



**AT commands** are used to control MODEMs. AT is the abbreviation for Attention. These commands come from **Hayes commands** that were used by the Hayes smart modems. The Hayes commands started with AT to indicate the attention from the MODEM. The dial up and wireless MODEMs (devices that involve machine to machine communication) need AT commands to interact with a computer. These include the Hayes command set as a subset, along with other extended **AT commands**.

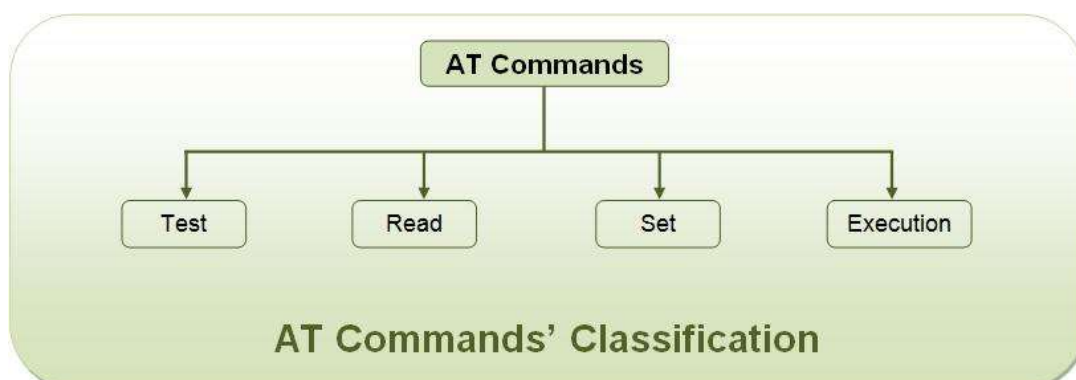
AT commands with a GSM/GPRS MODEM or mobile phone can be used to access following information and services:

1. Information and configuration pertaining to mobile device or MODEM and SIM card.
2. SMS services.
3. MMS services.
4. Fax services.
5. Data and Voice link over mobile network.

The Hayes subset commands are called the basic commands and the commands specific to a GSM network are called extended AT commands.

## Types of AT Commands:

There are four types of AT commands:



*Fig. 1: Image Showing Classification of AT Commands*

- 1) **Test commands** – used to check whether a command is supported or not by the MODEM.

**SYNTAX:** AT<command name>=?

**For example:** ATD=?



For example: `AT+CSCA="+9876543210", 120`

#### 4) Execution commands – used to carry out an operation.

**SYNTAX:** `AT<command name>=parameter1, parameter2, ..., parameterN`

The read commands are not available to get value of last parameter assigned in execution commands because parameters of execution commands are not stored.

For example: `AT+CMSS=1,"+ 9876543210", 120`

### Explanation of commonly used AT commands:

#### 1) AT – This command is used to check communication between the module and the computer.

For example,

AT

OK

The command returns a result code OK if the computer (serial port) and module are connected properly. If any of module or SIM is not working, it would return a result code ERROR.

#### 2) +CMGF – This command is used to set the SMS mode. Either text or PDU mode can be selected by assigning 1 or 0 in the command.

**SYNTAX:** `AT+CMGF=<mode>`

0: for PDU mode

1: for text mode

The text mode of SMS is easier to operate but it allows limited features of SMS. The PDU (protocol data unit) allows more access to SMS services but the operator requires bit level knowledge of TPDU's. The headers and body of SMS are accessed in hex format in PDU mode so it allows availing more features.

For example,

`AT+CMGF=1`

OK

#### 3) +CMGW – This command is used to store message in the SIM.

**SYNTAX:** `AT+CMGW=" Phone number"> Message to be stored Ctrl+z`

As one types AT+CMGW and phone number, '>' sign appears on next line where one can type the message. Multiple line messages can be typed in this case. This is why the message is terminated by providing a 'Ctrl+z' combination. As Ctrl+z is pressed, the following information response is displayed on the screen.

+CMGW: Number on which message has been stored



- 5) **ATD** – This command is used to dial or call a number.

SYNTAX: ATD<Phone number>;(Enter)

For example,

ATD123456789;

- 6) **ATA** – This command is used to answer a call. An incoming call is indicated by a message 'RING' which is repeated for every ring of the call. When the call ends 'NO CARRIER' is displayed on the screen.

SYNTAX: ATA(Enter)

As ATA followed by enter key is pressed, incoming call is answered.

For example,

RING

RING

ATA

- 7) **ATH** – This command is used to disconnect remote user link with the GSM module.

SYNTAX: ATH (Enter)

## List of AT commands:

The AT commands for both, GSM module and the mobile phone, are listed below. Some of these commands may not be supported by all the GSM modules available. Also there might be some commands which won't be supported by some mobile handsets.

### Testing :

Command	Description
AT	Checking communication between the module and computer.

### Call control :

Command	Description
ATA	Answer command
ATD	Dial command
ATH	Hang up call
ATL	Monitor speaker loudness
ATM	Monitor speaker mode
ATO	Go on-line



AT&F	Restore factory settings
AT&V	View active configuration
AT&W	Store parameters in given profile
AT&Y	Select Set as power up option
AT+CLCK	Facility lock command
AT+COLP	Connected line identification presentation
AT+GCAP	Request complete capabilities list
AT+GMI	Request manufacturer identification
AT+GMM	Request model identification
AT+GMR	Request revision identification
AT+GSN	Request product serial number identification (IMEI)

**Phone control :**

Command	Description
AT+CBC	Battery charge
AT+CGMI	Request manufacturer identification
AT+CGMM	Request model identification
AT+CGMR	Request revision identification
AT+CGSN	Request product serial number identification
AT+CMEE	Report mobile equipment error
AT+CPAS	Phone activity status
AT+CPBF	Find phone book entries
AT+CPBR	Read phone book entry
AT+CPBS	Select phone book memory storage
AT+CPBW	Write phone book entry
AT+CSCS	Select TE character set
AT+CSQ	Signal quality

**Computer data interface :**

Command	Description
ATE	Command Echo
ATQ	Result code suppression
ATV	Define response format
ATX	Response range selection
AT&C	Define DCD usage
AT&D	Define DTR usage
AT&K	Select flow control
AT&Q	Define communications mode option
AT&S	Define DSR option
AT+ICF	DTE-DCE character framing
AT+IFC	DTE-DCE Local flow control
AT+IPR	Fixed DTE rate



ATB	Communications standard option
AT+CBST	Select bearer service type
AT+CEER	Extended error report
AT+CRLP	Radio link protocol
AT+DS	Data compression

**Miscellaneous :**

Command	Description
A/	Re-execute command line
AT?	Command help
AT*C	Start SMS interpreter
AT*T	Enter SMS block mode protocol
AT*V	Activate V.25bis mode
AT*NOKIATEST	Test command
AT+CESP	Enter SMS block mode protocol

**SMS Text mode :**

Command	Description
AT+CSMS	Select message service
AT+CPMS	Preferred message storage
AT+CMGF	Message format
AT+CSCA	Service centre address
AT+CSMP	Set text mode parameters
AT+CSDH	Show text mode parameters
AT+CSCB	Select cell broadcast message types
AT+CSAS	Save settings
AT+CRES	Restore settings
AT+CNMI	New message indications to TE
AT+CMGL	List messages
AT+CMGR	Read message
AT+CMGS	Send message
AT+CMSS	Send message from storage
AT+CMGW	Write message to memory
AT+CMGD	Delete message

**SMS PDU mode :**

Command	Description
AT+CMGL	List Messages
AT+CMGR	Read message
AT+CMGS	Send message
AT+CMGW	Write message to memory



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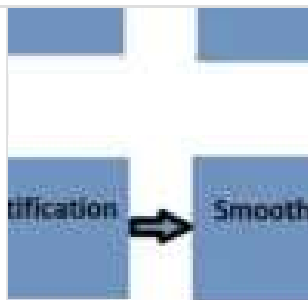
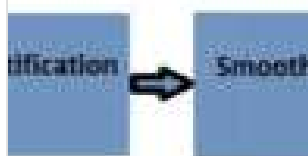
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