jammed Detect & Report | |
|---|---|
| | 0..254 |
| **AT#JDR?** | Read command reports the current behaviour mode, Maximum Noise Power Level and Disturbed Channel Minimum Number, in the format:<br><br>**#JDR: <mode>,<MNPL>,<DCMN>** |
| **AT#JDR=?** | Test command reports the supported range of values for the parameters **<mode>**,**<MNPL>** and **<DCMN>** |
| Example | `AT#JDR=2`<br>`OK`<br>*`…jammer enters in the range…`*<br>`#JDR: JAMMED`<br>*`…jammer exits the range…`*<br>`#JDR: OPERATIVE` |
| Note | It is suggested not to change the default setting for Maximum Noise Power Level and Disturbed Channel Minimum Number.<br><br>If the device is installed in a particular environment where the default values are not satisfactory the two parameters **<MNPL>** and **<DCMN>** permit to adapt the detection to all conditions. |

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## 3.7.5.8 Easy Script® Extension - Python[12] interpreter, AT Commands

### *3.7.5.8.1 #WSCRIPT - Write Script*

| **#WSCRIPT - Write Script** | |
|---|---|
| **AT#WSCRIPT= [<script_name>, <size>, [,<hidden>]]** | Execution command inserts a script text and save it with the name **<script_name>** in the NVM of the module supporting the Python extension.<br><br>The script text should be sent using Raw Ascii file transfer.<br>It is important to set properly the port settings. In particular:<br>**Baud rate: 115200 bps**<br>**Flow control: hardware.**<br><br>Parameters:<br>**<script_name>** - file name, string type (max 16 chars, case sensitive).<br>**<size>** - file size in bytes<br>**<hidden>** - file hidden attribute<br>0 - file content is readable with **#RSCRIPT** (default).<br>1 - file content is hidden, **#RSCRIPT** command will report empty file.<br><br>The device responds to the command with the prompt '**>>>**' and waits for the script file text for **<size>** bytes.<br><br>The operations completes when all the bytes are received.<br><br>If script writing ends successfully, the response is **OK**; otherwise an error code is reported<br><br>Note: The script name should be passed between quotes and all Executable Scripts files must have **.py** extension - Script names are Case sensitive.<br><br>Note: When sending the script be sure that the line terminator is **<CR><LF>** and that your terminal program does not change it.<br><br>Note: with the hidden attribute it is possible to protect your script from being viewed and copied, only the file name can be viewed, its content is hidden even if the file is still being run correctly. It's your care to maintain knowledge on what the script file contains. |
| Example | `AT#WSCRIPT="First.py ",54,0`<br>*`>>> here receive the prompt; then type or send the script, sized 54 bytes`*<br><br>`OK` |

[12] PYTHON is a registered trademark of the Python Software Foundation.

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| #WSCRIPT - Write Script | |
|---|---|
| | *Script has been stored* |
| Note | This command can also be used to write any text file in the MODULE-PYTHON memory (not script files only), for example application data or settings files with a different extension than **.py**. |

### *3.7.5.8.2 #ESCRIPT - Select Active Script*

| #ESCRIPT - Select Active Script | |
|---|---|
| **AT#ESCRIPT= [<script_name>]** | Set command selects the name of the script that will be executed by the Easy Script® interpreter at the start-up. The script will be executed at start-up only if the **DTR** line is found **LOW** during initial start-up (that is: COM is not open on a PC), otherwise the Easy Script® interpreter will not execute and the module supporting the Python extension will behave normally answering only to AT commands on the serial port.<br><br>Parameter:<br>**<script-name>** - file name, string type (max 16 chars, case sensitive).<br><br>Note: all script files must have **.py** extension.<br><br>Note: The **<script_name>** must match with a file name written with the **#WSCRIPT** in order to have it run.<br><br>Note: the command does not check whether the script **<script_name>** does exist in the NVM of the module supporting the Python extension or not. If the file **<script_name>** is not present at the start-up then the Script Interpreter will not execute. |
| **AT#ESCRIPT?** | Read command reports the name of the script, as a quoted string, that will be executed by the Easy Script® interpreter at the start-up. |

### *3.7.5.8.3 #STARTMODESCR - Script Execution Start Mode*

| #STARTMODESCR - Script Execution Start Mode | |
|---|---|
| **AT#STARTMODESCR= <script_start_mode> [,<script_start_to>]** | Set command sets the active script execution start mode.<br>The name of the script that will be executed by the Easy Script® interpreter is the one stored with **#ESCRIPT** command.<br><br>Parameter:<br>**<script_start_mode>** - script execution start mode<br>0 - the script will be executed at start-up only if the **DTR** line is found **LOW** during initial start-up (that is: COM is not open on a PC), otherwise the Easy Script® interpreter will not execute and the MODULE will behave normally answering only to AT commands |

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| #STARTMODESCR - Script Execution Start Mode | |
|---|---|
| | on the serial port (factory default).<br>1 - the script will be executed at start-up only if during initial start-up the user does not send any AT command on the serial port for the time specified in **<script_start_to>** parameter, otherwise the Easy Script® interpreter will not execute and the MODULE will behave normally answering only to AT commands on the serial port. The **DTR** line is not tested.<br><br>**<script_start_to>** - script start timeout;<br>10..60 - time in seconds; this parameter is used only if parameter **<script_start_mode>** is set to 1; it is the waiting time for an AT command on the serial port to disable active script execution start. If the user does not send any AT command on the serial port for the time specified in this parameter active script will not be executed. Default value is 10 seconds.<br><br>Note: The active script must match with a file name written with the **#WSCRIPT** in order to have it run. |
| **AT#STARTMODESCR?** | Read command reports the current script start mode and the current script start timeout, in the format:<br><br>**#STARTMODESCR= <script_start_mode>,<script_start_timeout>** |
| **AT#STARTMODESCR=?** | Test command returns the range of available values for parameters **<script_start_mode>** and **<script_start_timeout>**, in the format:<br><br>**#STARTMODESCR: (0,1),(10-60)**<br>**OK** |

### *3.7.5.8.4 #EXECSCR - Execute Active Script*

| #EXECSCR - Execute Active Script | |
|---|---|
| **AT#EXECSCR** | Execution command starts execution of the active script by the Easy Script® interpreter later than start-up, from AT command interface. The script that will be executed is the one stored with **#ESCRIPT** command. This command is useful when the execution at start-up has been blocked deliberately and the user wants to control execution start. |
| **AT#EXECSCR=?** | Test command returns **OK** result code. |

### *3.7.5.8.5 #RSCRIPT - Read Script*

| #RSCRIPT - Read Script | |
|---|---|
| **AT#RSCRIPT= [<script_name>]** | Execution command reports the content of script file **<script_name>**. |

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| #RSCRIPT - Read Script | |
|---|---|
| | Parameter:<br>**<script-name>** - file name, string type (max 16 chars, case sensitive).<br><br>The device responds to the command with the prompt '**<<<**', followed by the script file text.<br><br>Note: if the file **<script_name>** was saved with the hidden attribute, then an empty file is reported with the **OK** result code.<br><br>Note: If the file **<script_name>** is not present an error code is reported. |
| Example | `AT#RSCRIPT="First.py "`<br>*hereafter receive the prompt; then the script is displayed, immediately after the prompt*<br>`<<<import MDM`<br><br>`MDM.send('AT\r',10)`<br>`Ans=MDM.receive(20)`<br>`OK` |
| Note | Executable scripts files must have **.py** extension. |

### *3.7.5.8.6 #LSCRIPT - List Script Names*

| #LSCRIPT - List Script Names | |
|---|---|
| **AT#LSCRIPT** | Execution command reports the list of script files names currently saved into the NVM and the available free NVM memory in the format:<br><br>**[#LSCRIPT: <script_name1>,<size1>…**<br>**[<CR><LF>#LSCRIPT: <script_name*n*>,<size*n*>]]**<br>**<CR><LF>#LSCRIPT: free bytes: <free_NVM>**<br><br>where:<br>**<script-name*n*>** - file name, quoted string type (max 16 chars, case sensitive)<br>**<size*n*>** - size of script in bytes<br>**<free_NVM>** - size of available NVM memory in bytes |
| **AT#LSCRIPT=?** | Test command returns **OK** result code. |
| Example | AT#LSCRIPT<br>#LSCRIPT: “First.py”,51<br>#LSCRIPT: “Second.py”,178<br>#LSCRIPT: “Third.py”,95<br>#LSCRIPT: free bytes: 20000<br><br>OK |

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### 3.7.5.8.7 #DSCRIPT - Delete Script

| #DSCRIPT - Delete Script | |
|---|---|
| **AT#DSCRIPT= [<script_name>]** | Execution command deletes a script file from NVM memory.<br><br>Parameter:<br>**<script_name>** - name of the script file to delete, string type (max 16 chars, case sensitive)<br><br>Note: if the file **<script_name>** is not present an error code is reported. |
| Example | `AT#DSCRIPT="Third.py"`<br>`OK` |

### 3.7.5.8.8 #REBOOT - Reboot

| #REBOOT - Reboot | |
|---|---|
| **AT#REBOOT** | Execution command reboots immediately the unit.<br><br>It can be used to reboot the system after a remote update of the script in order to have the new one running. |
| Example | `AT#REBOOT`<br><br>`…. Module Reboots …` |
| Note | This command does not return result codes. |

### 3.7.5.8.9 #CMUXSCR - CMUX Script Enable

| #CMUXSCR - CMUX Script Enable | |
|---|---|
| **AT#CMUXSCR= <enable>,[<rate>]** | Set command enables/disables the use of CMUX interface since the start of a Python script and specifies the **DTE** speed at which the device sends and receives CMUX frames (used to fix the **DTE-DCE** interface speed).<br><br>Parameters:<br>**<enable>** - enables/disables CMUX script.<br>0 - disables CMUX script (factory default)<br>1 - enables CMUX script<br><br>**<rate>**<br>300<br>1200<br>2400<br>4800<br>9600<br>19200<br>38400 |

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| #CMUXSCR - CMUX Script Enable | |
|---|---|
| | 57600<br>115200 (default)<br><br>If **<rate>** is omitted the value is unchanged<br><br>**<enable>** and **<rate>** values are saved in NVM |
| **AT#CMUXSCR ?** | Read command returns the current value of **#CMUXSCRIPT** parameters in the format:<br><br>**#CMUXSCRIPT: <enable>,<rate>** |
| **AT#CMUXSCR =?** | Test command reports the range for the parameters **<enable>** and **<rate>** |

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## 3.7.5.9 GPS AT Commands Set

### *3.7.5.9.1 $GPSP - GPS Controller Power Management*

| **$GPSP - GPS Controller Power Management** | |
|---|---|
| **AT$GPSP=<status>** | Set command allows to manage power-up or down of the GPS controller<br><br>Parameter:<br>**<status>**<br>0 - GPS controller is powered down<br>1 - GPS controller is powered up (default)<br><br>Note: for the GPS product (GE863-GPS): if the GPS controller is powered down while camera or VAUX pin is enabled they'll both also be also powered off. |
| **AT$GPSP?** | Read command reports the current value of the **<status>** parameter, in the format:<br><br>**$GPSP: <status>** |
| **AT$GPSP=?** | Test command reports the range of supported values for parameter **<status>** |
| Example | `AT$GPSP=0`<br>`OK` |
| Note | If a camera is used with the module and it is powered on, issuing **$GPSP=0** causes the GPS module to be reset but not to be powered down, because the camera power supply is in common with the GPS module. |

### *3.7.5.9.2 $GPSR - GPS Reset*

| **$GPSR - GPS Reset** | |
|---|---|
| **AT$GPSR= <reset_type>** | Execution command allows to reset the GPS controller.<br><br>Parameter:<br>**<reset_type>**<br>0 - Hardware reset: the GPS receiver is reset and restarts by using the values stored in the internal memory of the GPS receiver.<br>1 - Coldstart (No Almanac, No Ephemeris): this option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained. It is available in controlled mode only.<br>2 - Warmstart (No ephemeris): this option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Receiver Initialization Setup screen. The almanac is retained but the ephemeris is cleared. It is available in controlled mode only. |

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| $GPSR - GPS Reset | |
|---|---|
| | 3 - Hotstart (with stored Almanac and Ephemeris): the GPS receiver restarts by using the values stored in the internal memory of the GPS receiver; validated ephemeris and almanac. It is available in controlled mode only. |
| **AT$GPSR=?** | Test command reports the range of supported values for parameter **<reset_type>** |
| Example | AT$GPSR=0<br>OK |

### 3.7.5.9.3 $GPSD - GPS Device Type Set

| $GPSD - GPS Device Type Set | |
|---|---|
| **AT$GPSD= <device_type>** | Set command defines which GPS device is connected to the module. It dedicates the Serial port #1 of the module (TRACE) to receive the GPS strings from the GPS module.<br><br>Parameter:<br>**<device type>**<br>0 - none; the serial port is not connected to GPS device and available for standard use<br>1 - currently has no meaning, maintained for backward compatibility<br>2 - serial port connected to GPS serial port: controlled mode (default)<br>3 - currently has no meaning, maintained for backward compatibility<br><br>Note: the current setting is stored through **$GPSSAV** |
| **AT$GPSD?** | Read command reports the current value of **<device_type>** parameter, in the format:<br><br>**$GPSD: <device_type>** |
| **AT$GPSD=?** | Test command reports the range of supported values for parameter **<device_type>** |
| Example | AT$GPSD=0<br>OK |

### 3.7.5.9.4 $GPSSW - GPS Software Version

| $GPSSW - GPS Software Version | |
|---|---|
| **AT$GPSSW** | Execution command provides GPS Module software version in the format:<br><br>**$GPSSW: <sw version>** |
| **AT$GPSSW?** | Read command has the same meaning as the Execution command |
| **AT$GPSSW=?** | Test command returns the **OK** result code |
| Example | AT$GPSSW |

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| $GPSSW - GPS Software Version | |
|---|---|
| | $GPSSW: GSW3.1.1_3.1.00.07-C23P1.00<br>OK |

### 3.7.5.9.5 $GPSAT - GPS Antenna Type Definition

| $GPSAT - GPS Antenna Type Definition | |
|---|---|
| **AT$GPSAT=<type>** | Set command selects the GPS antenna used.<br><br>Parameter:<br>**<type>**<br>0 - GPS Antenna not power supplied by the module<br>1 - GPS Antenna power supplied by the module (default)<br><br>Note: if current **<type>** is 0, either **$GPSAV** and **$GPSAI** have no meaning.<br><br>Note: the current setting is stored through **$GPSSAV** |
| **AT$GPSAT?** | Read command returns the currently used antenna, in the format:<br><br>**$GPSAT: <type>** |
| **AT$GPSAT=?** | Test command reports the range of supported values for parameter **<type>** |
| Example | AT$GPSAT=1<br>OK |
| Note | Refer to the HW user guide for the compatible GPS antennas |

### 3.7.5.9.6 $GPSAV - GPS Antenna Supply Voltage Readout

| $GPSAV - GPS Antenna Supply Voltage Readout | |
|---|---|
| **AT$GPSAV** | Execution command returns the measured GPS antenna's supply voltage in mV |
| **AT$GPSAV?** | Read command has the same meaning as the Execution command |
| **AT$GPSAV=?** | Test command returns the **OK** result code |
| Example | AT$GPSAV<br>$GPSAV:3800<br>OK |
| Note | It has meaning only if current **$GPSAT** setting is not 0 |

### 3.7.5.9.7 $GPSAI - GPS Antenna Current Readout

| $GPSAI - GPS Antenna Current Readout | |
|---|---|
| **AT$GPSAI** | Execution command reports the GPS antenna's current consumption in the format: |

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| $GPSAI - GPS Antenna Current Readout | |
|---|---|
| | **$GPSAI:<value>[,<status>]**<br><br>where:<br>**<value>** - the measured current in mA<br>**<status>**<br>0 - GPS antenna OK<br>1 - GPS antenna consumption out of the limits<br><br>Note: the output **<status>** is available only if the antenna protection is activated (see **$GPSAP**) |
| **AT$GPSAI?** | Read command has the same meaning as the Execution command |
| **AT$GPSAI=?** | Test command returns the **OK** result code |
| Example | `AT$GPSAI?`<br>`$GPSAI:040,0`<br>`OK` |
| Note | It has meaning only if current **$GPSAT** setting is not 0 |

### *3.7.5.9.8 $GPSAP - GPS Antenna Protection*

| $GPSAP - GPS Antenna Protection | |
|---|---|
| **AT$GPSAP=<set>[,<value>]** | Set command allows to activate an automatic protection in case of high current consumption of GPS antenna. The protection disables the GPS antenna supply voltage.<br><br>Parameters:<br>**<set>**<br>0 - deactivate current antenna protection (default)<br>1 - activate current antenna protection<br><br>**<value>** - the antenna current limit value in mA<br>0..200<br><br>If parameter **<set>=0** parameter **<value>** has no meaning and can be omitted.<br><br>Note: the new setting is stored through **$GPSSAV** |
| **AT$GPSAP?** | Read command reports the current activation status of antenna automatic protection and the current antenna limit value, in the format:<br><br>**$GPSAP: <set>,<value>** |
| **AT$GPSAP=?** | Test command reports the range of supported values for parameters **<set>** and **<value>** |
| Example | `AT$GPSAP=0`<br>`OK` |

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| $GPSAP - GPS Antenna Protection | |
|---|---|
| | *Note : no SW control on antenna status (HW current limitation only)*<br><br>`AT$GPSAP=1,25`<br>`OK`<br>*activate current antenna protection with related current limit*<br><br>`AT$GPSAP?`<br>`$GPSAP:1,50`<br>`OK`<br>*Antenna protection activated with 50mA limit* |
| Note | The module is already provided of an Hardware protection for the high current consumption that is automatically activated if the consumption exceeds 50mA |

### 3.7.5.9.9 $GPSS - GPS NMEA Serial Port Speed

| $GPSS - GPS Serial Port Speed | |
|---|---|
| **AT$GPSS=<speed>** | Set command allows to select the speed of the NMEA serial port.<br><br>Parameter:<br>**<speed>**<br>4800 - (default)<br>9600<br>19200<br>38400<br>57600<br><br>Note: the new setting is stored through **$GPSSAV** |
| **AT$GPSS?** | Read command returns the current serial ports speed in the format:<br><br>**$GPSS: <speed>** |
| **AT$GPSAP=?** | Test command returns the available range for **<speed>** |

### 3.7.5.9.10 $GPSNMUN - Unsolicited NMEA Data Configuration

| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| **AT$GPSNMUN= <enable> [,<GGA>,<GLL>, <GSA>,<GSV>, <RMC>,<VTG >]** | Set command permits to activate an Unsolicited streaming of GPS data (in NMEA format) through the standard GSM serial port and defines which NMEA sentences will be available<br><br>Parameters:<br>**<enable>**<br>0 - NMEA data stream de-activated (default) |

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| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| | 1 - NMEA data stream activated with the following unsolicited response syntax:<br>**$GPSNMUN:<CR><NMEA SENTENCE><CR>**<br>2 - NMEA data stream activated with the following unsolicited response syntax:<br>**<NMEA SENTENCE><CR>**<br>3 - dedicated NMEA data stream; it is not possible to send AT commands; with the escape sequence '+++' the user can return to command mode<br><br>**<GGA>** - Global Positioning System Fix Data<br>0 - disable (default)<br>1 - enable<br>**<GLL>** - Geographical Position - Latitude/Longitude<br>0 - disable (default)<br>1 - enable<br>**<GSA>** - GPS DOP and Active Satellites<br>0 - disable (default)<br>1 - enable<br>**<GSV>** - GPS Satellites in View<br>0 - disable (default)<br>1 - enable<br>**<RMC>** - recommended Minimum Specific GPS Data<br>0 - disable (default)<br>1 - enable<br>**<VTG>** - Course Over Ground and Ground Speed<br>0 - disable (default)<br>1 - enable |
| **AT$GPSNMUN?** | Read command returns whether the unsolicited GPS NMEA data streaming is currently enabled or not, along with the NMEA sentences availability status, in the format:<br><br>**$GPSNMUN:<enable>,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG >** |
| **AT$GPSNMUN=?** | Test command returns the supported range of values for parameters **<enable>, <GGA>, <GLL>, <GSA>, <GSV>, <RMC>, <VTG>** |
| Example | `AT$GPSNMUN=1,0,0,1,0,0,0`<br>`OK`<br>*These sets the GSA as available sentence in the unsolicited message*<br><br>`AT$GPSNMUN=0`<br>`OK`<br>*Turn-off the unsolicited mode*<br><br>`AT$GPSNMUN?`<br>`$GPSNMUN: 1,0,0,1,0,0,0`<br>`OK`<br>*Give the current frame selected (GSA)* |

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| $GPSNMUN - Unsolicited NMEA Data Configuration | |
|---|---|
| | The unsolicited message will be:<br>$GPSNMUN:<br>$GPGSA,A,3,23,20,24,07,13,04,02,,,,,,2.4,1.6,1.8*3C |
| Reference | NMEA 01803 Specifications |
| Note | *The command is available in "Controlled Mode" only*<br><br>*The available NMEA Sentences are depending on the GPS receiver used*<br><br>*In GE863-GPS and GM862-GPS the fields PDOP and VDOP are not available*<br>*Use NMEA serial port instead if full DOP info are needed* |

### 3.7.5.9.11 $GPSACP - Get Acquired Position

| $GPSACP - Get Acquired Position | |
|---|---|
| **AT$GPSACP** | Execution command returns information about the last GPS position in the format:<br><br>**$GPSACP: <UTC>,<latitude>,<longitude>,<hdop>,<altitude>, <fix>,<cog>,<spkm>,<spkn>,<date>,<nsat>**<br><br>where:<br>**<UTC>** - UTC time (hhmmss.sss) referred to GGA sentence<br>**<latitude>** - format is ddmm.mmmm N/S (referred to GGA sentence)<br>where:<br>dd - degrees<br>00..90<br>mm.mmmm - minutes<br>00.0000..59.9999<br>N/S: North / South<br>**<longitude>** - format is dddmm.mmmm E/W (referred to GGA sentence)<br>where:<br>ddd - degrees<br>000..180<br>mm.mmmm - minutes<br>00.0000..59.9999<br>E/W: East / West<br>**<hdop>** - x.x - Horizontal Diluition of Precision (referred to GGA sentence)<br>**<altitude>** - xxxx.x Altitude - mean-sea-level (geoid) in meters (referred to GGA sentence)<br>**<fix>** - referred to GSA sentence<br>1 - Invalid Fix<br>2 - 2D fix<br>3 - 3D fix |

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| $GPSACP - Get Acquired Position | |
|---|---|
| | **<cog>** - ddd.mm - Course over Ground (degrees, True) (referred to VTG sentence)<br>where:<br>ddd - degrees<br>000..360<br>mm - minutes<br>00..59<br>**<spkm>** - xxxx.x Speed over ground (Km/hr) (referred to VTG sentence)<br>**<spkn>** - xxxx.x- Speed over ground (knots) (referred to VTG sentence)<br>**<date>** - ddmmyy Date of Fix (referred to RMC sentence)<br>where:<br>dd - day<br>01..31<br>mm - month<br>01..12<br>yy - year<br>00..99 - 2000 to 2099<br>**<nsat>** - nn - Total number of satellites in view (referred to GSV sentence) |
| **AT$GPSACP?** | Read command has the same meaning as the Execution command |
| **AT$GPSACP=?** | Test command returns the **OK** result code |
| Example | `AT$GPSACP`<br>`$GPSACP:080220.479,4542.82691N,01344.26820E,259.07,3,2.1,0.1,0.0,0.0,270705,09`<br><br>`OK` |

### *3.7.5.9.12 $GPSCON - Direct Access to GPS Module*

| $GPSCON - Direct Access to GPS Module | |
|---|---|
| **AT$GPSCON** | Execution command allows to set the GSM baseband in transparent mode in order to have a direct access to the serial port of the GPS module. The GSM module will transfer directly the received data to the GPS module, without checking or elaborating them.<br><br>Note: the new setting is stored through **$GPSSAV**<br><br>Note: the command is usable only in “controlled mode”.<br><br>Note: in case of an incoming call from GSM, this will be visible on the RING pin of serial port.<br><br>Note: the escape sequence is “+++”<br><br>Note: the Serial Port Speed can be maximum 38400 bps |
| **AT$GPSCON=?** | Test command returns the **OK** result code |

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### 3.7.5.9.13 $GPSPRG - Set The GPS Module In Programming Mode

| $GPSPRG - Set The GPS Module In Programming Mode | |
|---|---|
| **AT$GPSPRG** | Execution command allows to switch on the GPS part in BOOT mode and set the GSM processor in Transparent Mode, in order to permit the re-programming of th GPS flash memory.<br><br>Note: the escape sequence is “+++”<br><br>Note: it is possible to issue **$GPSPRG** only if the Serial Port Speed is fixed 38400 bps |
| **AT$GPSCON?** | Read command has the same effect as Execution command. |
| **AT$GPSCON=?** | Test command returns the **OK** result code |

### 3.7.5.9.14 $GPSPS - Set The GPS Module In Power Saving Mode

| $GPSPS - Set The GPS Module In Power Saving Mode | |
|---|---|
| **AT$GPSPS= <mode [,<PTF_Period>]** | Set command allows to set the GPS module in Power saving mode.<br><br>Parameters:<br>**<mode>** - the GPS receiver can operate in three modes<br>0 - full power mode, power saving disabled (default); it is the standard operating mode; power is supplied to the receiver continuously and the GPS receiver continues to operate without an interrupt.<br>1 - tricklepower mode; the power to the SiRF chipset is cycled periodically, so that it operates only a fraction of the time; power is applied only when a position fix is scheduled.<br>2 - push-to-fix mode; the GPS receiver is generally off, but turns on frequently enough to collect ephemeris data to maintain the GPS1 real-time clock calibration so that, upon user request, a position fix can be provided quickly after power-up.<br>**<PTF_Period>** - push-to-fix period, numeric value in secs; when mode is push-to-fix, the receiver turns on periodically according to this parameter; default value is 1800 sec. |
| **AT$GPSPS?** | Read command returns the current power saving mode and push-to-fix period, in the format:<br><br>**$GPSPS: <mode>,<PTF_Period>** |
| **AT$GPSPS=?** | Test command returns the available range for **<mode>** and **<PTF_Period>** |
| Note | Available in “controlled mode” only |

### 3.7.5.9.15 $GPSWK - Wake Up GPS From Power Saving Mode

| $GPSWK - Wake Up GPS From Power Saving Mode | |
|---|---|
| **AT$GPSWK** | Execution command allows to wake up the GPS module if set in sleeping |

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| $GPSWK - Wake Up GPS From Power Saving Mode | |
|---|---|
| | mode due to power saving.<br><br>Note: if the GPS module is in tricklepower mode, it will start up, make the fix and then continue to work in power saving mode.<br><br>Note: if the GPS module is in push-to-fix mode, issuing **$GPSWK** pemits to wake up it before the push to fix period; after the new fix the GPS module will return in push-to-fix mode with the same parameters. |
| **AT$GPSWK=?** | Test command returns the **OK** result code |
| Note | Available in “controlled mode” only |

### *3.7.5.9.16 $GPSSAV - Save GPS Parameters Configuration*

| $GPSSAV - Save GPS Parameters Configuration | |
|---|---|
| **AT$GPSSAV** | Execution command saves the current configuration in the non volatile EEPROM memory of the module. |
| **AT$GPSSAV=?** | Test command returns the **OK** result code |
| Example | AT$GPSSAV<br>OK |
| Note | The module must be restarted to use the new configuration |

### *3.7.5.9.17 $GPSRST - Restore To Default GPS Parameters*

| $GPSRST - Restore To Default GPS Parameters | |
|---|---|
| **AT$GPSRST** | Execution command restores the GPS parameters to “Factory Default” configuration and stores them in the non volatile EEPROM memory of the module. |
| **AT$GPSRST=?** | Test command returns the **OK** result code |
| Example | AT$GPSRST<br>OK |
| Note | The module must be restarted to use the new configuration |

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## 3.7.5.10 SAP AT Commands Set

### *3.7.5.10.1 #RSEN – Remote SIM Enable*

| **#RSEN – Remote SIM Enable** | |
|---|---|
| **AT#RSEN=<mode>,<br>[<sapformat>],<br>[<role>],<br>[<muxch>],<br>[<beacon>]** | Set command is used to enable/disable the Remote SIM feature. The command returns Error if requested on a non multiplexed interface<br><br>Parameter:<br>**<mode>**<br>0 - disable<br>1 - enable<br>**<sapformat>**<br>0 - X-SAP (unsupported)<br>1 - binary SAP (default)<br>**<role>**<br>0 - remote SIM Client (default)<br>1 - remote SIM Server (unsupported)<br>**<muxch>** - MUX Channel Number; mandatory if **<mode>=1** and **<sapformat>=1**<br>1..3<br>**<beacon>** - retransmition timer of SAP Connection Request<br>0 - only one transmition (default)<br>1..100 - timer interval in seconds.<br><br>NOTES:<br>If the module has a SIM inserted, when it receives the enable Command:<br>- de-register from the actual network<br>- de-initialize the current SIM.<br><br>NOTE for **<sapformat>=1** (binary SAP): while RSEN is activate SAP connection status is signalled with following URC:<br><br>**#RSEN: <conn>**<br>where<br>**<conn>** - connection status<br>0 - disconnected<br>1 - connected |
| **AT#RSEN?** | Read command returns the connection status of Remote SIM feature |
| **AT#RSEN=?** | Test command returns all supported values of Remote SIM Enable command |

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# 4 List of acronyms

| | |
|---|---|
| **ARFCN** | Absolute Radio Frequency Channel Number |
| **AT** | Attention command |
| **BA** | BCCH Allocation |
| **BCCH** | Broadcast Control Channel |
| **CA** | Cell Allocation |
| **CBM** | Cell Broadcast Message |
| **CBS** | Cell Broadcast Service |
| **CCM** | Current Call Meter |
| **CLIR** | Calling Line Identification Restriction |
| **CTS** | Clear To Send |
| **CUG** | Closed User Group |
| **DCD** | Data Carrier Detect |
| **DCE** | Data Communication Equipment |
| **DCS** | Digital Cellular System |
| **DGPS** | Differential GPS, the use of GPS measurements, which are differentially corrected |
| **DNS** | Domain Name System Server |
| **DSR** | Data Set Ready |
| **DTE** | Data Terminal Equipment |
| **DTMF** | Dual Tone Multi Fraquency |
| **DTR** | Data Terminal Ready |
| **GGA** | GPS Fix data |
| **GLL** | Geographic Position – Latitude/Longitude |
| **GLONASS** | Global positioning system maintained by the Russian Space Forces |
| **GMT** | Greenwich Mean Time |
| **GNSS** | Any single or combined satellite navigation system (GPS, GLONASS and combined GPS/GLONASS) |
| **GPRS** | Global Packet Radio Service |
| **GPS** | Global Positioning System |
| **GSA** | GPS DOP and Active satellites |
| **GSM** | Global System Mobile |
| **GSV** | GPS satellites in view |
| **HDLC** | High Level Data Link Control |
| **HDOP** | Horizontal Dilution of Precision |
| **IMEI** | International Mobile Equipment Identity |
| **IMSI** | International Mobile Subscriber Identity |
| **IP** | Internet Protocol |
| **IRA** | International Reference Alphabet |
| **IWF** | Interworking Function |

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| | |
|---|---|
| **MO** | Mobile Originated |
| **MT** | Mobile Terminal |
| **NMEA** | National Marine Electronics Association |
| **NVM** | Non Volatile Memory |
| **PCS** | Personal Communication Service |
| **PDP** | Packet Data Protocol |
| **PDU** | Packet Data Unit |
| **PIN** | Personal Identification Number |
| **PPP** | Point to Point Protocol |
| **PUK** | Pin Unblocking Code |
| **RLP** | Radio Link Protocol |
| **RMC** | Recommended minimum Specific data |
| **RTS** | Request To Send |
| **SAP** | SIM Access Profile |
| **SCA** | Service Center Address |
| **SMS** | Short Message Service |
| **SMSC** | Short Message Service Center |
| **SMTP** | Simple Mail Transport Protocol |
| **TA** | Terminal Adapter |
| **TCP** | Transmission Control Protocol |
| **TE** | Terminal Equipment |
| **UDP** | User Datagram Protocol |
| **USSD** | Unstructured Supplementary Service Data |
| **UTC** | Coordinated Universal Time |
| **VDOP** | Vertical dilution of precision |
| **VTG** | Course over ground and ground speed |
| **WAAS** | Wide Area Augmentation System |

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# 5 Document Change Log

| Revision | Date | Changes |
|---|---|---|
| ISSUE #0 | 04/08/06 | Initial release |
| ISSUE #1 | 26/10/06 | 3.2.2.1 +CME ERROR: - ME Error Result Code: updated<br>3.2.2.2 +CMS ERROR - Message Service Failure Result Code: updated<br>3.2.6 Factory and user profile: updated<br>-“GPS Commands Set” total update<br>-updated the following commands description under SELINT 0, SELINT 1 and SELINT 2 paragraph: +COPN, +CCFC, +CCWA, +CPIN, +CIND, +CNMI, +COPS, +CMEE, #SKTD, #AUTOATT, +CALA, +CAOC, +CACM, +CAMM, +CPUC, S12<br>-updated under SELINT 0 and SELINT 1 command +CPAS, #FTPOPEN, \Q, #CSURV, #CSURVC<br>-updated the following commands only under SELINT 2: +CMUX, +CLCC, +CMGL, +CMGR, #LSCRIPT<br>-removed from the AT commands table under SELINT 0 and SELINT 1 the following commands: #CBC and #EMAILMSG<br>-added new commands (for SELINT 2): #EXECSCR, #STARTMODESCR |

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