Universal IP

AT Commands

Reference Guide

MultiTech Systems

Universal IP AT Commands Reference Guide S000457L, Version L

Use with the following products

SocketModem® iCell GPRS (MTSMC-G2-IP, MTSMC-G2-GP)
SocketModem® iCell CDMA (MTSMC-C1-IP, MTSMC-C1-GP)
SocketModem® iCell HSPA+ (MTSMC-H5-IP, MTSMC-H5-GP)
SocketEthernet IP® (MT100SEM-IP)
SocketModem® iCell HSPA (MTSMC-H3-IP-P1, MTSMC-H3-MI-IP-P1)
SocketModem® iCell HSPA (MTSMC-H4-IP, MTSMC-H4-GP)
SocketModem® iCell EV-DO (MTSMC-EV2-IP, MTSMC-EV2-GP)
SocketWireless® Wi-Fi® (MT810SWM-IP)

The following devices use these commands when the modem is in IP mode:

SocketModem® IP (MT5692SMI-IP)
MultiModem® iCell GPRS (MTCMR-G2, MTCMR-G2-GP)
MultiModem® iCell CDMA (MTCMR-C1, MTCMR-C1-GP)
MultiModem® iCell EDGE (MTCMR-E1, MTCMR-E1-GP)
MultiModem® iCell HSPA+ (MTCMR-H5, MTCMR-H5-GP)
MultiModem® iCell EV-DO (MTCMR-EV2, MTCMR-EV2-GP)
MultiModem® iCell HSPA (MTCMR-H4, MTCMR-H4-GP)

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Chapter 1 – General AT Commands

Use these AT commands with any Universal IP device.

Set Commands

AT – Command Mode

Description: If the modem responds OK to an AT command, the modem is likely in command mode. Many commands will respond with ERROR when the modem is connected to the network.

E – Turn Echo ON/OFF

Description: Use this command to turn ON/OFF echoing command at the serial terminal. If the modem is connected to the network, ERROR appears.

Syntax: **ATE[<setting>]**

Values: 0 – turn echo off.

1 – turns echo on.

I – Identification

Description: Displays identification parameters.

Syntax: **ATI[<value>]**

Values: 3 – Identifies the firmware version.

5 – Identifies the country.

Responses: For MT100SEM: "1.00 to 1.00g"

For MT810SWM-IP: "1.xx" ("xx" is the number.)

OK

Otherwise ERROR

Example: Version: MT810swm Release V1.0 (12-August-09)

OK

"B5" (MT100SEM example)

V – Terse or Verbose

Description: Sets terse or verbose responses. If the modem is connected to the network, ERROR appears.

Syntax: **ATV[<value>]**

ATV? Displays the current V setting or use AT#VALL to view all settings.

Values: 0 – Sets terse mode (ATV also sets terse mode)

1 – Sets verbose mode

Default: **ATV1**

Z – Default Configuration

Description: This command restores the configuration profile from NVM. Settings are recalled on power up.

Syntax: **ATZ**

Response: OK (Command valid)

Otherwise ERROR

&C – RLSD (DCD) Option Turn On or Off

Description: The modem controls the RLSD output in accordance with the parameter supplied. This command sets the DCD On or Off.

Syntax: **AT&C[<value>]**

AT&C? Read or show the current value.

Values: 0 – Sets DCD to remain On at all times.

1 – Sets DCD to follow the physical connection.

2 – DCD follows the state of the TCP/UDP connection.

Default: **1**

Response: OK

Otherwise ERROR

&D – DTR Option

Description: The modem reads the DTR to determine if the Data Terminal is Ready. This command allows the modem to act on the DTR.

Syntax: **AT&D[<value>]**

AT&D? Read or show the current value.

Values: 0 – DTR is ignored (AT&D with no parameter).

1 – An Active to Inactive transition disconnects an active TCP/UDP connection

2 – (For Non-MT100SEM) An active to inactive transition disconnects the physical connection

Default: 0

Response: OK

Otherwise ERROR

&F – Reset Factory Defaults

Description: **For MT100SEM:** This command replaces all settings with the factory defaults but does not store them to memory. Use &W to store them to the memory.

For NON-MT100SEM: This command replaces the settings of &D, &S, &C, E, and V with default values and temporarily stores them in volatile memory. After sending AT&F, issue AT&W to store default settings in non-volatile memory.

Syntax: **AT&F**

Values: None/No parameters

&S – DSR ON or OFF

Description: This command sets the DSR to ON of OFF.

Syntax: **AT&S[<value>]**

AT&S? Read or show the current value.

Values: 0 – Sets DSR to remain ON at all times

1 – Sets DSR to follow DCD

2 – DSR follows the state of the TCP/UDP connection

Default: **1**

Response: OK

Otherwise ERROR

&W – Store Factory Defaults to NVM

Description: **For MT100SEM:** Stores factory defaults to the NVM.

For NON-MT100SEM: Stores the default settings of &D, &S, &C, E, and V when they are reset to defaults via AT&F.

For H3 models: Stores the UIP settings of &D, &S, &C, E, and V when they are reset to defaults via AT&F. Response of COMMAND NOT SUPPORT may appear and can be ignored. UIP values are set regardless of the COMMAND NOT SUPPORT response.

Syntax: **AT&W**

Values: None

+ICF – DTE-DCE Character Framing

Description: This command determines the local serial port start-stop (asynchronous) character framing that the DCE uses

Note: The input for the command always requires the format value. However, the parity value is optional and will be set as defined in the table.

Syntax: **AT+ICF=[<format value>],[<parity value>]**

AT+ICF? Read or show the current value.

Values: <format>

0 – Autodetect (not supported)

1 – 8 Data 2 Stop (supported)

<parity> parameter is ignored

2 – 8 Data 1 Parity 1 Stop (supported)

If no <parity> provided, 3 is used by default as <parity> value

3 – 8 Data 1 Stop (supported)

<parity> parameter is ignored

4 – 7 Data 2 Stop (supported)

<parity> parameter is ignored

5 – 7 Data 1 Parity 1 Stop (supported)

If no <parity> provided, 3 is used by default as <parity> value

6 – 7 Data 1 Stop (supported)

<parity> parameter is ignored

<parity>

0 – Odd (supported)

1 – Even (supported)

2 – Mark (supported)

3 – Space (supported)

4 – None (supported)

Default: Format: **2**

Parity: **4**

Examples:

+ICF input values		Resulting affect		
Format	Parity	Data bits	Stop bits	Parity
1	0-4, blank (ignored)	8	2	None
2	0-4, blank	8	1	0-4; 3 if the input is left blank
3	0-4, blank (ignored)	8	1	None
4	0-4, blank (ignored)	7	2	None
5	0-4, blank	7	1	0-4; 3 if the input is left blank
6	0-4, blank (ignored)	7	1	None

+IFC – Set Flow Control

Description: Turns flow control on and off.

Syntax: **AT+IFC=<flow control value>**

Values: 0,0 Flow Control Off

2,2 Hardware Flow Control On

Default: **2,2** Hardware Flow Control On

+IPR – Set Serial Speed

Description: Sets the serial speed.

Syntax: **AT+IPR=<serial speed value>**

Values: 300 to 921600

Display: AT+IPR? Displays the current serial speed.

AT+IPR=? Displays a list of all possible values (serial speeds).

Default: For All Products: **115200**

#AUTORESET - Reset the Processor at a Given Time

Description: Set an amount of time when the modem will reset after no input has been detected on the serial port.

This command is not supported on the SocketEthernet IP (MT100SEM-IP).

Syntax: **AT#AUTORESET=<time in minutes>**

AT#AUTORESET? or AT#VALL

Values: 0-65535 the time in minutes

From 1 to 5 numeric digits (0 to 9).

Default: **0**

#DELFLASH – Erase Flash Memory Parameter Values

Description: This command erases the contents of the flash memory and loads with defaults values.

Syntax: **AT#DELFLASH**

Values: No parameter values.

RESET – Reset Main Processor or Internal Modem

Description: This command will force a reset on the Stack and internal radio or just the internal radio.

Note: After issuing AT#RESET, it can take up to 45 seconds before the MT810SWM-IP is ready to accept AT Commands. When configuring the MT810SWM-IP using security mode WPA or WPA2, the bootup time will take longer.

Syntax: **AT#RESET =<value>**

Values: 0 – Reset the Stack and internal modem

Reset the internal modem only.

This value is not valid for the SocketEthernet IP (MT100SEM-IP) and the SocketWireless Wi-Fi (MT810SWM-IP)

Example: AT#RESET=0

#SHIELDCHAR – Configure the Shielding Character for DLEMODE

Description: This parameter defines the shield character for the clients that use shielding (also known as DLE shielding with regards to UIP).

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#SHIELDCHAR=[<parameter1>]**

AT#SHIELDCHAR?

Values: 0-255 (an integer value between 0 and 255)

Responses: \r\n#SHIELDCHAR: VALUE\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#SHIELDCHAR=20\r

reply: \r\nOK\r\n

send: AT#SHIELDCHAR?\r

reply: \r\n#SHIELDCHAR: 20\r\n

reply: \r\nOK\r\n

#ESCAPECHAR – Configure the Escape Character for DLEMODE

Description: This parameter defines the escape character for the clients that use an escape character (also known as DLE shielding with regards to Universal IP.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#ESCAPECHAR=<parameter1>**

AT#ESCAPECHAR?

Values: 0-255; Integer value between 0 and 255

Responses: \r\n#ESCAPECHAR: VALUE\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#ESCAPECHAR=3\r

reply: \r\nOK\r\n

send: AT#ESCAPECHAR?\r

reply: \r\n#ESCAPECHAR: 3\r\n

reply: \r\nOK\r\n

Display Commands

#VSHOWSERIAL – Display RS-232 Signal Status of the User Serial Port

Description: Displays the RS-232 signal status; used for engineering.
This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#VSHOWSERIAL**

Values: n/a

Responses: \r\SERIAL information\r\n
\r\nOK\r\n
\r\nERROR\r\n

Examples: **send:** AT#VSHOWHARDWARE\r
reply: \r\n+------------------------------+--+\r\n
reply: \r\n| Serial EIA Signal Status (DCE interface) |\r\n
reply: \r\n+------------------------------+--+\r\n
reply: \r\n| CTS : ON |\r\n
reply: \r\n| DSR : OFF |\r\n
reply: \r\n| DCD : OFF |\r\n
reply: \r\n| RTS : ON |\r\n
reply: \r\n| DTR : ON |\r\n
reply: \r\n+------------------------------+--+\r\n
reply: \r\nOK\r\n

#VSHOWUPTIME – Displays the Current Uptime in Days, Hours, Minutes, Seconds

Description: Displays the current uptime of the UIP stack.
This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#VSHOWUPTIME**

Values: n/a

Responses: \r\nVALUE\r\n
\r\nOK\r\n
\r\nERROR\r\n

Examples: **send:** AT#VSHOWUPTIME\r
reply: \r\n00000:00:03:46\r\n
reply: \r\nOK\r\n

#VSHOWUPTIMES – Displays the Current Uptime in Seconds

Description: Displays the current uptime of the UIP stack in seconds.
This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#VSHOWUPTIMES**

Values: n/a

Responses: \r\nVALUE\r\n
\r\nOK\r\n
\r\nERROR\r\n

Examples: **send:** AT#VSHOWUPTIMES\r
reply: \r\n304\r\n
reply: \r\nOK\r\n

#VVERSION – Display Software Version

Description: This command directs the TCP/IP stack to display the software version.

Syntax: **AT#VVERSION**

Values: No TCP/IP parameters.

#VSTATE – Display Current State of Physical Connection

Description: This command displays the status of the physical network connection.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP).

Syntax: **AT#VSTATE**

Responses:

#STATE: "IDLE"	Physical connection is idle and ready to connect
#STATE: "DIALING"	Physical connection is attempting to contact the network
#STATE: "AUTHENTICATING"	Physical connection is complete; PPP authentication is being performed
#STATE: "CONNECTED"	Physical connection is complete and PPP negotiation is complete; stack is ready for client commands
#STATE: "DISCONNECTING"	Physical connection is in the process of disconnecting from the network
#STATE: "DISCONNECTED"	Physical connection is disconnected from the network (Only used on the MT100SEM-IP)
#STATE: "CHECKING"	Checking current status; try again

#VALL – Display All Parameters

Description: The MT100SEM display of Possible Responses differs slightly from the MT5692SMI-IP display. An example of the MT100SEM Possible Responses screen is included on this page. See the next page for an example of the other Possible Responses screen.

This command directs the TCP/IP stack to display all AT# parameters. The parameters are displayed by blocks of categories separated by a <CR><LF> sequence, all at the same time.

Syntax: **AT#VALL**

Responses – MT100SEM-IP only	
#FTPGETFILENAME: " " #FTPGETPATH: " " #FTPMODE: 0 #FTPPORT: 21 #FTPPUTFILENAME: " " #FTPPUTPATH: " " #FTPPW: "ftppassword" #FTPSERV: " " #FTPTYPE: 1 #FTPUN: “ftplogin” #POP3HEADERMODE: 1 #POP3PORT: 110 #POP3PW: "password" #POP3SERV: "pop3.domain.com" #POP3UN: "module@domain.com" #DOMAIN: "domain.com" #SENDERADDR: "module@domain.com" #SENDERNAME: "Test module" #SMTPPORT: 25 #SMTPPW: " " #SMTPSERV: "smtp.domain.com" #SMTPUN: " " #SMTPAUTH: 1 #BODY1: " " #CCREC1: " " #REC1: " " #SUBJ1: "Email Subject" #BODY2: " " #CCREC2: " " #REC2: " " #SUBJ2: " " #BODY3: " " #CCREC3: " " #REC3: " " #SUBJ3: " " #DLEMODE: 1 , 1 #TCPSERV: 1 , " " #TCPPORT: 1 , 0 #TCPTXDELAY: 1 , 100 #DLEMODE: 2 , 1	#TCPSERV: 2 , " " #TCPPORT: 2 , 0 #TCPTXDELAY: 2 , 100 #UDPSERV: 1 , " " #UDPPORT: 1 , 0 #UDPTXDELAY: 1 , 100 #UDPSERV: 2 , " " #UDPPORT: 2 , 0 #UDPTXDELAY: 2 , 100 #PINGDELAY: 1 #PINGNUM: 4 #PINGREMOTE: " " #DHCP: 0 #IPADDR: "192.168.2.3" #IPGATEWAY: "192.168.2.1" #IPNETMASK: "255.255.255.0" #EMACSPD: 0 #DNSSERV1: "0.0.0.0" #DNSSERV2: "0.0.0.0" #TELNET: 0 #TELNETPORT: 23 #TELNETUSER: "admin" #TELNETPASSWORD: " " +IPR: 115200 +ICF: 2,4 +IFC: 2,2 #AUTODISC: 1 #AUTODISCPORT:1020 #AUTODISCTIMER: 10 #AUTODISCHOST: "MT100SEM" #AUTODISCUSER: "admin" #AUTODISCPASSWORD: " " V: 1 &S: 0 &C: 0 OK

Syntax: **AT#VALL**

Applies to All Except MT100SEM-IP	
#ANSWERMODE: 0	#CCREC1: ""
#CALLBACKTIMER: 2	#REC1: ""
#CALLSCREENNUM: "0"	#SUBJ1: ""
#DIALN1: ""	#BODY2: ""
#DIALN2: ""	#CCREC2: ""
#DIALSELECT: 1	#REC2: ""
#GPRSMODE: 1	#SUBJ2: ""
#PHYTIMEOUT: 15	#BODY3: ""
#REDIALCOUNT: 0	#CCREC3: ""
#REDIALDELAY: 5	#REC3: ""
#RINGCOUNT: 0	#SUBJ3: ""
#AUTOCONNECT: 0	#DLEMODE: 1,1
#ISPUN: ""	#TCPPORT: 1,0
#ISPPW: ""	#TCPSERV: 1,""
#PPPMODE: 3	#TCPTXDELAY: 1,100
#PPPMYIP: 0.0.0.0	#UDPPORT: 0
#PPPPEERIP: 0.0.0.0	#UDPSERV: ""
#PPPSERVPW: ""	#UDPTXDELAY: 100
#PPPSERVUN: ""	#PINGDELAY: 1
#APNPW: ""	#PINGNUM: 4
#APNSERV: ""	#PINGREMOTE: ""
#APNUN: ""	#AUTHENT: NONE
#GPRSCID: 1	+IPR: 115200
#DNSSERV1: "0.0.0.0"	+ICF: 2,4
#DNSSERV2: "0.0.0.0"	+IFC: 2,2
#FTPGETFILENAME: ""	V: 1
#FTPGETPATH: ""	E: 1
#FTPPORT: 21	&S: 1
#FTPPUTFILENAME: ""	&C: 1
#FTPPUTPATH: ""	&D: 0
#FTPPW: ""	#KEEPALIVEMODE: 0
#FTPSERV: ""	#KEEPALIVEPORT: 0
#FTPTYPE: I	#KEEPALIVEDELAY: 100
#FTPUN: ""	#KEEPALIVESERV: ""
#FTPMODE: 0	#AUTORESET: 0
#POP3HEADERMODE: 1	#ATCMD: 1,""
#POP3PORT: 110	#ATCMD: 2,""
#POP3PW: ""	#ATCMD: 3,""
#POP3SERV: ""	#ATCMD: 4,""
#POP3UN: ""	#PERSISTENTSOCKET: 0
#DOMAIN: ""	#OUTPORT: 37500
#SENDERADDR: ""	#GPIO: 1,1,0,0,0,0
#SENDERNAME: ""	#GPIO: 2,1,0,0,0,0
#SMTPPORT: 25	#GPIO: 3,0,0,0,0,0
#SMTPPW: ""	#GPIO: 4,0,0,0,0,0
#SMTPSERV: ""	#GPIO: 5,3,0,0,0,0
#SMTPUN: ""	OK
#BODY1: ""	

Chapter 2 – SMTP AT Commands

Use these AT commands with any Universal IP device.

Set Commands

#SENDERNAME – Set Sender Name

Description: The sender's literal name (different from the SENDERADDR parameter, which is the sender's email address). This parameter will appear in the header of the email sent by the TCP/IP stack software, in the field: "From:"

Syntax: **AT#SENDERNAME="<value>"**

AT#SENDERNAME**?** Read or display current value (also AT#VSMTP or AT#VALL).

Values: Alphanumeric ASCII text string up to 120 characters. The address must be provided in literal format (for instance, "machine 245").

Default: No default.

#SENDERADDR – Set Sender Address

Description: To send emails, the TCP/IP stack software must know the email address of the sender. The "sender" is the email identification of the hardware platform itself or the optional attached equipment. This email address will appear in the header of the email sent by the TCP/IP stack software, in the field "From:"

Syntax: **AT#SENDERADDR="<value>"**

AT#SENDERADDR? Read or display current value (also AT#VSMTP or AT#VALL).

Values: Alphanumeric ASCII text string up to 60 characters. The address must be provided in literal format (for instance xxxxxxx@web.zyx). No default.

#CCRECi – Set Additional Recipient CC

Description: The software can send email messages to an additional recipient as a "carbon copy". This parameter contains the email address of the additional recipient. This email address will appear in the header of the email sent by the TCP/IP stack software in the field "Cc:"

For a given value n, the CCRECn parameter is directly associated with the RECn parameter.

Syntax: **AT#CCRECi="<value>"**

AT#CCRECi? (replace i with 1, 2, or 3) or AT#VMAILi, AT#VALL

Values: CCRECi (i = 1, 2, or 3)

Alphanumeric ASCII text string up to 120 characters. The address must be provided in literal format (for instance xxxxx@web.com).

Default: No default.

#DOMAIN – Set Domain Name of the Sender

Description: When sending an email message, the TCP/IP stack software must provide the SMTP server with the domain name of the sender. In some cases, this domain name may be different from the domain name included in the sender's email address.

Syntax: **AT#DOMAIN="<value>"**

AT#DOMAIN? Read or display current value (also AT#VSMTP or AT#VALL).

Values: Alphanumeric ASCII text string up to 120 characters.

Default: No default.

#RECiADD – Set Email Address

Description: To send email messages, the TCP/IP stack software must know the e-mail address of the recipient. This email address will appear in the email header sent by the TCP/IP stack software, in the field 'To:'

The RECi parameter can hold a maximum of 10 email addresses, each email address being at the most 120 characters long.

This command overwrites all previously set email addresses of the RECi parameter.

If more than ten addresses are entered, the 11th and subsequent addresses until the end character will be ignored.

Syntax: **AT#RECi="<Value>"**

AT#RECi? (replace i with 1, 2, or 3) or AT#VMAILi, AT#VALL

Values: RECi (i = 1, 2, or 3)

Alphanumeric ASCII text string up to 120 characters. The address must be provided in literal format (for instance xxxxx@company.com).

Setting One Email Address / Resetting the Parameter / Getting:

Set value / reset the parameter: AT#RECi="<Value>" (replace i with 1, 2, or 3)

View value: AT#REC? (replace i with 1, 2, or 3) or AT#VMAILi, AT#VALL

Setting One to Ten Email Address to the RECi Parameter / Resetting the Parameter:

To set 1 to 10 email addresses to the RECi parameter, enter the AT#RECiADD<CR> overwriting command.

Each email address has to be an alphanumeric ASCII text string, in literal format (for instance, dev12345678@web.xyz). To add another email address, enter the <CR><LF> pair. To end the setting, enter the following character: 1A (in ASCII code), generated in a keyboard by CTRL+Z escape sequence.

Default: No default.

Example: AT#REC1ADD<CR>

Email1@domain.fr<CR><LF>

Email2@domain.com<CR><LF>

<CTRL+Z>

#SUBJi – Set Email Pre-Defined Subject Text

Description: These parameters contain the pre-defined subject text that will be used by the TCP/IP stack to compose the email header.

Syntax: **AT#SUBJi="<value>"** (replace i with 1, 2, or 3)

AT#SUBJi? (replace i with 1, 2, or 3) or AT#VMAILi, AT#VALL

Values: Alphanumeric ASCII text string up to 120 characters.

Default: No default.

#BODYi – Set Pre-Defined Email Combinations

Description: These parameters store pre-defined message bodies. They allow the host application to send pre-defined email combinations.

Syntax: **AT#BODY<value>** Interactive mode enter the body followed by CTRL-Z

AT#BODY<value>="<string>" Set the Body<value> string to "<string>"

AT#BODY<value>? Read or display the current setting of BODY<value**>**

Values: 1 – 3 Predefined email message body

The body content has to be entered after the AT#BODY1<CR> command. It has to be an alphanumeric ASCII text string up to 120 characters followed this character: 1A (in ASCII code) and generated on a keyboard by CTRL+Z.

Default: No default.

Example: AT#BODY1<CR>

Text string

<CTRL+Z>

#SMTPNETWORKTIMER – SMTP Client Network Transmit Safety Timeout Value

Description: This parameter determines the inactivity time in seconds of the TCP TX buffer.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#SMTPNETWORKTIMER=<parameter1>**

Values: 0-65535 – the time in seconds the client will wait for the TCP available TX buffer to be greater than 0. A setting of 0 will disable the function.

Responses: \r\n#SMTPNETWORKTIMER: VALUE1\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples:

send: AT#SMTPNETWORKTIMER=100\r

reply: \r\nOK\r\n

send: AT#SMTPNETWORKTIMER?\r

reply: \r\n#SMTPNETWORKTIMER: 100\r\n

reply: \r\nOK\r\n

#SMTPPORT – Set SMTP Server Port

Description: To reach the SMTP server, the TCP/IP stack software must know the port of the SMTP server used for sending email.

This parameter should be changed only by your network administrator since it depends on network infrastructure configuration including firewalls, proxy or specific TCP port translation settings.

Syntax: **AT#SMTPPORT=<value>**

AT#SMTPPORT? Read or display the current setting (or AT#VSMTP, AT#VALL).

Values: From 1 to 5 digits (each digit between 0 and 9 inclusive). Note that numbers above 65,535 are illegal as the port identification fields are 16 bits long in the TCP header.

Default: **25**

#SMTPPW – Set SMTP Password

Description: Some SMTP servers use an authentication process when sending emails. In these cases, the TCP/IP stack software provides the SMTP password (associated to the SMTP user name) for the email sending process.

If this parameter is an empty string, the authentication mode is inactive.

If both this parameter and the SMTPUN parameter are not empty, the authentication mode is active.

Syntax: **AT#SMTPPW="<value>"**

AT#SMTPPW? Read or display the current setting (or AT#VSMTP, AT#VALL).

Values: Alphanumeric ASCII text string up to 64 characters.

Default: No default.

#SMTPSERV – Set SMTP Server Address

Description: To send email messages the TCP/IP stack software must know the address of the SMTP server that is to be used. In most cases, the local ISP maintains the SMTP server.

Syntax: **AT#SMTPSERV="<value>"**

AT#SMTPSERV? Read or display the current setting (or AT#VSMTP, AT#VALL).

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx) or

Alphanumeric ASCII text string up to 120 characters if DNS is available.

Default: No default.

#SMTPUN – Set SMTP User Name

Description: To send email messages, some SMTP servers use an authentication process. In these cases, the TCP/IP stack software will provide the SMTP user name (associated with a SMTP password) for the email sending process.

If this parameter is an empty string, the authentication mode is inactive. If both this parameter and the SMTPPW parameter are not empty, the authentication mode is active.

Syntax: **AT#SMTPUN="<value>"**

AT#SMTPUN? Read or display the current setting (or AT#VSMTP, AT#VALL).

Values: Alphanumeric ASCII text string up to 64 characters.

Default: No default.

#SENDMAILi – Send Mail without Interactive Mode

Description: MT5692SMI-IP supports only SENDMAIL1 options.

This command sends one of the 3 pre-defined email combinations. Once an IP link is established, the attached host can direct the TCP/IP stack to send an email message at any time (except when the TCP/IP stack software is already in a process using TCP resources).

The header of this email is built using the REC1/2/3, CCREC1/2/3 and SUBJ1/2/3 parameters while the body is filled in the BODY1/2/3 parameter.

This is similar to a "send email" operation issued by a standard messaging client on a PC.

Syntax: **AT#SENDMAILi**

Replace the i with #SENDMAIL1, #SENDMAIL2, or #SENDMAIL3.

To view parameters, use #VMAIL and #VSMTP. Also listed in #VMAILi (where i = 1, 2, or 3)

Example:

Command	Possible Responses
AT#SENDMAIL1 (Send predefined mail #1)	OK **Note:** Mail 1 has been successfully sent
AT#SENDMAIL2 (Send predefined mail #2)	OK **Note:** Mail 2 has been successfully sent
AT#SENDMAIL3 (Send predefined mail #3)	OK **Note:** Mail 3 has been successfully sent
AT#SENDMAIL2	#CME ERROR: 38027 **Notes:** The address of the SMTP server has not been resolved by the secondary DNS server. TCP/IP stack is not able to reach the primary or secondary DNS servers or a wrong SMTP server address has been entered.
AT#SENDMAIL1	#CME ERROR: <value> **Notes:** An error has occurred during the communication with the remote SMTP server. It may also happen during the data transfer (after the OK message). This error can be due to one of the following reasons: - The DNS servers are not able to resolve the SMTP server address - The SMTP server is temporarily out of service - The authentication (SMTPUN, SMTPPW) is not valid - Email address specified in REC1 or CCREC1 is not valid See section 'Response messages and error codes'.

#PUTMAIL – Send Mail to Recipient with Interactive Mode

Description: This command allows the attached host to send an email message containing body text passed to the TCP/IP stack over the serial port. Once an IP link is established, the attached host can send an email message at any time (except when the TCP/IP stack software is already in a process using TCP resources).

The header of this email is built using the REC1, CCREC1 and SUBJ1 parameters.

This is similar to a "send email" operation issued by a standard messaging client on a PC.

Syntax: **AT#PUTMAIL**

To view parameters, use #VMAIL and #VSMTP. Also in #VMAILi (where i = 1, 2, or 3)

Note: If not constructing a header, you must issue the <CR><LF> bytes (binary value: 0D 0A) as the first data bytes to finish the internal headers correctly. This mechanism is in place to allow for the addition of custom headers such as MIME data.

Command	Possible Responses
AT#PUTMAIL You have to configure only receiver address1, copy address1, and subject1 before or during the session, but content (body) of the email is typed when the TCP/IP session is established. Content is not echoed.	Ok_Info_WaitingForData **Notes:** An SMTP session has been successfully opened with the remote SMTP server. Once the TCP/IP stack has displayed this message, all the data received on the serial port is sent in the email body. The (CR)(LF)(.)(CR)(LF) sequence sent by the attached host indicates the TCP/IP stack the end of the email body.
<CR><LF> See the syntax note above.	
<content> Content is not written when typing.	
<CR><LF> . <CR><LF> Termination sequence: <CR> = <Enter>, <LF> = <Ctrl Enter>	OK **Note:** The mail has been successfully sent.
AT#PUTMAIL	#CME ERROR: 38027 **Notes:** The address of the SMTP server has not been resolved by the secondary DNS server. TCP/IP stack is not able to reach the primary or secondary DNS servers or a wrong SMTP server address has been entered.
AT#PUTMAIL	#CME ERROR: <value> **Notes:** An error has occurred during the communication with the remote SMTP server. It may also happen during the data transfer (after the OK message). This error can be due to one of the following reasons: - DNS servers are not able to resolve the SMTP server address. - SMTP server is temporarily out of service. - Authentication (SMTPUN, SMTPPW) is not valid. - An email address specified in REC1 or CCREC1 is not valid. - *n* = inactivity period of 50 seconds on the serial port. See section 'Response messages and error codes'

#SMTPAUTH – Authentication ON or OFF

Description: Turns authentication ON or OFF.

Syntax: **AT#SMTPAUTH=<value>**

AT#SMTPAUTH? or AT#VSMTP, AT#VALL

Values: 0 – OFF

1 – ON

Default: **0**

Display Commands

#VSMTP – Display SMTP Parameters

Description: Directs the TCP/IP stack to display all the AT# parameters related to the email sender configuration.

Syntax: **AT#VSMTP**

Example:

Command	Possible Responses
AT#VSMTP (View SMTP parameters)	#DOMAIN: “a2myoper.com” #SENDERADDR: “toto@myoper.com” #SENDERNAME: “toto” #SMTPPORT: 25 #SMTPPW: “mysmtppw” #SMTPSERV: “smtp.a2myoper.com” #SMTPUN: “mysmtpun” #SMTPAUTH: 1 OK

#VMAILi – Display Email Parameters for Respective Mail ID

Description: This command directs the TCP/IP stack to display all the AT# parameters related to the email combinations configuration.

Syntax: **AT#VMAILi** (replace i with 1, 2, or 3)

Command	Possible Responses
AT#VMAIL1 (View predefined (nb 1)mail header elements)	#Body 1= #REC1= #CCREC1= #SUBJ1= OK

Chapter 3 – POP3 AT Commands

Use these AT commands with any Universal IP device.

Set Commands

#POP3HEADERMODE – POP3 Header

Description: When receiving an email message, the TCP/IP stack can be configured to send or not to send the POP3 header over the serial port. The POP3 header contains the From, Cc and Subject fields.

Syntax: **AT#POP3HEADERMODE=<value>**

AT#POP3HEADERMODE? Read or display the current setting (or AT#VPOP3, AT#VALL).

Values: 0 – The email header will not be sent over the serial port while retrieving.

1 – The email header will be sent over the serial port while retrieving.

Default: 1

#POP3PORT – Set POP3 Server Port

Description: To reach the POP3 server, the TCP/IP stack software must know the port of the POP3 server used for retrieving email.

Note: Only the network administrator should change this parameter, which depends on network infrastructure configuration including firewalls, proxy or specific TCP port translation settings.

Syntax: **AT#POP3PORT=<value>**

AT#POP3PPORT? Read or display the current setting (or AT#VPOP3, AT#VALL).

Values: 5 digits (each digit between 0 and 9 inclusive). Note that numbers above 65,535 are illegal as the port identification fields are 16 bits long in the TCP header.

Default: **110**

#POP3PW – Set POP3 Password

Description: Password for POP3 account. To retrieve email messages sent to a specified email address, the TCP/IP stack software must know the POP3 password that has been set for that email account.

Syntax: **AT#POP3PW="<value>"**

AT#POP3PW? Read or display the current setting (or AT#VPOP3, AT#VALL).

Values: Alphanumeric ASCII text string up to 64 characters.

Default: No default.

#POP3SERV – Set POP3 Server Address

Description: To retrieve email messages, the TCP/IP stack software must know the address of the POP3 server that is to be used. The POP3 server must be the one where the specified email account is hosted (which is not necessarily maintained by the local ISP).

Syntax: **AT#POP3SERV="<value>"**

AT#POP3SERV? Read or display the current setting (or AT#VPOP3, AT#VALL).

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx) or

Alphanumeric ASCII text string up to 120 characters if DNS is available.

Default: No default.

#POP3UN – Set POP3 User Name

Description: User name for POP3 account. To retrieve email messages sent to a specified email address, the TCP/IP stack software must know the POP3 user name that has been set for that email account.

Syntax: **AT#POP3UN="<value>"**

AT#POP3UN? Read or display the current setting (or AT#VPOP3, AT#VALL).

Values: Alphanumeric ASCII text string up to 64 characters.

Default: No default.

#GETMAIL – Retrieve Host Mail

Description: Allows the attached host to direct the TCP/IP stack to retrieve the first mail present in the POP3 server list. Once an IP link is established, the attached host can retrieve an email message at any time (except when the TCP/IP stack software is already in a process using TCP resources). Similar to a “check email box” feature issued by a standard messaging client on a PC.

Syntax: **AT#GETMAIL**

To view parameters, use #VPOP3.

Command	Possible Responses
AT#GETMAIL (Retrieve mail)	Ok_Info_Mail <mail content> **Notes:** This message is issued when one email message is located in the specified POP3 mailbox. Depending on the #POP3HEADERMODE parameter, the TCP/IP stack sends the email header over the serial port to the attached host. (CR)(LF)(.)(CR)(LF) indicates the end of the email body.
AT#GETMAIL	Ok_Info_NoMail Note: There is no email to retrieve in the POP3 mailbox.
AT#GETMAIL	#CME ERROR: 38027 **Notes:** The address of the POP3 server has not been resolved by the secondary DNS server. TCP/IP stack is not able to reach the primary and secondary DNS servers or a wrong POP3 server address has been entered.
AT#GETMAIL	#CME ERROR: <value> **Notes:** An error has occurred during the communication with the remote POP3 server. It may also happen during the data transfer after the MAIL message. In this case, it is preceded by a (CR)(LF)(.)(CR)(LF) sequence. This error can be due to one of the following reasons: - The DNS servers are not able to resolve the POP3 server address - The POP3 server is temporarily out of service - The authentication (POP3UN, POP3PW) is not valid See section ‘Response messages and error codes’.

Display Command

#VPOP3 – POP3 Module Parameters

Description: Directs the TCP/IP stack to display all the AT# parameters related to the email retriever configuration.

Syntax: **AT#POP3?**

Values: POP3HEADERMODE
POP3PORT
POP3PW
POP3SERV
POP3UN
POP3VERBOSE (for MT810SWM-IP only).

Default: No default

Chapter 4 – FTP AT Commands

Use these AT commands with any Universal IP device.

Set Commands

#FTPPORT – Enter FTP Server Port

Description: To reach the FTP server, the TCP/IP stack software must know the control port of the FTP server used for file transfer.

Note: This parameter should be changed only upon request of your network administrator since it applies to network infrastructure including firewalls, proxy or specific TCP port translation.

Syntax: **AT#FTPPORT=<value>**

AT#FTPPORT? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: From 1 to 5 digits (each digit between 0 and 9 inclusive).

Numbers above 65,535 are illegal as port identification fields are 16 bits long in the TCP header.

Default: **21**

#FTPMODE – Enter FTP Mode

Description: Define the FTP behavior for file transfer.

Syntax: **AT#FTPMODE=<value>**

AT#FTPMODE? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: 0 – FTP Active Mode

1 – FTP Passive Mode

Default: 0

#FTPTYPE – Specify Data Type

Description: Before transferring files from a specified FTP server, the TCP/IP stack software must specify the type of data to be transferred within the FTP session.

Syntax: **AT#FTPTYPE="<value>"**

AT#FTPTYPE? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: A – FTP ASCII sessions (Not all products support this option)

I – FTP Binary sessions.

Note: When this value is set to A, data sent by the TCP/IP stack to the FTP server is made of 7 bits characters (NVT-ASCII: the MSB is set to 0). As a result, binary data containing 8 bits characters will be corrupted during the transfer if the FTPTYPE is set to A.

Default: **I**

#FTPSERV – Specify FTP Server Address

Description: FTP server address. To connect to an FTP server to download files, the TCP/IP stack software must know the address of the FTP server that is to be used.

Syntax: **AT#FTPSERV="<value>"**

AT#FTPSERV? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx) or, if DNS is available, alphanumeric ASCII text string up to 120 characters. No default.

#FTPUN – Set FTP User Name

Description: Before transferring files from a specified FTP server, the TCP/IP stack software must open an FTP session using a valid FTP user name.

Syntax: **AT#FTPUN="<value>"**

AT#FTPUN? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: Alphanumeric ASCII text string up to 64 characters.

Default: No default.

#FTPPW – Set FTP Password

Description: Before transferring files from a specified FTP server, the TCP/IP stack software must open an FTP session using a valid FTP password.

Syntax: **AT#FTPPW="<value>"**

AT#FTPPW? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: Alphanumeric ASCII text string up to 64 characters.

Default: No default.

#FTPGETFILENAME – Set FTP Download File Name

Description: In order to download a file from the FTP server, the TCP/IP stack software must know the name of the relevant file.

Syntax: **AT#FTPGETFILENAME="<value>"**

AT#FTPGETFILENAME**?** Read or display the current setting (or AT#VFTP, AT#VALL).

Values: Alphanumeric ASCII text string up to 120 characters.

Default: No default.

#FTPPUTFILENAME – Set FTP Upload File Name

Description: In order for the TCP/IP stack software to upload a file to the FTP server, the TCP/IP stack software must know the name of the relevant file

Syntax: **AT#FTPPUTFILENAME="<value>"**

AT#FTPPUTFILENAME? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: Alpha-numeric ASCII text string up to 120 characters.

Default: No default.

#FTPGET – Download Files from FTP Server

Description: This command, sent by the attached host, directs the TCP/IP stack to connect to the specified FTP server and to retrieve the specified file from this server. Once the operation is completed, the TCP/IP stack closes the FTP connection.

Once an IP link is established, the attached host can retrieve a file from an FTP server at any time (except when the TCP/IP stack software is already in a process using TCP resources).

This command is similar to a GET operation (with an automatic connect/disconnect) issued by a standard FTP client on a PC. The TCP/IP stack handles the global FTP process by itself.

Note: The TCP/IP stack will signal the attached host of the end of the file that is being downloaded with a single <ETX> character. The <ETX> characters that are part of the file data will be shielded as <DLE><ETX>. The <DLE> characters that are part of the file data will be shielded as <DLE><DLE>. The attached host will need to remove the shielding <DLE> characters.

Syntax: **AT#FTPGET**

Values: FTPGETFILENAME
FTPGETPATH
FTPPORT
FTPSERV
FTPTYPE
FPTMODE
FTPPW
FTPUN
FTPFILESIZE

#FTPPUT – Upload Files to FTP Server

Description: This command sent by the attached host directs the TCP/IP stack to connect to the specified FTP server and to upload the data received on the serial port to the specified file on this server. Once the operation is completed, the TCP/IP stack closes the FTP connection.

Once an IP link is established, the attached host can send a file to a FTP server at any time (except when the TCP/IP stack software is already in a process using TCP resources).

This command is similar to a PUT operation (with an automatic connect/disconnect) issued by a standard FTP client on a PC. The TCP/IP stack handles the global FTP put process by itself.

Note: The TCP/IP stack will interpret only an <ETX> character as the end of the file to be transferred if it's not preceded by a <DLE> character. As a consequence, the attached host must send <ETX> characters preceded by <DLE> characters, and it must also code <DLE> characters as <DLE><DLE>.

Syntax: **AT#FTPPUT**

Values: FTPPUTFILENAME
FTPDIR
FTPPORT
FTPSERV
FTPTYPE
FTPMODE
FTPPW
FTPUN

Default: No default

#FTPGETPATH – Set Path to Get a File from FTP Server

Description: In order for the TCP/IP stack software to get a file from the FTP server, the TCP/IP stack software must know the path of the relevant file. For example: *ftp.companyx.com/wireless/WPST* or, if you at in the root *ftp.companyx.com*, you can then simply type /

Syntax: **AT#FTPGETPATH="<value>"**

AT#FTPGETPATH? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: Alpha-numeric ASCII text string up to 120 characters.

Note: Depending on the FTP server, the value can be used for getting a file from the root directory of the FTP server.

Default: No default.

#FTPPUTPATH – Set Path to Send Files to FTP Server

Description: In order for the TCP/IP stack software to send a file to the FTP server, the TCP/IP stack software must know the path of the relevant file. For example: *ftp.companyx.com/wireless/WPST* or, if you at in the root *ftp.companyx.com*, you can then simply type /

Syntax: **AT#FTPPUTPATH="<value>"**

AT#FTPPUTPATH? Read or display the current setting (or AT#VFTP, AT#VALL).

Values: Alpha-numeric ASCII text string up to 120 characters.

Note: Depending on the FTP server, the value can be used for getting a file from the root directory of the FTP server.

Default: No default.

#FTPAPPEND – Append Data to Server

Description: This command sent by the attached host directs the TCP/IP stack to connect to the specified FTP server and to append the data received on the serial port to the specified file on this server. Once the operation is completed, the TCP/IP stack closes the FTP connection.

Once an IP link is established, the attached host can send a file to a FTP server at any time (except when the TCP/IP stack software is already in a process using TCP resources).

This command is similar to a PUT operation (with an automatic connect/disconnect) issued by a standard FTP client on a PC. The TCP/IP stack handles the global FTP put process by itself.

Note: Certain conditions must be met in order to use this command. First, the FTP server must support this command as some servers do and some servers don't. Also, the client performing the APPEND operation must read/write to the FTP server as well.

Syntax: **AT#FTPAPPEND**

#FTPNETWORKTIMER – FTP Client Network Transmit Safety Timeout Value

Description: This parameter determines the inactivity time in seconds of the TCP TX buffer.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#FTPNETWORKTIMER=<parameter1>**

Values: 0-65535 – the time in seconds the client will wait for the TCP available TX buffer to be greater than 0. A setting of 0 will disable the function.

Responses: \r\n#FTPNETWORKTIMER: VALUE1\r\n

\r\nOK\r\n

\r\nERROR\r\n

Example(s): **send:** AT#FTPNETWORKTIMER=100\r

reply: \r\nOK\r\n

send: AT#FTPNETWORKTIMER?\r

reply: \r\n#FTPNETWORKTIMER: 100\r\n

reply: \r\nOK\r\n

Display Command

#VFTP – Display FTP Parameters

Description: This command directs the TCP/IP stack to display all AT# parameters for the FTP client configuration.

Syntax: **AT#VFTP**

Values: FTPSERV
FTPPORT
FTPUN
FTPPW
FTPGETFILENAME
FTPPUTFILENAME
FTPPUTPATH
FTPTYPE
FPTMODE

Chapter 5 – TCP AT Commands

Use these AT commands with any Universal IP device.

Set Commands

The id parameter is used for setting up profiles; Profile 1 and Profile 2. To view parameters including profile settings, use AT#<cmd>=id or AT#VTCP=id or AT#VALL.

#PERSISTENTSOCKET - Persistent Socket

Description: If enabled and the physical connection is present, a socket will be created automatically.

Syntax: **AT#PERSISTENTSOCKET=<Persistentsocket value>,<Result Codes>**

AT#PERSISTENTSOCKET? Read or display the current setting (or AT#VALL).

Values: 0 – Persistent socket is disabled

1 – The TCP originate is started (#OTCP=1)

2 – The TCP listener is started (#LTCPSTART=1)

3 – The UDP originate is started (#OUDP=1)

4 – The UDP listener is started (#LUDPSTART=1)

5 – The TCP originate is started (#OTCP=2)

6 – The TCP originate is started (#LTCPSTART=2)

Result Codes: 0 – All result codes will be suppressed during socket connection/disconnection

1 – All result codes will be displayed during socket connection/disconnection

Defaults: **0,1**

Example: AT#PERSISTENTSOCKET=1,0

#DLEMODE – Set DLE Mode

Description: When using socket TCP, the attached host has the choice whether or not to code the ETX character.

Syntax: **AT#DLEMODE=id,<DEL Mode value>**

AT#DLEMODE=id Read or display the current setting (or AT#VTCP=id, AT#VALL). For id, enter a Profile Setting: 1 or 2 {1,2}

Values: Set the value that the Profile will use:

0 – No specific process is needed on [ETX] characters.

It means that it is not possible for a host to request an end of connection or to receive a clear indication of the end of a connection from the TCP/IP stack.

1 – The [ETX] character means a request or an indication of end of connection.

As a consequence, [ETX] characters that belong to the payload data must be sent by the host on the serial port preceded by a DLE character. Similarly, ETX characters received by the TCP/IP stack from the Internet are sent to the host through the serial port preceded by a DLE character.

Default: **1**

#TCPPORT – Set TCP Port for Remote Peer

Description: To exchange data over TCP, the TCP/IP stack software must know the port of the remote peer used for the TCP session.

Syntax: **AT#TCPPORT=id,<TCP Port number for remote peer value>**

AT#TCPPORT=id Read or display the current setting (or AT#VTCP=id, AT#VALL). For id, enter a Profile Setting: 1 or 2 {1,2}

Values: Set the value that the Profile will use:

From 1 to 5 digits (each digit between 0 and 9 inclusive). Note that numbers above 65,535 are illegal as the port identification fields are 16 bits long in the TCP header.

Default: **1**

#TCPSERV – Set Address of Remote TCP Server

Description: To exchange data over TCP, the TCP/IP stack software must know the address of the remote TCP server (or host) that is to be used.

Syntax: **AT#TCPSERV=id,"<Address of remote TCP server value>"**

AT#TCPSERV=id Read or display the current setting (or AT#VTCP=id, or AT#VALL). For id, enter a Profile Setting: 1 or 2 {1,2}

Values: Set the value that the Profile will use:

32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx) or

Alphanumeric ASCII text string up to 120 characters if DNS is integrated.

Default: No default.

#TCPTXDELAY – Time Delay

Description: This command determines the time delay introduced before sending a TCP frame that has not been entirely filled with user data. The time is entered in milliseconds, and it should be noted that a value of 0 initiates the sending of a TCP frame as soon as possible after the reception of a single character value from the host.

Syntax: **AT#TCPTXDELAY=id,<Time Delay value>**

AT#TCPTXDELAY=id Read or display the current setting (or AT#VTCP=id or AT#VALL). For id, enter a Profile Setting: 1 or 2 {1,2}

Values: Set the value that the Profile will use:

Integer multiple of 20 between 0 and 32760 inclusive.

Default: **0**

#TCPPACKETMIN – TCP Client Transmit Packet Minimum Size

Description: This parameter determines the minimum packet size the TCP Client will transmit.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#TCPPACKETMIN=<parameter1>, <parameter2>**

Values: **parameter 1**

1 TCP profile 1

2 TCP profile 2

parameter 2

0-65535 – the size of the packet in bytes; a setting of 65535 will allow the max packet size allowed by the UIP stack

Responses: \r\n#TCPPACKETMIN: VALUE1,VALUE2\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send**: AT#TCPPACKETMIN=1,100\r

reply: \r\nOK\r\n

send: AT#TCPPACKETMIN=1\r

reply: \r\n#TCPPACKETMIN: 1,100\r\n

reply: \r\nOK\r\n

send: AT#TCPPACKETMIN=2,300\r

reply: \r\nOK\r\n

send: AT#TCPPACKETMIN=2\r

reply: \r\n#TCPPACKETMIN: 2,300\r\n

reply: \r\nOK\r\n

#TCPPACKETMAX – TCP Client Transmit Packet Maximum Size

Description: This parameter determines the maximum packet size the TCP Client will transmit.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Note: This value cannot be larger than the internal maximum UIP TCP payload size.

Syntax: **AT#TCPPACKETMAX=<parameter1>, <parameter2>**

Values: **parameter 1**

1 TCP profile 1

2 TCP profile 2

parameter 2

0-65535 – the size of the packet in bytes; a setting of 65535 will allow the max packet size allowed by the UIP stack

Responses: \r\n#TCPPACKETMAX: VALUE1,VALUE2\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples:

send: AT#TCPPACKETMAX=1,100\r

reply: \r\nOK\r\n

send: AT#TCPPACKETMAX=1\r

reply: \r\n#TCPPACKETMAX: 1,100\r\n

reply: \r\nOK\r\n

send: AT#TCPPACKETMAX=2,300\r

reply: \r\nOK\r\n

send: AT#TCPPACKETMAX=2\r

reply: \r\n#TCPPACKETMAX: 2,300\r\n

reply: \r\nOK\r\n

#TCPINACTIVITYTIMER – TCP Client Inactivity Timeout Value

Description: This parameter determines the inactivity time in seconds as to when a socket connection will automatically disconnect.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Note: Data transmission from either the remote or local side will reset the internal timer to the #TCPINACTIVITYTIMER value

Syntax: **AT#TCPINACTIVITYTIMER=<parameter1>, <parameter2>**

Values: **parameter 1**

1 TCP profile 1

2 TCP profile 2

parameter 2

0-65535 – the time in seconds of inactivity before a socket will automatically disconnect. A setting of 0 will disable the function.

Responses: \r\n#TCPINACTIVITYTIMER: VALUE1,VALUE2\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples:

send: AT#TCPINACTIVITYTIMER=1,100\r

reply: \r\nOK\r\n

send: AT#TCPINACTIVITYTIMER=1\r

reply: \r\n#TCPINACTIVITYTIMER: 1,100\r\n

reply: \r\nOK\r\n

send: AT#TCPINACTIVITYTIMER=2,300\r

reply: \r\nOK\r\n

send: AT#TCPINACTIVITYTIMER=2\r

reply: \r\n#TCPINACTIVITYTIMER: 2,300\r\n

reply: \r\nOK\r\n

TCPNETWORKTIMER – TCP Client Network Transmit Safety Timeout Value

Description: This parameter determines the inactivity time in seconds of the TCP TX buffer.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#TCPNETWORKTIMER=<parameter1>, <parameter2>**

Values: **parameter 1**

1 TCP profile 1

2 TCP profile 2

parameter 2

0-65535 – the time in seconds the client will wait for the TCP available TX buffer to be greater than 0. A setting of 0 will disable the function.

Responses: \r\n#TCPNETWORKTIMER: VALUE1,VALUE2\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#TCPNETWORKTIMER=1,100\r

reply: \r\nOK\r\n

send: AT#TCPNETWORKTIMER=1\r

reply: \r\n#TCPNETWORKTIMER: 1,100\r\n

reply: \r\nOK\r\n

send: AT#TCPNETWORKTIMER=2,300\r

reply: \r\nOK\r\n

send: AT#TCPNETWORKTIMER=2\r

reply: \r\n#TCPNETWORKTIMER: 2,300\r\n

reply: \r\nOK\r\n

#TCPTELNETMODE – Enable/Disable TCP Client Telnet Protocol

Description: Enables or disables the TCP Client Telnet protocol. Allows the TCP Client Telnet to handle a minimal Telnet protocol.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Note: TCP Client raw mode requires the username and password each to be followed by a line feed character not just any key.

Syntax: **AT#TCPTELNETMODE=<parameter1>, <parameter2>**

Values: **parameter 1**

1 TCP profile 1

2 TCP profile 2

parameter 2

0 Allow Telnet to connect, but ignore Telnet commands.

1 Enable TCP Client Telnet protocol function with username and password login

2 Enable TCP Client Telnet protocol function without username and password login

3 Enable TCP Client raw mode function with username and password login

Responses: \r\n#TCPTELNETMODE: VALUE1,VALUE2\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#TCPTELNETMODE=1,1\r

reply: \r\nOK\r\n

send: AT#TCPTELNETMODE=1\r

reply: \r\n#TCPTELNETMODE: 1,1\r\n

reply: \r\nOK\r\n

#TCPTELNETPW – Configure the TCP Client Telnet Protocol Login Password

Description: Configures the login password for the TCP Client Telnet protocol.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#TCPTELNETPW=<parameter1>, <parameter2>**

Values: **parameter 1**

1 TCP profile 1

2 TCP profile 2

parameter 2

64 character alphanumeric string

Responses: \r\n#TCPTELNETPW: VALUE1,VALUE2\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#TCPTELNETPW=1,"PASSWORD"\r

reply: \r\nOK\r\n

send: AT#TCPTELNETPW=1\r

reply: \r\n#TCPTELNETPW: 1,"PASSWORD"\r\n

reply: \r\nOK\r\n

#TCPTELNETUN – Set the TCP Client Telnet Protocol User Name

Description: Configure the TCP Client Telnet protocol login user name.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Syntax: **AT#TCPTELNETUN=<parameter1>, <parameter2>**

Values: **parameter 1**

1 TCP profile 1

2 TCP profile 2

parameter 2

64 character alphanumeric string

Responses: \r\n#TCPTELNETUN: VALUE1,VALUE2\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#TCPTELNETUN=1,"USER"\r

reply: \r\nOK\r\n

send: AT#TCPTELNETUN=1

reply: \r\n#TCPTELNETUN: 1,"USER"\r\n

reply: \r\nOK\r\n

#LTCPSTART – Open Listening Mode

Description: This command, sent by the attached host, directs the TCP/IP stack to open a listening TCP connection on the specified TCP port.

Once an IP link is established, the attached host can open a listening TCP socket at any time (except when the TCP/IP stack software is already in a process using TCP resources).

The TCP connection will be active upon reception of a TCP connection request sent by a remote allowed TCP peer (TCPSERV) on the appropriate TCP port (TCPPORT).

Once opened, this TCP connection may be closed by the remote TCP peer or by the attached host by sending an ETX character on the serial port (depending on the DLEMODE parameter).

Notes: The LTCP command can be aborted before an incoming TCP request has been received by issuing an <ETX> character on the serial port.

If the DLEMODE parameter is set to 1, the TCP/IP stack will interpret an <ETX> character only as a close request if a <DLE> character does not precede it. As a consequence, the attached host must send <ETX> characters preceded by <DLE> characters, and it must also code <DLE> characters in <DLE><DLE>. Similarly, each <ETX> character present in the payload data of the TCP frame will be coded by the TCP/IP stack on the serial port as <DLE><ETX>. Each <DLE> character will be coded as <DLE><DLE>. The attached host must then decode the TCP socket flow to remove these escape characters.

If the DLEMODE parameter is set to 0, the TCP/IP stack will never close the TCP connection (unless an error occurs).

Syntax: **AT#LTCPSTART=id** For id, enter a Profile Setting: 1 or 2 {1,2}

Values: DLEMODE
TCPPORT
TCPSERV
TCPTXDELAY

#LTCPSTOP – Close TCP Listening Mode

Description: This command directs the TCP/IP stack to close a TCP listening mode (previously launched by the AT#LTCPSTART command.

Syntax: **AT#LTCPSTOP=id** For id, enter a Profile Setting: 1 or 2 {1,2}

Values: DLEMODE
TCPPORT
TCPSERV
TCPTXDELAY

#OUTPORT – UDP/TCP Local Port Number

Description: Controls the local port that the UDP/TCP connection is bound to.

Syntax: **AT#OUTPORT=<Port Number value>**

AT#OUTPORT? Read or display the current setting (or AT#VALL).

Values: Set the port number local connection will use:

From 1 to 5 numeric digits (0 to 9).

Note: Numbers above 65,535 are illegal since port identification fields are 16-bits long in the IDP header.

Default: **37500**

#OTCP – Open a TCP Connection

Description: This command sent by the attached host directs the TCP/IP stack to open a TCP connection to the specified TCP server. Once an IP link is established, the attached host can open a TCP connection at any time (except when the TCP/IP stack software is already in a process using TCP resources).

This TCP connection may be closed by the remote TCP server or by the attached host via sending an ETX character on the serial port (**depending on the DLEMODE parameter**).

DLEMODE Value Notes:

Depending on the DLEMODE value, the attached host may close this TCP connection by sending an ETX character.

If the DLEMODE parameter is set to 1, the TCP/IP stack will only interpret an <ETX> character as a close request if it's not preceded by a <DLE> character. As a consequence, the attached host must send <ETX> characters preceded by <DLE> characters, and it must also code <DLE> characters in <DLE><DLE>. Similarly, each <ETX> character present in the payload data of the TCP frame will be coded by the TCP/IP stack on the serial port as <DLE><ETX>. Each <DLE> character will be coded as <DLE><DLE>. The attached host must then decode the TCP socket flow to remove these escape characters.

If DLEMODE is set to 0, the host cannot close the TCP connection (unless an error occurs).

If the remote TCP server closes the connection, the TCP/IP stack sends an ETX character on the serial port.

Syntax: **AT#OTCP=id** For id, enter a Profile Setting: 1 or 2 {1,2}

Values: DLEMODE
TCPPORT
TCPSERV
TCPTXDELAY

Display Command

#VTCP – Display TCP Parameters

Description: This command directs the TCP/IP stack to display all the AT# parameters related to the TCP socket configuration.

Syntax: **AT#VTCP=id or AT#VTCP**

Note: If you use **AT#VTCP=id**, the parameters for profile 1 ***or*** profile 2 will display. If you use **AT#VTCP**, the parameters for both Profile 1 and Profile 2 will display.

Example:

Command	Possible Responses
AT#VTCP (View TCP parameters of the TCP socket 2)	#DLEMODE: 1 , 1 #TCPSERV: 1 , ”... ” #TCPPORT: 1 , 0 #TCPTXDELAY: 1 , 100 #DLEMODE: 2 , 1 #TCPSERV: 2 , ”...” #TCPPORT: 2 , 0 TCPTXDELAY: 2 , 100 OK

Chapter 6 – UDP AT Commands

Set Commands

#PERSISTENTSOCKET - Persistent Socket

Description: If enabled and the physical connection is present, a socket will be created automatically.
This command is for all devices except the SocketEthernet IP (MT100SEM-IP).

Syntax: **AT#PERSISTENTSOCKET=<Persistentsocket value>,<Result Codes>**
AT#PERSISTENTSOCKET? Read or display the current setting (or AT#VALL).

Values: 0 – Persistent socket is disabled
1 – The TCP originate is started (#OTCP=1)
2 – The TCP listener is started (#LTCPSTART=1)
3 – The UDP originate is started (#OUDP=1)
4 – The UDP listener is started (#LUDPSTART=1)

Result Codes: 0 – All result codes will be suppressed during socket connection/disconnection
1 – All result codes will be displayed during socket connection/disconnection

Defaults: **0,1**

Example: AT#PERSISTENTSOCKET=1,0

#UDPPACKETMIN – UDP Client Transmit Packet Minimum Size

Description: This parameter determines the minimum packet size the UDP Client will transmit.
This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP).
Note: This value cannot be larger than the internal maximum UIP UDP payload size.

Syntax: **AT#UDPPACKETMIN=<parameter1>**
AT#UDPPACKETMIN? Read or display the current setting.

Values: 0-65535 – the size of the packet in bytes; a setting of 65535 will allow the min packet size allowed by the UIP stack

Responses: \r\n#UDPPACKETMIN: VALUE\r\n
\r\nOK\r\n
\r\nERROR\r\n

Examples: **send:** AT#UDPPACKETMIN=300\r
reply: \r\nOK\r\n

send: AT#UDPPACKETMIN?\r
reply: \r\n#UDPPACKETMIN: 300\r\n
reply: \r\nOK\r\n

#UDPPACKETMAX – UDP Client Transmit Packet Maximum Size

Description: This parameter determines the maximum packet size the UDP Client will transmit.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP).

Note: This value cannot be larger than the internal maximum UIP UDP payload size.

Syntax: **AT#UDPPACKETMAX=<parameter1>**

AT#UDPPACKETMAX? Read or display the current setting.

Values: 0-65535 – the size of the packet in bytes; a setting of 65535 will allow the max packet size allowed by the UIP stack

Responses: \r\n#UDPPACKETMAX: VALUE\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#UDPPACKETMAX=300\r

reply: \r\nOK\r\n

send: AT#UDPPACKETMAX?\r

reply: \r\n#UDPPACKETMAX: 300\r\n

reply: \r\nOK\r\n

#UDPINACTIVITYTIMER – UDP Client Inactivity Timeout Value

Description: This parameter determines the inactivity time in seconds as to when a socket connection will automatically disconnect.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP).

Note: Data transmission from either the remote or local side will reset the internal timer to the #UDPINACTIVITYTIMER value.

Syntax: **AT#UDPINACTIVITYTIMER=<parameter1>**

Values: 0-65535 – the time in seconds of inactivity before a socket will automatically disconnect. A setting of 0 will disable the function.

Responses: \r\n#UDPINACTIVITYTIMER: VALUE1\r\n

\r\nOK\r\n

\r\nERROR\r\n

Example(s): **send:** AT#UDPINACTIVITYTIMER=100\r

reply: \r\nOK\r\n

send: AT#UDPINACTIVITYTIMER?\r

reply: \r\n#UDPINACTIVITYTIMER: 100\r\n

reply: \r\nOK\r\n

#UDPIGNORESRCPORT – Ignore Send Source Port

Description: Allows the UDP client to ignore the remote IP's source port.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP).

Syntax: **AT#UDPIGNORESRCPORT=<parameter1>**

AT#UDPIGNORESRCPORT? Read or display the current setting.

Values: 0 – Remote source port is respected; all packets not matching the first received source port are rejected

1 – Remote source port is ignored; all packets matching the remote IP address are accepted

Responses: \r\n#UDPIGNORESRCPORT: VALUE\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#UDPIGNORESRCPORT=0\r

reply: \r\nOK\r\n

send: AT#UDPIGNORESRCPORT?\r

reply: \r\n#UDPIGNORESRCPORT: 0\r\n

reply: \r\nOK\r\n

#UDPREMOTEPORT – Remote Port Number

Description: Configure the UDP remote port.

Note: When the UDP session is initiated in listen mode (#LUDPSTART), this value will override the return port derived from the first incoming packet.

Syntax: AT#UDPREMOTEPORT=<parameter1>

AT#UDPREMOTEPORT? Read or display the current setting.

Values: 0 (disabled) - 65535

Default: **0**

Responses: \r\n#UDPREMOTEPORT: VALUE\r\n

\r\nOK\r\n

\r\nERROR\r\n

Examples: **send:** AT#UDPREMOTEPORT=300\r

reply: \r\nOK\r\n

send: AT#UDPREMOTEPORT?\r

reply: \r\n#UDPREMOTEPORT: 300\r\n

reply: \r\nOK\r\n

#UDPPORT – UDP Port Number

Description: If the UDP session is initiated in listen mode, use the local UDP port number.

If the UDP session is initiated in active mode, use the remote UDP port number.

Syntax: **AT#UDPPORT=<Port Number Value>**

AT#UDPPORT? Read or display the current setting.

Values: From 1 to 5 numeric digits (0 to 9). Note that numbers above 65,535 are illegal as the port identification fields are 16-bits long in the IP header. Port number 0 is illegal.

Default: **1**

#UDPSERV – UDP Server Address

Description: If the UDP session is initiated in listen mode, use the IP address filter. This means that the remote must have a defined UDPSERV IP address. If the UDP session is initiated in active mode, use the remote IP address.

Syntax: **AT#UDPSERV=<Value>**

AT#UDPSERV? Read or display the current setting.

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx) or Alphanumeric ASCII text string up to 120 characters if DNS is integrated. No default.

#UDPTXDELAY – Delay before Sending UDP Datagram

Description: This parameter determines the delay before sending an UDP datagram that has not been entirely filled with user data. The delay is expressed in milliseconds. The 0 value initiates the sending an UDP datagram as soon as possible after the reception of a single character value from the host.

Syntax: **AT#UDPTXDELAY=<Value>**

AT#UDPTXDELAY? Read or display the current setting.

Values: Integer, multiple of 20 and between 0 and 32760 inclusive.

Default: 100

#UDPDLEMODE – Set DLE Mode

Description: The attached host has the choice whether or not to code the ETX character.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP).

Note: If UDPDLEMODE is disabled, the user MUST use the RS232 DTR signal to perform a socket disconnect or disconnect the network connection

Details: If UDPDLEMODE is enabled, these rules must be followed: The user must shield all transmitted ETX ([x03]) and DLE (x10) characters by preceding these characters with a DLE (x10). The UIP stack will shield all UDP received ETX ([x03]) and DLE (x10) characters by preceding these characters with a DLE (x10), the user must un-shield by removing the DLE (x10) shield character.

An example payload to transmit from user to UIP stack:

(x01 x02 x03 x04 x01 x10) must be sent to the UIP stack as: (x01 x02 x10 x03 x04 x01 x10 x10). Notice the x10 before the [x03] and before the x10.

An example received payload by the UIP over UDP:

(x01 x02 x03 x04 x01 x10) is received by the UIP stack, the user will receive: (x01 x02 x10 x03 x04 x01 x10 x10). Notice the x10 before the [x03] and before the x10.

In summary: Encoding - 0x03 == 0x10 0x03

Encoding - 0x10 == 0x10 0x10

Decoding - 0x10 0x03 == 0x03

Decoding - 0x10 0x10 == 0x10

The REMOTE user does NOT have to perform any function pertaining to this mechanism.

If the user receives an un-shielded 0x03, the socket is finished.

Syntax: **AT#UDPDLEMODE=<parameter1>**

AT#UDPDLEMODE? **Read** or display the current setting.

Values: 0 – No extra processing is needed on DLE (x10) and ETX ([x03]) characters

1 – The ETX character is used as a socket disconnect or indicates a socket disconnect

Responses: \r\n#UDPDLEMODE: VALUE\r\n
\r\nOK\r\n
\r\nERROR\r\n

Example(s): **send:** AT#UDPDLEMODE=0\r
reply: \r\nOK\r\n

send: AT#UDPDLEMODE?\r
reply: \r\n#UDPDLEMODE: 0\r\n
reply: \r\nOK\r\n

#LUDPSTART – Initiate the UDP Session in Listen Mode

Description: Once an IP link is established, and if no other TCP/IP stack resource is active, this command sent by the attached host directs the TCP/IP stack to initiate the UDP session in listen mode on the specified UDP local port UDPPORT.

Syntax: **AT#LUDPSTART**

Values: UDPPORT
UDPSESRV
UDPTXDELAY

Default: No default

#LUDPSTOP – Close UDP Listening Mode

Description: This command directs the TCP/IP stack to close a UDP listening mode session previously launched by the AT#UDPSTART command.

Syntax: **AT#LUDPSTOP**

Values: UDPPORT (No default)

#OUTPORT – UDP/TCP Local Port Number

Description: Controls the local port that the UDP/TCP connection is bound to.

Syntax: **SAT#OUTPORT=<Port Number value>**

AT#OUTPORT? Read or display the current setting.(or AT#VALL).

Values: Set the port number local connection will use:

From 1 to 5 numeric digits (0 to 9). Note that numbers above 65,535 are illegal since port identification fields are 16-bits long in the IDP header.

Default: **37500**

#OUDP – Initiate UDP Session in Active Mode

Description: Once an IP link is established, and if no other TCP/IP stack resource is active, this command sent by the attached host directs the TCP/IP stack to initiate an UDP session in active mode on the specified UDP remote port UDPPORT to the specified remote IP address UDPSERV.

The host can then transmit to the UDPPORT or UDPSERV address. Datagrams can only be received from this UDPPORT or UDPSERV address.

Syntax: **AT#UDPOPEN**

Values: UDPPORT
UDPSERV
UDPTXDELAY

Default: No default

Display Command

#VUDP – Display UDP Module Configuration

Description: Directs the TCP/IP stack to display all the AT# parameters related to the UDP socket configuration.

Syntax: **AT#VUDP**

Values: UDPPORT
UDPSERV
UDPTXDELAY

Default: No default.

Chapter 7 – PING AT Commands

Use these AT commands with any Universal IP device.

Set Commands

Due to varying factors, PING response times may not be valid.

#PINGNUM – Number of PING Requests

Description: This command sets the number of PING echo requests to issue to PINGREMOTE.

Syntax: **AT#PINGNUM=<Value>**

AT#PINGNUM? Read or display the current setting.(or AT#VPING, AT#VALL).

Values: From 0 to 255 inclusive. (If 0, ping indefinite until ETX (0x03) is issued)

Default: **4**

#PINGREMOTE – IP Address of PING Request

Description: Sets the IP address up of the remote device to ping.

Syntax: **AT#PINGREMOTE="<IP Address Value>"**

AT#PINGREMOTE? Read or display the current setting.(or AT#VPING, AT#VALL).

Values: 32-bit number is dotted-decimal notation (i.e., xxx.xxx.xxx.xxx).

Default: No default

#PING – Start PING Request

Description: Directs the module to start PING requests to the configured PING remote address. No of requests to be sent is obtained from the PINGNUM parameter.

Syntax: **AT#PING**

AT#PING? Read or display the current setting.

Values: Read parameters: (read from serial flash predefined before starting the ping command.)
PINGNUM
PINGREMOTE

#PINGDELAY – PING Delay Time

Description: This command sets the waiting delay, in seconds, before an echo request is considered as a **no reply**. It is also the delay between two echo requests (if PINGNUM > 1).

Syntax: **AT#PINGDELAY=<Value>**

AT#PINGDELAY? Read or display the current setting.

Values: From 1 to 255 inclusive.

Default: **1**

Display Command

#VPING – Display PING Parameters

Description: Display PING module related information.

Syntax: **AT#VPING**

AT#PING? Read or display the current setting.

Values: PINGNUM

PINGREMOTE

PINGENABLE

PINGDELAY

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Chapter 8 – General AT Commands

Use these AT commands with SocketEthernet IP devices.

Set Commands

#DHCP – DHCP On or Off

Description: Enables or disables the DHCP client. If the DHCP client is enabled, the module will take the IP address from DHCP server. If DHCP client is disabled, the module will take the static IP address configured for the module.

Note: The module must be reset to put the command into effect.

Syntax: **AT#DHCP=<0,1>**

AT#DHCP? Read or display the current setting.

Values: AT#DHCP=0 Turn off DHCP (sets IP Address, Netmask, and Gateway back to defaults)

AT#DHCP=1 Turn on DHCP (automatically assigns IP Address, Netmask, and Gateway)

Default: **0**

Responses: AT#DHCP=0 returns OK

AT#DHCP? returns 0 and OK

#IPADDR – Set Static IP Address

Description: Sets the static IP Address.

Note: The module must be reset to put the command into effect.

Syntax: **AT#IPADDR="<IP Address value>"**

AT#IPADDR? Read or display the current setting.

Values: IP Address in dotted decimal notation (xxx.xxx.xxx.xxx) "x" stands for a number between 0-255. 255 is the maximum value in an xxx group.

Default: **192.168.2.3**

Responses: AT#IPADDR =192.168.1.10 returns and OK

AT#IPADDR? returns 192.168.1.10 (Manually Configured) and OK

#IPGATEWAY – Set Gateway Address

Description: Sets the default gateway address. The view of get command shows whether the address is statically configured or obtained from the DHCP server.

Note: The module must be reset to put the command into effect.

Syntax: **AT#IPGATEWAY="<gateway address value>"**

AT#IPGATEWAY? Read or display the current setting.

Values: IP Address in dotted decimal notation (xxx.xxx.xxx.xxxx). "x" = a number between 0-255.

Default: **192.168.2.1**

Responses: AT#IPGATEWAY =192.168.1.11 returns and OK

AT#IPGATEWAY? returns 192.168.1.11 (Manually Configured) and OK

#IPNETMASK – Set Subnet Mask

Description: Sets the subnet mask.

Note: The module must be reset to put the command into effect.

Syntax: **AT#IPNETMASK="<Subnet Mask value>"**

AT#IPNETMASK? Read or display the current setting.

Values: IP Address in dotted decimal notation (xxx.xxx.xxx.xxxx). "x" = a number between 0-255.

Default: **255.255.255.0**

Responses: AT#IPNETMASK = 255.255.255.0 returns and OK

AT#NETMASK? returns 255.255.255.0 (Manually Configured) and OK

#DNSSERV1 – Set DNS Server IP Address

Description: In order to translate the server names from literal format into IP addresses, the TCP/IP stack software implements the Domain Name System (DNS) protocol. The DNS Server IP address must be specified for use by the TCP/IP stack software.

Syntax: **AT#DNSSERV1="<value>"**

AT#DNSSERV1? Read or display the current setting.

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx).

Default: **202.56.215.6**

Responses: AT# DNSSERV1=192.168.0.1 returns and OK

AT# DNSSERV1? returns 192.168.0.1 and OK

#DNSSERV2 – Set Secondary DNS Server

Description: In order to translate the server names from literal format into IP addresses, the TCP/IP stack software implements the Domain Name System (DNS) protocol. The DNS Server IP address has to be specified for use by the TCP/IP stack software. This secondary DNS server is used in the case where the primary DNS server does not respond to a request.

Note: The Universal IP resolver (DNS Client) has a list that holds up to 4 DNS servers, the first 2 in the list are populated by the #DNSSERV1 and #DNSSERV2 commands, the 3rd and 4th are populated by DNS information provided by the ISP or cellular carrier. The list is checked in order (1-4). This means that user configured name servers will be checked before dynamically assigned name servers.

Syntax: **AT#DNSSERV2="<value>"**

AT#DNSSERV2? Read or display the current setting.

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx).

Default: **202.56.230.6**

#EMACSPD – Set Ethernet Connection

Description: Sets the Ethernet connection at 10 or 100 full or half duplex.

Syntax: **AT#EMACSPD=x** where x stands for 0,1,2,3,4

Values: 0 – Auto Sensing

1 – 10Mbis half duplex

2 – 10Mbis full duplex

3 – 100Mbis half duplex

4 – 100Mbis full duplex

AT#EMACSPD? View the current setting. Can view with AT#VALL or AT#VIP also.

Default: **AT#EMACSPD=0**

#HOSTNAME – Configure the DHCP Client Host Name

Description: Configures the device host name reported to the DHCP server.
This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP).

Syntax: **AT#HOSTNAME="<parameter1>"**
AT#HOSTNAME? Read or display the current setting.

Values: Host name (up to 64 alpha-numeric characters)

Responses: \r\n#HOSTNAME: "VALUE"
\r\nOK\r\n
\r\nERROR\r\n

Example(s): **send:** AT#HOSTNAME="Device9876"\r
reply: \r\nOK\r\n

send: AT#HOSTNAME?\r
reply: \r\n#HOSTNAME: "Device9876"\r\n
reply: \r\nOK\r\n

Display Commands

#ETHIFSTATUS – View Network Interface Settings

Description: Display the address settings.

Syntax: **AT#ETHIFSTATUS**

Values: None

Example: INTERFACE: UP
LINK: UP
IPADDR: 192.168.2.3
IPGATEWAY: 192.168.2.1
IPNETMASK: 255.255.255.0
MACADDR: 00:00:00:00:00:00
DNSSERV1: 0.0.0.0.
DNSSERV2: 0.0.0.0.
DNSSERV3: 0.0.0.0.
DNSSERV4: 0.0.0.0.

#VDNS – Display Configuration of DNS Servers

Description: This command the TCP/IP stack to display all AT# parameters related to the configuration of the DNS servers. Note: This is displayed only when DHCP is OFF.

Syntax: **AT#VDNS**

Values: None

#VIP – View Address Settings

Description: Displays the address settings.

Notes: This command displays the programmed IP settings. To see IP settings in use, including DHCP parameters, use the #ETHIFSTATUS command.

Also, this command shows valid results only when DHCP is OFF. Otherwise, it displays the default or stored values.

Syntax: **AT#VIP**

Values: None

Example: The order and content is as follows:

DHCP (Enable/Disable)

IP address

Subnet Mask

Default Gateway

Speed setting (see #EMACSPD command)

MAC address

Chapter 9 – Auto Discovery AT Commands

Note: Auto Discovery broadcasts information; however, at this time, the information cannot be updated using the Auto Discovery Manager.

Set Commands

#AUTODISC – Auto Discovery On/Off

Description: This command turns Auto Discovery On or Off.

Syntax: **AT#AUTODISC=<value>**

AT#AUTODISC? Read or display the current setting (or AT#VAUTODISC, AT#VALL).

Values: 0 – OFF

1 – ON

Default: **1**

#AUTODISCTIMER – Auto Discovery Timer

Description: This command sets the Auto Discovery timer.

Syntax: **AT#AUTODISCTIMER=<value>**

AT#AUTODISCTIMER? Read or display the current setting (or AT#VAUTODISC, AT#VALL).

Values: 0 to 60 seconds

Default: **10**

#AUTODISCPORT – Auto Discovery Port

Description: This command sets the Auto Discovery port.

Syntax: **AT#AUTODISCPORT=<value>**

AT#AUTODISCPORT? Read or display the current setting (or AT#VAUTODISC, AT#VALL).

Values: 0 to 65535

Default: **1020**

#AUTODISCHOST – Set Auto Discover Host Name

Description: This command sets the Host Name that will appear in the Auto Discovery Manager.

Syntax: **AT#AUTODISCHOST ="<value>"**

AT#AUTODISCHOST? Read or display the current setting (or AT#VAUTODISC or AT#VALL).

Values: Alphanumeric ASCII text string up to 120 characters.

Default: **MT100SEM**

#AUTODISCUSERNAME – Set Auto Discover User Name

Description: This command sets the User Name that will appear in the Auto Discovery Manager.

Syntax: **AT#AUTODISCUSERNAME =<setting>**

AT#AUTODISCUSERNAME? Read or display the current setting (or AT#VAUTODISC or AT#VALL).

Values: Text string up to 120 characters

Default: No default.

#AUTODISCPASSWORD – Sets Auto Discover Password

Description: This command sets the Password that will appear in the Auto Discovery Manager.

Syntax: **AT#AUTODISCPASSWORD =<setting>**

AT#AUTODISCPASSWORD? Read or display the current setting (or AT#VAUTODISC or AT#VALL).

Values: Text string up to 120 characters

Default: No default

Display Command

#VAUTODISC – Display Auto Discovery Commands

Description: This command displays all the AT# parameters related to the Auto Discovery configuration.

Syntax: **AT#VAUTODISC**

Example:
#AUTODISC: 1
#AUTODISCPORT: 1020
#AUTODISCTIMER: 10
#AUTODISCHOST: MT100SEM
#AUTODISCUSERNAME: "admin"
#AUTODISCPASSWORD: ""

Part 3 – AT Commands for SocketWireless Wi-Fi Devices

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Chapter 10 – IP AT Commands

These commands are for SocketWireless Wi-Fi Devices.

Set Commands

#DHCP – DHCP On or Off

Description: Enables or disables the DHCP client. If the DHCP client is enabled, the module will take the IP address from DHCP server. If DHCP client is disabled, the module will take the static IP address configured for the module.

Note: The module must be reset to put the command into effect.

Syntax: **AT#DHCP=<0,1>**

AT#DHCP? Read or display the current setting.

Values: 0 - Turn off DHCP (sets IP Address, Netmask, and Gateway back to defaults)

1 - Turn on DHCP (automatically assigns IP Address, Netmask, and Gateway)

Default: **0**

#IPADDR – Set Static IP Address

Description: Sets the static IP Address.

Note: The module must be reset to put the command into effect.

Syntax: **AT#IPADDR="<IP Address value>"**

AT#IPADDR? Read or display the current setting.

Values: IP Address in dotted decimal notation **(xxx.xxx.xxx.xxx)** "x" stands for a number between 0-255. 255 is the maximum value in an xxx group.

Default: **192.168.2.3**

#IPGATEWAY – Set Gateway Address

Description: Sets the default gateway address. The view of get command shows whether the address is statically configured or obtained from the DHCP server.

Note: The module must be reset to put the command into effect.

Syntax: AT#IPGATEWAY="<gateway address value>"

AT#IPGATEWAY? Read or display the current setting.

Values: IP Address in dotted decimal notation (xxx.xxx.xxx.xxxx). "x" = a number between 0-255.

Default: 192.168.2.1

#IPNETMASK – Set Subnet Mask

Description: Sets the subnet mask.

Note: The module must be reset to put the command into effect.

Syntax: **AT#IPNETMASK="<Subnet Mask value>"**

AT#IPNETMASK? Read or display the current setting.

Values: IP Address in dotted decimal notation (xxx.xxx.xxx.xxxx). "x" = a number between 0-255.

Default: **255.255.255.0**

#IPDNSSERV – Configure the DNS Server

Description: Enables the DNS server. By default, DNS is enabled. Use this command before using DNS services.

Syntax: **AT#IPDNSSERV**

Values: 0 - Disables DNS

1 - Enable DNS

Default: **1**

#DNSSERV1 – Set DNS Server IP Address

Description: In order to translate the server names from literal format into IP addresses, the TCP/IP stack software implements the Domain Name System (DNS) protocol. The DNS Server IP address must be specified for use by the TCP/IP stack software.

Note: The module must be reset to put the command into effect.

Syntax: **AT#DNSSERV1="<value>"**

AT#DNSSERV1? Read or display the current setting.

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx).

Default: **202.56.215.6**

#DNSSERV2 – Set Secondary DNS Server

Description: In order to translate the server names from literal format into IP addresses, the TCP/IP stack software implements the Domain Name System (DNS) protocol. The DNS Server IP address has to be specified for use by the TCP/IP stack software. This secondary DNS server is used in the case where the primary DNS server does not respond to a request.

Note: The Universal IP resolver (DNS Client) has a list that holds up to 4 DNS servers, the first 2 in the list are populated by the #DNSSERV1 and #DNSSERV2 commands, the 3rd and 4th are populated by DNS information provided by the ISP or cellular carrier. The list is checked in order (1-4). This means that user configured name servers will be checked before dynamically assigned name servers.

Syntax: **AT#DNSSERV2="<value>"**

AT#DNSSERV2? Read or display the current setting.

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx).

Default: **202.56.230.6**

#IPRELEASE – Release a DHCP Address Assigned by the Server

Description: In order to gracefully release a DHCP address assigned by the server, the module should issue a command of DHCPRELEASE.

Syntax: **AT#IPRELEASE**

Response: AT#IPRELEASE returns OK

#IPRENEW – Renew the DHCP Information from the Server

Description: The DHCP client can renew the DHCP information from the server. On completion of lease time, the DHCP client will automatically renew the DHCP information. Before that, if the client wants to renew the information, it can use this command.

Syntax: **AT#IPRENEW**

Response: AT#IPRENEW returns OK

#IPQUERY – Give a Domain Name

Description: Sends a query to the DNS server to resolve the name

Syntax: **AT#IPQUERY=<Host Name>**

Values: Host name in alpha-numeric string format. Example: www.google.com.

Default: No default.

Response: OK

#IPRESOLV – Is There a Connection with DNS or Not

Description: If the DNS client is successful in resolving the host name, this command shows the IP address of the resolved host name. If the DNS client fails to resolve, it shows error message.

Syntax: **AT#IPRESOLV=<Host Name>**

Values: Host name in alpha-numeric string format.

Default: No default.

S0= – Automatic Answer

Description: Sets automatic answering of TCP or UDP connections.

Syntax: **ATS0=**

Values: 0 - Manually answer

1 - Automatically answer

Default: No default.

Display Commands

#IPDNSTABLE – Display DNS Table

Description: This command displays the DNS table containing the list of queried Host names, corresponding to their resolved IPs.

Syntax: **AT#IPDNSTABLE**

Values: None

Response: AT#IPDNSTABLE returns Name: WWW.GOOGLE.COM, IP Address: 59.100.107.97

OK

#VDNS – Display Configuration of DNS Servers

Description: This command the TCP/IP stack to display all AT# parameters related to the configuration of the DNS servers.

Syntax: **AT#VDNS**

Values: None

Response: #DNSSERV1: "0.0.0.0"

#DNSSERV2: "0.0.0.0"

OK

#VIP – View Address Settings

Description: Displays the address settings.

Syntax: **AT#VIP**

Values: None

Response: #DHCP: 0
#IPADDR: "192.168.1.100"
#IPNETMASK: "255.255.255.0"
#IPGATEWAY: "192.168.1.1"
#MACADDR: "00:08:00:12:34:dd" (Mac address is displayed)
#DNSSERV1: "0.0.0.0"
#DNSSERV2: "0.0.0.0"
OK

Example: The order and content is as follows:
DHCP (Enable/Disable)
IP address
Subnet Mask
Default Gateway
MAC address
Primary DNS
Secondary DNS

Chapter 11 – General AT Commands

These commands are for SocketWireless Wi-Fi Devices.

Set Commands

A – Manual Answer of TCP or UDP Connection

Description: Manual answer of a TCP or UDP connection.

Syntax: ATA

Values: N/A

Example: AT#WLANENABLE=1

Give command ATS0=0

Connect a TCP connection using command AT#TCPSTART=1/2

OK

RING… <ATA is issued)

Ok_Info_WaitingForData

S2 – Escape Sequence

Description: Use this command to change the character for the escape sequence.

Syntax: **ATS2=<+>**

Values: 'c' value, which is used as the escape sequence

Default: **+**

Example: ATS2?

+

OK

ATS2=+

OK

ATS2?

+

OK

A/ – Previous Command

Description: This command executes the previous command.

Syntax: **A/**

Values: No values.

#BOOTMSG – Enable/Disable Boot Message

Description: Enables/disables the boot message.

Syntax: **AT#BOOTMSG=<0,1>**

AT#BOOTMSG? Read or display the current setting.

Values: 0 - Disable

1 - Enable

Default: **1**

Examples:
```
AT#BOOTMSG?
0
OK
AT#BOOTMSG=1
OK
AT#BOOTMSG?
1
OK
AT#BOOTMSG=0
OK
```

#WATCHDOG – Enable/Disable Watchdog

Description: Enable/disable Watchdog for the system – reset on HANG.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WATCHDOG=<0,1>**

AT#WATCHDOG?

Values: 0 - Disable Watchdog

1 - Enable Watchdog

Default: **1**

Example:
```
AT#WATCHDOG?
1
OK
```

#WATCHDOGTIMER – Watchdog Timer

Description: Sets the Watchdog timer in milliseconds.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WATCHDOGTIMER=<value>**

AT#WATCHDOGTIMER? Read or display the current setting.

Values: Maximum milliseconds that can be entered is 7000

Default: **1000ms**

Example:
```
AT#WATCHDOGTIMER?
4000
OK
```

Chapter 12 – Telnet AT Commands

These commands are for the SocketEthernet IP (MT100SEM-IP) and the SocketWireless Wi-Fi (MT810SWM-IP).

Set Commands

#TELNET – Start/Stop Telnet Session

Description: Starts and stops a Telnet session.

Note: The module must be reset to put the command into effect.

Syntax: **AT#TELNET=<0,1>**

AT#TELNET? Read or display the current setting.

Values: 0 - Stop Telnet session.

1 - Start Telnet session; wait for remote to Telnet in.

Default: **0**

Example: AT#TELNET?

0

OK

#TELNETPORT– Set Telnet Port

Description: Sets Telnet port.

Note: The module must be reset to put the command into effect.

Syntax: AT#TELNETPORT = <port number>

AT#TELNETPORT? Read or display the current setting (or AT#VTELNET or AT#VALL)

Values: 1 to 65535

Default: 23

Example: AT#TELNETPORT?

23

OK

#TELNETUSER – Set Telnet User

Description: Sets Telnet user.

Note: The module must be reset to put the command into effect.

Syntax: **AT#TELNETUSER= "<64 char string>"**

AT# TELNETUSER? Read or display the current setting (or AT#VTELNET or AT#VALL).

Default: admin

Example: AT#TELNETUSER?

admin

OK

#TELNETPASSWORD – Set Telnet Password

Description: Sets Telnet password.

Note: The module must be reset to put the command into effect.

Syntax: **AT# TELNETPASSWORD = "<64 char string>"**

AT# TELNETPASSWORD? Read or display the current setting (or AT#VTELNET or AT#VALL).

Default: " "

Example: AT#TELNETPASSWORD?
admin
OK

Display Command

#VTELNET – View Telnet Settings

Description: Displays all Telnet settings.

Syntax: **AT# VTELNET**

Example: AT#VTELNET
#TELNET: 0
#TELNETPORT: 23
#TELNETUSER: "admin"
#TELNETPASSWORD: "admin"
OK

Chapter 13 – WLAN AT Commands

These commands are for SocketWireless Wi-Fi Devices.

Set Commands

#WLANSECURITYMODE – Security Mode of WLAN Module

Description: Sets the Wireless LAN security mode.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WLANSECURITYMODE =<value>**

AT#WLANSECURITYMODE? Read or display the current setting.

Values: 0 – Security Disable

1 – WEP64 Security

2 – WEP128 Security

3 – WPA Security

4 – WPA2 Security

Default: **0**

#WLANNETWORKMODE – WLAN Network Mode

Description: Sets the wireless LAN network mode.

Note: The module must be reset to put the command into effect.

Syntax: AT#WLANNETWORKMODE =<value>

AT#WLANNETWORKMODE? Read or display the current setting.

Values: **0** - Infrastructure mode

1 - Ad – Hoc mode

Default: 0

#WLANCOUNTRYCODE – Country Code

Description: Sets country code. Different countries have different restrictions on Wireless LAN parameters like operating channels and transmit power. To make it operable, the country code can be set by using this AT command.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WLANCOUNTRYCODE ="<value>"**

AT#WLANCOUNTRYCODE? Read or display the current setting.

Values: Country Code FCC - US:

AT#WLANCOUNTRYCODE="DOMAIN_FCC"

Supported Channels - Channel 1 to channel 11

Country Code IC - Canada:

AT#WLANCOUNTRYCODE="DOMAIN_IC"

Supported Channels - Channel 1 to channel 11

Country Code ETSI - Europe:

AT#WLANCOUNTRYCODE="DOMAIN_ETSI"

Supported Channels - Channel 1 to channel 13

Supported Channels - Channel 10 to channel 13

Default: **DOMAIN_FCC (For US)**

#WLANSCANMODE – Scanning Mode

Description: Sets scanning mode. The module can work in both active scanning and passive scanning modes. In active scanning, the module actively sends a probe request to associate with the AP, and in passive scanning, the module waits for a beacon from the AP and then it associates.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WLANSCANMODE =<value>**

AT#WLANSCANMODE? Read or display the current setting.

Values: 0 - Active scanning

1 - Passive scanning

Default: **0**

#WLANSSID – SSID of WLAN

Description: Sets the WLAN network SSID.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WLANSSID ="<value>"**

AT#WLANSSID? Read or display the current setting.

Values: Alphanumeric ASCII Text String of up to 32 characters. It will take a blank space also.

Default: **mt810swm_disable**

#WLANDATARATE – WLAN Transmission Data Rate

Description: Sets the WLAN transmission data rate. "Auto" can be used for auto data rate during data transfer.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WLANDATARATE=<value>**

AT#WLANDATARATE? Read or display the current setting.

Values: Auto, 1, 2, 5.5, 9, 11, 12, 24, 36, 48, 54 (in Mbps)

Default: **11**

#WLANIBSSCHANNEL – Channel for Ad-Hoc Mode

Description: Sets channel for Ad-Hoc mode.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WLANIBSSCHANNEL=<value>**

AT#WLANIBSSCHANNEL? Read or display the current setting.

Values: 1 – 13 (See Country Code for limit)

Default: **9**

#WLANCONNECT – Connect with AP

Description: Connects the module with AP.

Syntax: **AT#WLANCONNECT**

Values: None

Example: AT#WLANCONNECT
SSID : WestConfRoom
RSSI : -52
Network : BSS
Security : No Enc
Capability : 0x1
Channel : 5
WLAN Mode : B Mode
BSSID : 00:13:D3:7B:A3:6A
OK

#WLANDISCONNECT – Disconnect with AP

Description: Disconnects the module with AP.

Syntax: **AT#WLANDISCONNECT**

Values: None

Example: AT#WLANDISCONNECT
OK

#WLANENABLE – Auto Connect Module with AP

Description: On power up, this parameter determines whether to connect to the AP automatically or manually. Connection to the AP can be established by AT#WLANCONNECT command. A value of 0 means the module will not connect to AP automatically. A value of 1 means that on power up the module tries to connect to the AP for configured settings.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WLANENABLE=<value>**

AT#WLANENABLE? Read or display the current setting.

Values: 0 - Manual connection to the AP

1 - Automatic connection to the AP

Default: **0**

#WLANDOZE= – Moves Module into or out of Power Save

Description: This command moves the module into or out of Power Save during an active connection.

Syntax: **AT#WLANDOZE=**

AT#WLANDOZE? Read or display the current setting.

Values: 0 - Power active mode

1 - Power doze mode

#WLANPROFILEn=n – Change the WLAN Profile

Description: This command changes the WLANPROFILE.

Syntax: **AT#WLANSETPROFILEn=n,"<SSID>",<Security Mode>,<Key Index>,"< Passphrase>"**

AT#WLANSETPROFILEn?

Values: 1, 2, 3, 4

Parameters: **ssid = up to 32 characters ssid**

security mode = 0 (no encryption)
1 (wep64)
2 (wep128)
3 (wpa-psk)
4 (wpa2-psk)

keyindex = 1 to 4 applicable for security option (1-4)

passphrase = ASCII text string of *hexadecimal numbers* applicable for security modes 1-2.

passphrase = ASCII *text string* applicable for security modes 3-4.
(10 ASCII text string of *hexadecimal numbers* for wep64)
(26 ASCII text string of *hexadecimal numbers* for wep128)
(8-63 ASCII *text string* for wpa-psk)
(8-63 ASCII *text string* for wpa2-psk)

Note: **Keyindex** and **passphrase** are not applicable for security option (0)

Examples: AT#WLANPROFILE1=1,"MT_NOENC",0 (for no encryption mode)

AT#WLANPROFILE2=2,"MT_WEP64",1,1,"1234567890" (for wep64 key)

AT#WLANPROFILE3=3,"MT_WEP128",2,1,"12345678901234567890123456"(for wep128)

AT#WLANPROFILE4=4,"MT_WPA",3,1,"12345678" (for WPA psk mode)

AT#WLANPROFILE4=4,"MT_WPA2",4,1,"12345678" (for WPA2 psk mode)

#WLANSCAN – Scan Wireless Networks

Description: Scans all the APs (access points) in the environment and displays information about their settings and capabilities on HyperTerminal or similar program.

Syntax: **AT#WLANSCAN**

Example: ESSID: Plan B

BSSID: 00:08:00:C0:30:99

Channel Num: 6

RSSI: -61

Network Type: BSS

Security: No Enc

Capability: 0x1

WLAN Mode: B Mode

#WLANUSEPROFILE – User Profile

Description: Sets and displays the use profile value. If user profile value is set to any value between 1 and 4, then at the time of user name association, the module first scans for the selected user profile parameters.

The module must be reset to put the command into effect.

Syntax: AT#WLANUSEPROFILE=<value>

AT#WLANUSEPROFILE? Read or display the current setting.

Values: 1 – 4

#WLANGETRSSI – Received Signal Strength

Description: This command displays the current received signal strength.

Syntax: **AT#WLANGETRSSI**

Values: The response returns a signal strength value from -256 dBm through -1 dBm. A value of 0 equals no connection to an access point.

Example: AT#WLANGETRSSI
RSSI : 0
OK

#WLANACTIVATE – Move Module out of Power Save

Description: This command moves the module out of Power Save during an active connection. See #WLANDOZE

The module must be reset to put the command into effect.

Syntax: **AT#WLANACTIVATE**

Values: n/a

#WLANROAM – Enable/Disable Roaming

Description: This command enables/disables automatic roaming of the module when the wireless connection is lost by the Access Point.

The module must be reset to put the command into effect.

Syntax: **AT#WLANROAM**

Values: 0 - Disable Auto Roam

1 - Enable Auto Roam

Default: **1**

#WEP64KEY – Keys for WEP64 Security Mode

Description: Sets keys for WEP64 Security mode.

The module must be reset to put the command into effect.

Syntax: **AT#WEP64KEYn ="<value>"**

AT#NWEP64KEYn? Read or display the current setting.

Values: ASCII text string of 10 hexadecimal characters. Valid characters include 0-9, a-f or A-F

Default: **6162636465**

#WEP128KEY – Keys for WEP128 Security Mode

Description: Sets keys for WEP128 Security mode.

Note: he module must be reset to put the command into effect.

Syntax: **AT#WEP128KEYn ="<value>"**

AT#WEP128KEYn? Read or display the current setting.

Values: ASCII text string of 26 hexadecimal characters; valid characters include: 0-9, a-f or A-F

Default: **12345678901234567890123456**

#WPAPSKKEY – Keys for WPA PSK Security Mode

Description: Sets keys for WPA PSK security mode.

Syntax: **AT# WPAPSKKEYn ="<value>" n=1-4**

AT# WPAPSKKEYn? Read or display the current setting.

Values: ASCII text string of 8 to 64 hexadecimal characters; e.g., 1234567890. They can include any ASCII character from 32-126 decimal.

Default: **1234567890**

#WPA2PSKKEY – Keys for WPA2 PSK Security Mode

Description: Sets keys for WPA2 PSK security mode.

Syntax: **AT# WPA2PSKKEYn ="<value>" n=1-4**

AT# WPA2PSKKEYn? Read or display the current setting.

Values: ASCII text string of 8 to 64 hexadecimal characters; e.g., 1234567890. They can include any ASCII character from 32-126 decimal.

Default: **1234567890**

#WEPKEYID – Set the Default TX Key Index

Description: Sets the default Transmission Key used for data encryption in WEP.

Note: The module must be reset to put the command into effect.

Syntax: **AT#WEPKEYID=<value>**

Values: 1 – 4

Default: **1**

Example:
AT#WEP?
WEPKEYID:1
OK

#WLANPOWERSAVE – Enable Power Save at Boot

Description: This command sets the Power Save at the Boot Works after the Power Cycle.

Syntax: **AT#WLANPOWERSAVE=<value>**

Values: 0 – Power Save Disabled

1 – Power Save Enabled

Default: **0**

Display Commands

#WEP? – See the Value of the WEP Keys

Description: This command displays the values of the WEP keys.

Syntax: **AT#WEP?**

Values:
WEP64KEY1:"6162636465"
WEP64KEY2:"6162636465"
WEP64KEY3:"6162636465"
WEP64KEY4:"6162636465"
WEP128KEY1:"12345678901234567890123456"
WEP128KEY2:"12345678901234567890123456"
WEP128KEY3:"12345678901234567890123456"
WEP128KEY4:"12345678901234567890123456"
WPAPSKKEY1:"1234567890"
WPAPSKKEY2:"1234567890"
WPAPSKKEY3:"1234567890"
WPAPSKKEY4:"1234567890"
WPA2PSKKEY1:"1234567890"
WPA2PSKKEY2:"1234567890"
WPA2PSKKEY3:"1234567890"
WPA2PSKKEY4:"1234567890"

#WLANPROFILE – Display the WLAN Profile

Description: This command displays the WLAN profile parameters based on the profile ID.

Syntax: **AT#WLANSETPROFILE<value>?**

Values: 1 – 4

Examples:

```
AT#WLANPROFILE1?
profile id :1
SSID :Adhoc
security :0
OK
AT#WLANPROFILE2?
profile id :2
SSID :mt810swm_wep64
security :1
Keyindex :1
passphrase :1234567890
OK
AT#WLANPROFILE3?
profile id :3
SSID :mt810swm_wep128
security :2
Keyindex :1
passphrase :12345678901234567890123456
OK
AT#WLANPROFILE4?
profile id :4
SSID :mt810swm_wpapsk
security :3
Keyindex :1
passphrase :12345678
OK
```

#WLAN? – WLAN Module

Description: Displays WLAN module-related information.

Syntax: **AT#WLAN?**

Values:

SECURITYMODE	SSID
NETWORKMODE	IBSSCHANNEL
COUNTRYCODE	DATARATE
SCANMODE	WLANENABLE
TXPOWER(dBm)	MACADDR

Default: No default.

Example:

```
AT#WLAN?
#SECURITYMODE: 0
#NETWORKMODE: 0
#COUNTRYCODE: "DOMAIN_FCC"
#SCANMODE: 0
#TXPOWER: NA
#SSID: "WestConfRoom"
#IBSSCHANNEL: 9
#DATARATE: 11.0
#WLANENABLE: 0
#MACADDR: "00:08:00:12:34:dd"
OK
```

#WLANASSOCINFO – Display Association Information

Description: This command displays the channel and BSSID of the current association.

Syntax: **AT#WLANASSOCINFO**

Values: n/a

Example:

```
AT#WLANASSOCINFO
SSID : WestConfRoom
RSSI : -52
Network : BSS
Security : No Enc
Capability : 0x1
Channel : 5
WLAN Mode : B Mode
BSSID : 00:13:D3:7B:A3:6A
OK
```

Part 4 –
AT Commands for the SocketModem iCell, SocketModem IP, MultiModem iCell

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Chapter 14 – AT Commands

These commands are for the following products

- SocketModem iCell (MTSMC-G2-IP)
- SocketModem iCell (MTSMC-C1-Nx-IP)
- SocketModem IP (MT5692SMI-IP) when used in IP mode
- MultiModem iCell (MTCMR-xx-xx) when used in IP mode

Set Commands

+WOPEN – Set IP Mode or Modem Mode

Description: This command sets the mode of operation.

Syntax: **AT+WOPEN=<value>**

AT+WOPEN? (Displays the current mode of operation).

Values: 0 – Modem Mode

1 – IP Mode

Note: If you set +WOPEN=1, do not set S0=1 as it will keep the device from transmitting.

For H5 devices: Setting +WOPEN=0 returns ERROR. Users cannot turn off the stack to talk directly to the modem.

Default: **1**

#AUTHENT – Authentication Type

Description: This command sets the PPP authentication type: PAP, CHAP, or NONE.

Syntax: **AT#AUTHENT="<value>"**

AT#AUTHENT? (Displays current PPP authentication type).

Values: PAP

CHAP

NONE

Default: **NONE**

#ANSWERMODE – Set Answering Mode

Description: The TCP/IP stack can handle incoming calls. This parameter defines how the TCP/IP stack will behave when receiving an incoming call.

Notes: If #ANSWERMODE is set to a value other than 0, the user must enable caller ID. To enable caller ID, use the command **AT+CLIP=1**.

A wake-up SMS message will **NOT** work if the device is busy.

Syntax: AT#ANSWERMODE=<value>

AT#ANSWERMODE? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: **0 – Ignore.** Ignores the incoming call. In this case, it is the responsibility of the host to accept/not accept the incoming call by issuing the AT#ACCEPT command.

1 – Automatic Answer. The TCP/IP stack goes off hook and accepts the incoming call. As described below, the calling number must match the one specified in the CALLSCREENNUM parameter. (The RINGCOUNT parameter must be > 0).

2 – Static Callback. The TCP/IP stack ignores the incoming call and then automatically dials (DIALN1 or DIALN2 determined by the DIALSELECT parameter) by issuing an AT#CONNECTIONSTART command. The calling number must match the one specified in the CALLSCREENNUM parameter. The RINGCOUNT parameter must be > 0.

3 – Dynamic Callback. The TCP/IP stack ignores the incoming call and then automatically dials the calling number by issuing an AT#CONNECTIONSTART command. For this feature, the Caller ID service is mandatory. As described below, the calling number must match the one specified in the CALLSCREENNUM parameter.

4 – Automatic Connection Using SMS. The TCP/IP stack matches the message from an incoming SMS message to the #SMSPHRASE parameter. If a match occurs, #CONNECTIONSTART is issued. (The RINGCOUNT parameter must be 0).

Default: **0**

#SMSPHRASE – Set Incoming SMS Phrase

Description: When receiving an incoming SMS and #ANSWERMODE=4, the SMS message allows the TCP/IP stack to identify a specific message from the sender. This information is helpful in preventing unauthorized SMS to trigger actions on the TCP/IP stack.

This command is for all devices except the SocketWireless Wi-Fi (MT810SWM-IP)

Note: A setting of 0 (zero) disables all remote SMS messages.

Syntax: **AT#SMSPHRASE="<parameter1>"**

AT#SMSPHRASE? Read or display the current setting.

Values: parameter1 = 160 character alphanumeric string

Responses: \r\n#SMSPHRASE: "VALUE"\r\n

\r\nOK\r\n

\r\nERROR\r\n

Example(s): **send :** AT#SMSPHRASE="password"\r

reply : \r\nOK\r\n

send : AT#SMSPHRASE?\r

reply : \r\n#SMSPHRASE: "password"\r\n

reply : \r\nOK\r\n

#CALLBACKTIMER – Set Automatic Call-Back Wait

Description: This parameter defines the number of seconds the TCP/IP stack will wait before an automatic call-back operation occurs after receiving an incoming call. It applies only when the ANSWERMODE parameter is set to an automatic call-back mode (value>1). This timer starts at the end of the ringing signal.

Syntax: **AT#CALLBACKTIMER=<value>**

AT#CALLBACKTIMER? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: Integer between 2 and 255 inclusive. This timer is set in seconds.

Default: **2**

#CALLSCREENNUM – Set Caller ID Service

Description: When receiving an incoming call, the caller identification (Caller ID) service allows the TCP/IP stack to identify the phone number of the remote caller. This information is helpful in preventing unauthorized callers to trigger actions on the TCP/IP stack.

This parameter allows the user to filter the incoming calls when the ANSWERMODE parameter is set to an automatic mode (value>0). This filtering doesn't apply when the ANSWERMODE parameter is set to 0. In this case, it is the host's responsibility to accept or reject the incoming call. If an incoming phone number is not authorized, the TCP/IP stack will ignore it.

Syntax: **AT#CALLSCREENNUM=<value>**

AT#CALLSCREENNUM? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: **0 - Zero.** Remote caller not authorized.

*** - All.** No filtering is applied on incoming calls. All remote phone numbers are authorized. This value must be set to receive incoming calls when Caller ID service is not available.

Not valid for Analog Devices.

Decimal Phone Number. Only the phone number configured here is authorized for incoming calls. Alphanumeric ASCII text string up to 64 characters.

Default: **0**

#KEEPALIVEMODE – Keep-Alive Mode

Description: If the keep-alive mode is not equal to zero, then the keep-alive function will trigger. The function allows a persistent physical connection to be established. If enabled and a remote host is not reached, the physical connection is disconnected (if connected) and reestablished.

Syntax: **AT#KEEPALIVEMODE=<Keepalivemode value>**

AT#KEEPALIVEMODE? Read or display the current setting (or AT#VKEEPALIVE or AT#VALL).

Values: 0 – Keep-Alive mode is disabled

1 – Keep-Alive mode is enabled using a TCP connection

2 – Keep-Alive mode is enabled using ICMP

Default: **0**

Example: AT#KEEPALIVEMODE=1

#KEEPALIVEPORT – Keep-Alive Port Number

Description: If the keep-alive session is TCP, then keep alive port controls the remote host port number.

Syntax: **AT#KEEPALIVEPORT=<Port Number value>**

AT#KEEPALIVEPORT? Read or display the current setting (or AT#VKEEPALIVE or AT#VALL)

Values: Set the port number that the Profile will use:

From 1 to 5 numeric digits (0 to 9).

Note: Numbers above 65535 are illegal since port identification fields are 16-bits long in the IDP header.

Default: **1**

Example: AT#KEEPALIVEPORT=xxxxx

#KEEPALIVESERV – Keep-Alive Server Address

Description: The remote address for both TCP and ICMP keep-alive.

Syntax: **AT#UDPSERV="<Keepalive Server Addressvalue>"**

AT#KEEPALIVESERV? Read or display the current setting (or AT#VKEEPALIVE or AT#VALL).

Values: Set the Remote Server Address value that the Profile will use:

32-bit number is dotted-decimal notation (i.e., xxx.xxx.xxx.xxx) or

Alphanumeric ASCII text string up to 120 characters if DNS is working.

Default: No default.

Example: AT#KEEPALIVESERV="xxx.xxx.xxx.xxx" or AT#KEEPALIVESERV="some.address.com"

#KEEPALIVEDELAY – Keep-Alive Delay

Description: This parameter determines the delay before the keep-alive mechanism will check the remote host for connectivity.

Syntax: **AT#KEEPALIVEDELAY=<Data Delay value>**

AT#KEEPALIVEDELAY? Read or display the current setting (or AT#VKEEPALIVE or AT#VALL).

Values: Set the delay value in minutes

Integer between 0 and 65535

Default: **100**

Example: AT#KEEPALIVEDELAY=xxxxx

#OUTPORT – UDP/TCP Local Port Number

Description: Controls the local port that the UDP/TCP connection is bound to.

Syntax: **AT#OUTPORT=<Port Number value>**

AT#OUTPORT? Read or display the current setting (or AT#VKEEPALIVE or AT#VALL).

Values: Set the port number local connection will use:

From 1 to 5 numeric digits (0 to 9).

Note:

Numbers above 65,535 are illegal since port identification fields are 16-bits long in the IDP header.

Default: **0**

Example: AT#OUTPORT=xxxxx

#ATCMD – Customize Dial-Up Commands

Description: This command allows the user to customize AT commands on dial up.

Syntax: **AT#ATCMD=id,"Valid AT command"**

AT#ATCMD=id or AT#VALL For id, enter a Profile Setting: 0, 1, 2, 3 {0,1,2,3}

Values: Set the valid AT command (Do not include AT or issue &F, as the command will error)

Defaults: **For Analog Devices:**

0, "-STE=1"

1, "+MS=V34"

2, ".."

3, ".."

For All Other Devices:

0, ".."

1, ".."

2, ".."

3, ".."

#REDIALCOUNT – Set Connection Attempts Allowed

Description: This parameter indicates how many unsuccessful connection attempts the TCP/IP stack software will make before terminating the connection attempt activity.

Syntax: **AT#REDIALCOUNT=<value>**

AT#REDIALCOUNT? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: Integer between 0 and 14, inclusive.

If the value is set to 0, the TCP/IP stack software will not make any call retry.

Default: **5**

#REDIALDELAY – Set Call Retry Delay

Description: This parameter controls the delay (in seconds), if any, that will exist between each call retry.

Syntax: **AT#REDIALDELAY=<value>**

AT#REDIALDELAY? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: Integers 0 and 5–14 inclusive.

If this parameter is configured to zero, the TCP/IP stack software will attempt another connection immediately after terminating the previous unsuccessful attempt.

Default: **5**

#PHYTIMEOUT – Set Inactivity Time

Description: This parameter is used by the TCP/IP stack software in order to terminate connections to the telephone line when a long period elapses without activity. "Without activity" is defined as a period when no data is transferred between the Internet and the TCP/IP stack software or between the TCP/IP stack software and the attached equipment. This timer prevents the telephone line from being connected indefinitely for any reason.

Note: When the inactivity timer expires, the modem ends the communication.

Syntax: **AT#PHYTIMEOUT=<value>**

AT#PHYTIMEOUT? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: Integer between 1 and 255 inclusive. This timer is set in minutes.

Default: **15**

Return Codes: TIMEOUT: The inactivity timer is reached; the modem ends the communication.

#RINGCOUNT – Set Number of Rings/Automatic Operation

Description: This parameter defines the number of rings that will be counted before an automatic operation occurs when receiving an incoming call.

It applies only when the ANSWERMODE parameter is set to an automatic mode (value>0).

If the ANSWERMODE parameter is used, the RINGCOUNT value must also be >0.

Syntax: **AT#RINGCOUNT=<value>**

AT#RINGCOUNT? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: Integer between 0 and 15 inclusive.

0 = modem will not answer.

1-15 = modem will answer on the ring number selected.

Default: **0**

#DIALN1 – Set Primary Dial-Up Number

Description: This parameter is the primary dial-up phone number that will connect with the local ISP. Length depends on country/region.

Syntax: **AT#DIALN1="<value>"**

AT#DIALN1? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: Decimal phone numbers.

Default: No default.

#DIALN2 – Set Secondary Dial-Up Number

Description: This parameter is the secondary dial-up phone number that will connect with the local ISP. Length depends on country.

Syntax: **AT#DIALN2="<value>"**

AT#DIALN2? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: Decimal phone numbers.

Default: No default.

#DIALSELECT – Set Internet Connection Number

Description: The value of this command determines the number called to establish an Internet connection. It configures the TCP/IP stack software to use the primary dial-up number or the secondary dial-up number.

Syntax: **AT#DIALSELECT=<value>**

AT#DIALSELECT? Read or display the current setting (or AT#VPHY, AT#VALL).

Values: 1 – Use primary dial-up number.

2 – Use secondary dial-up number

Default: **1**

#ISPPW – Set ISP Password

Description: This parameter sets the password for the ISP account. When communication is initiated and once the physical (modem) connection has been established with the ISP, the TCP/IP stack software must provide the ISP with the password associated with the account to be used.

Syntax: **AT#ISPPW="<value>"**

AT#ISPPW? Read or display the current setting (or AT#VPPP, AT#VALL).

Values: Alpha-numeric ASCII text string up to 64 characters.

Default: No default.

#ISPUN – Set ISP User Name

Description: This parameter sets the user name of the ISP account. When communication is initiated and the physical (modem) connection has been established with the ISP, the TCP/IP stack software must provide the ISP with the user name associated with the account to be used.

Syntax: **AT#ISPUN="<value>"**

AT#ISPUN? Read or display the current setting (or AT#VPPP, AT#VALL).

Values: Alpha-numeric ASCII text string up to 64 characters.

Default: No default.

Incoming Call Management Commands

#ACCEPT – Answer Incoming Call

Description: This command directs the TCP/IP stack to answer an incoming call. When the TCP/IP stack receives an incoming call, it sends over the serial port the "RING" messages. Depending on the value of the ANSWERMODE parameter, the TCP/IP stack may answer automatically or not.

If ANSWERMODE is set to 0, it is the host that is responsible for answering the incoming call.

Once the physical layer is up, the TCP/IP stack runs.

The AT#CONNECTIONSTOP command ends the connection by going on hook.

Syntax: **AT#ACCEPT**

Command	Possible Responses
AT#ACCEPT (Manual acceptance of an incoming call)	OK **Note:** Beginning of the call setting process CONNECT <speed> **Note:** Modem speed negotiated between both sides xxx.xxx.xxx.xxx **Note:** IP address indication attributed to the TCP/IP stack PPP OK **Note:** The software is ready to run IP applications to send/receive data
AT#ACCEPT (Manual acceptance of an incoming call)	NO CARRIER **Note:** The modem handshaking process with the remote host is interrupted or unsuccessful
AT#ACCEPT (Manual acceptance of an incoming call)	PPP ERROR **Note:** The PPP negotiation has failed (check ISPUN, ISPPW, PPPMODE, and the configuration of the PPP peer)

Values: **Read parameters:**

ANSWERMODE

IPSPW

ISPUN

PPPMYIP

#CONNECTIONSTOP – Stop Communication

Description: This command directs the TCP/IP stack to end a communication previously established with a CONNECTIONSTART command or AT#ACCEPT.

Syntax: **AT#CONNECTIONSTOP**

Command	Possible Responses
AT#CONNECTIONSTOP (Disconnect)	OK

Values: No TCP/IP parameter is used for the execution of this command.

#CONNECTIONSTART – Start Communication

Description: This command directs the TCP/IP stack to originate an outgoing call.

Upon receiving this command, the TCP/IP stack attempts to complete a connection session.

The TCP/IP stack will dial the number according to the #GPRSMODE value and Dial Option parameter (DIALN1 or DIALN2 depending on DIALSELECT). If an error occurs, the TCP/IP stack automatically re-attempts the call origination attempt, according to the REDIALCOUNT parameter. Once the physical layer is up, the TCP/IP stack runs.

Syntax: **AT#CONNECTIONSTART**

Command	Possible Responses
AT#CONNECTIONSTART (Request connection to network. This is for GPRSMODE=0.)	DIALING **Note:** Phone line is available 2124560123 **Note:** Dial DIALN1 or DIALN2 number depending on DIALSELECT CONNECT 9600 **Note:** Modem speed negotiated between both sides. If the TCP/IP stack is configured for modem only operation (PPPMODE parameter), there are no more return codes 213.192.200.4 **Note:** IP address attributed to the TCP/IP stack Ok_Info_PPP **Note:** As soon as the TCP/IP stack software displays this message, it is ready to receive commands
AT#CONNECTIONSTART (Request connection to network. This is for GPRSMODE=1 or GPRSMODE=2)	Ok_Info_GprsActivation **Note:** As soon as the TCP/IP stack software displays this message, it is ready to receive commands 213.192.200.4 **Note:** IP address attributed to the TCP/IP stack
AT#CONNECTIONSTART	BUSY **Note:** A busy signal is detected on the remote site TCP/IP stack will wait REDIALDELAY seconds then dial again. The redialing will continue until success or until the number of call retries defined in parameter REDIALCOUNT has been reached.
AT#CONNECTIONSTART	NO CARRIER **Note:** A physical connection could not be completed. The TCP/IP stack will wait REDIALDELAY seconds then dial again. The redialing will continue until success or until the number of call retries defined in parameter REDIALCOUNT has been reached.

Values: **Read Parameters:**

DIALN1
DIALN2
DIALSELECT
ISPPW
ISPUN
REDIALCOUNT
REDIALDELAY

#AUTOCONNECT – Automatically Connect the PPP Link

Description: **#AUTOCONNECT** enables/disables the automatic link connection. The APN or ISP values need to be set correctly.

Syntax: **AT#AUTOCONNECT=<value>**

AT#AUTOCONNECT? Read or display the current setting (or AT#VALL).

Values: 0 – AUTOCONNECT disabled

1 – AUTOCONNECT enabled

Default: **0**

#PPPMODE – Set TCP/IP Behavior

Description: The TCP/IP stack can manage the access layer in different ways. This parameter selects the way the TCP/IP stack must run once the physical is layer successfully established.

Syntax: **AT#PPPMODE=<value>**

AT#PPPMODE? Read or display the current setting (or AT#VPPP, AT#VALL).

Values: **3** – **Standard PPP.** The TCP/IP stack behaves as a PPP client for outgoing calls and as a PPP client for incoming calls.

Default: **3**

#PPPMYIP – Set IP Address When Using PPP

Description: When the TCP/IP stack behaves as a PPP server (according to the PPPMODE parameter setting), it is in charge of the IP address attribution mechanism.

Once the PPP authentication is successfully achieved, the remote PPP peer asks the TCP/IP stack for an IP address. Then the related PPP layer, called IPCP, suggests an IP address to the peer that has been previously stored in the TCP/IP stack parameters. If the remote accepts this address, the IP link is then established.

This parameter defines the IP address to be attributed to the TCP/IP stack when the PPP Server mode is running.

Syntax: **AT#PPPMYIP=<value>**

AT#PPPMYIP? Read or display the current setting (or AT#VPPP, AT#VALL).

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx).

Default: **0.0.0.0**

#PPPPEERIP – Set IP Address for Remote PPP

Description: When the TCP/IP stack behaves as a PPP server (according to the PPPMODE parameter setting), it is in charge of the IP address attribution mechanism.

Once the PPP authentication is successfully achieved, the remote PPP peer asks the TCP/IP stack for an IP address. Then the related PPP layer, called IPCP, suggests an IP address to the peer that has been previously stored in the TCP/IP stack parameters. If the remote accepts this address, the IP link is then established.

This parameter defines the IP address to be attributed to the remote PPP peer when the PPP Server mode is running.

Syntax: **AT#PPPPEERIP=<value>**

AT#PPPPEERIP? Read or display the current setting (or AT#VPPP, AT#VALL).

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx).

Default: **0.0.0.0**

#PPPSERVUN – Set User Name for Remote PPP Client

Description: When the TCP/IP stack behaves as a PPP server (according to the PPPMODE parameter), it checks the remote PPP client login/password before granting access to the server.

This parameter defines the user name that must be specified by the remote PPP client.

Syntax: **AT#PPPSERVUN=<value>**

AT#PPPSERVUN? Read or display the current setting (or AT#VPPP, AT#VALL).

Values: Alpha-numeric ASCII text string up to 64 characters.

Default: No default.

#PPPSERVPW – Set Remote PPP Client Password

Description: When the TCP/IP stack behaves as a PPP server (according to the PPPMODE parameter setting), it checks the remote PPP client login/password before granting access to the server.

This parameter defines the password that must be specified by the remote PPP client.

Syntax: **AT#PPPSERVPW=<value>**

AT#PPPSERVPW? Read or display the current setting (or AT#VPPP, AT#VALL).

Values: Alpha-numeric ASCII text string up to 64 characters.

Default: No default.

#APNPW – Set Access Point Name Password

Description: #APNPW is the Access Point Name password parameter coming with the APNUN from the GSM operator and provides GPRS access.

Syntax: **AT#APNPW=<value>**

AT#APNPW? Read or display the current setting (or AT#VGPRS, AT#VALL).

Values: Alphanumeric ASCII text string up to 120 characters.

Default: No default.

#APNSERV – Set Access Point Name

Description: #APNSERV is the Access Point Name parameter coming from the GSM operator for providing GPRS access.

Syntax: **AT#APNSERV=<value>**

AT#APNSERV? Read or display the current setting (or AT#VGPRS, AT#VALL).

Values: Alphanumeric ASCII text string up to 120 characters.

Default: No default.

#APNUN – Set Access Point User Name

Description: #APNUN is the Access Point Name User Name parameter coming with the APNPW from the GSM operator for providing GPRS access.

Syntax: **AT#APNUN=<value>**

AT#APNUN? Read or display the current setting (or AT#VGPRS, AT#VALL).

Values: Alphanumeric ASCII text string up to 120 characters.

Default: No default.

#GPRSCID – Set PDP Context Identifier

Description: #GPRSCID is the PDP context identifier which specifies a particular PDP context definition. This parameter is local and may be used in other PDP context-related commands.

Syntax: **AT#GPRSCID=<value>**

AT#GPRSCID? Read or display the current setting (or AT#VGPRS, AT#VALL).

Values: Numeric between 1 and 4 inclusive.

Default: **1**

#GPRSMODE – Activate Switching Between GSM and GPRS

Description: #GPRSMODE configures the activation of the software for switching between GSM and GPRS.

Syntax: **AT#GPRSMODE=<value>**

AT#GPRSMODE? Read or display the current setting (or AT#VGPRS, AT#VALL).

Values: 0 – Configured for GSM use.

1 – Configured for GPRS use.

2 – Configured for CDMA use.

Default: **1**

Display Commands

#DISPLAYIP – Display IP Addresses

Description: This command allows the attached host to view the attributed IP addresses that have been attributed during the IPCP phase of the PPP negotiation. Both local and remote PPP peer IP addresses are displayed. This command should be issued only once the PPP OK message has been received from the TCP/IP stack.

Syntax: **AT#DISPLAYIP**

Values: **Read Parameters:**

PPPMYIP

PPPPEERIP

Response: MY IP: xxx.xxx.xxx.xxx

PEER IP: xxx.xxx.xxx.xxx

#VPPP – Display PPP Parameters

Description: This command directs the TCP/IP stack to display all the AT# parameters related to the PPP layer configuration.

Syntax: **AT#VPPP**

Command	Possible Responses
AT#VPPP	#ISPUN: “myispun” #ISPPW: “myisppwd: #PPPMODE: 1 #PPPMYIP: “0.0.0.0” #PPPPEERIP: “0.0.0.0” OK

Values: **Read Parameters:**

ISPPW

ISPUN

PPPMYIP

PPPPEERIP

#VPHY – Display Physical Parameters

Description: This command directs the TCP/IP stack to display all the AT# parameters related to the physical layer configuration.

Syntax: **AT#VPHY**

Command	Possible Responses
AT#VPHY	#ANSWERMODE: 0 #CALLBACKTIMER: 2 #CALLSCREENNUM: “0” #DIALN1: “” #DIALN2: “” #DIALSELECT: 1 #PHYTIMEOUT: 15 #REDIALCOUNT: 5 #REDIALDELAY: 5 #RINGCOUNT: 0 OK

Values: ANSWERMODE
CALLBACKTIMER
CALLSCREENNUM
DIALN1
DIALN2
DIALSELECT
PHYTIMEOUT
REDIALCOUNT
REDIALDELAY
RINGCOUNT

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About GPIO

If the specific hardware allows GPIO (check availability with AT#GPIO=1), then you may specify certain external events from the GPIOs to trigger specific stack functions; i.e., email, upload files, download files. **In order for this to work, you must configure the specific function first.** For instance, if SENDMAIL1 will be called, then all settings pertaining to SENDMAIL1 must be configured before the #GPIO command is configured.

MultiModem iCell: The MultiModem iCell allows for the following GPIO IDs and GPIO function combinations:

GPIO 1 - 2: GPIO function 0 may be selected

GPIO 3 - 4: GPIO functions 0, 1, 2 and 3 may be selected

GPIO 5: GPIO function 3 may be selected

SocketModem iCell: The SocketModem iCell allows for the following GPIO IDs and GPIO function combinations:

GPIO 1 - 2: GPIO function 0 may be selected

GPIO 3 - 4: GPIO functions 0, 1, 2 and 3 may be selected

GPIO 5: GPIO 5 is non-functional

#GPIO – Enable/Disable and Configure External GPIO Driven Events

Description: If GPIO is enabled and configured correctly, a specific external trigger (Digital HI/LOW or Analog value from 0-3.3V) will trigger a specified function from the stack.

Syntax: **AT#GPIO=ID**, GPIO Function, Trigger Level, Debounce, Stack Function, Hangup

AT#GPIO=<n> where n is the GPIO number or AT#VALL

For ID, use the GPIO number as described in the hardware documentation

Values: 1 - 5

GPIO: Allows the GPIO to be a Digital Input, Digital Output or ADC input

Values: **0** - Digital Input without internal pullup

1 - Digital Input with internal pullup

2 - Digital Output

3 - ADC input

Trigger Level: The Voltage level at which GPIO will trigger.

For Digital input, a value greater than 0 indicates high. 0 indicates low.

For Digital output, a positive value will drive the line high. A zero value will drive the line low.

For ADC input, the trigger value will be in the range of 0 to 3300 millivolts.

Values: 0 - 3300 in milliVolts

Debounce: The time between successive reads on the GPIO.

Values: 0 - 65535 milliseconds

Stack

Function: The desired stack function to be **specified** on a GPIO trigger. The stack function must be properly configured; i.e., for a sendmail function, all proper sendmail items must be configured.

Values: 0 - Disabled (The GPIO will not trigger)

1 - #SENDMAIL1

2 - #SENDMAIL2

3 - #SENDMAIL3

4 - #PUTMAIL

5 - #GETMAIL

6 - #LTCPSTART=1

7 - #OTCP=1

8 - #OUDP=1

9 - #LUDPSTART=1

Hangup: Determines whether to disconnect from the network after GPIOs have been processed.

Values: 0 - Physical connection disconnects when all GPIOs have been processed

1 - Physical connection stays connected.

2 - Physical connection disconnects when all GPIOs have been processed; suppress responses

3 - Physical connection stays connected; suppress responses

Default: 1,1,0,0,0,0,x

2,1,0,0,0,0,x

3,0,0,0,0,0,x

4,0,0,0,0,0,x

5,3,0,0,0,0,x

Note: The final number (represented by 'x') is variable and not supported at this time.

Example: AT#GPIO=1,0,1,180,1,0

GPIO 1 would be configured as a Digital Input with internal pullup (0).

A positive voltage will trigger the GPIO (1).

A Debounce time of 180 ms (180) will be used.

#SENDMAIL1 will be called if the GPIO triggers (1).

After processing the GPIO, the physical connection will be disconnected (0) and all responses will be printed to the user.

#GPIOR – Read the Current Register Status of the Specified GPIO Pin

Description: The current status of the specific GPIO pin is displayed according to its configuration.

Syntax: AT#GPIOR=<parameter>

Values: 1 GPIO Port 1
2 GPIO Port 2
3 GPIO Port 3
4 GPIO Port 4
5 GPIO Port 5

Responses: \r\n#GPIOR: VALUE1,VALUE2\r\n
\r\nOK\r\n
\r\nERROR\r\n

Examples: send: AT#GPIOR=1\r
reply: \r\n#GPIOR: 1,1\r\n
reply: \r\nOK\r\n

#GPIOTRIGGER – Configure the GPIO pin and trigger type

Description: Configure the GPIO pin and trigger type.

Syntax: AT#GPIOTRIGGER=<parameter1>,<parameter2>

Values: parameter 1 (GPIO pin)
1 - GPIO Port 1
2 - GPIO Port 2
3 - GPIO Port 3
4 - GPIO Port 4
5 - GPIO Port 5
parameter 2 (trigger type)
0 - Trigger at (or above for analog) (default for backwards compatibility)
1 - Trigger on active to inactive
2 - Trigger on inactive to active
3 - Trigger on both edges
4 - Trigger at (or below for analog)
(Default is 0)

Responses: \r\n#GPIOTRIGGER: VALUE1,VALUE2\r\n
\r\nOK\r\n
\r\nERROR\r\n

Examples: **send:** AT#GPIOTRIGGER=1,1\r
reply: \r\nOK\r\n
send: AT#GPIOTRIGGER=1\r
reply: \r\n#GPIOTRIGGER: 1,1\r\n
reply: \r\nOK\r\n
send: AT#GPIOTRIGGER=2,2\r
reply: \r\nOK\r\n

send: AT#GPIOTRIGGER=2\r
reply: \r\n#GPIOTRIGGER: 2,2\r\n
reply: \r\nOK\r\n

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Chapter 16 – GPS Device AT Commands

#GPSSERV – Set GPS Host Server Address

Description: This command sets the server IP address or name to which the GPS data will be sent.

Syntax: **AT#GPSSERV="<value>"**

AT#GPSSERV**?** or AT#VGPS or AT#VALL

Values: 32-bit number in dotted-decimal notation (i.e., xxx.xxx.xxx.xxx) or

Alphanumeric ASCII text string up to 120 characters if DNS is available. No default.

Responses: OK

Otherwise ERROR

#GPSPORT – Set GPS Host Port

Description: This command sets the GPS host port (TCP, UDP).

Syntax: **AT#GPSPORT=<port number>**

AT#GPSPORT? or AT#VGPS or AT#VALL

Values: 1 to 65535

Default: **1**

Responses: OK

Otherwise ERROR

#GPSPROTO – Set GPS Host Protocol

Description: This command sets the server protocol that the GPS will use (TCP, UDP).

Syntax: **AT#GPSPROTO=<value>**

AT#GPSPROTO? or AT#VGPS or AT#VALL

Values: 0 **-** UDP

1 - TCP

Default: **0**

Responses: OK

Otherwise ERROR

#GPSPREFIX – Set GPS Message Prefix

Description: This command is used to set a unique identification for each device or vehicle.

Syntax: **AT#GPSPREFIX="<value>"**

AT#GPSPREFIX? or AT#VGPS or AT#VALL

Values: Up to 4 characters in an alphanumeric string

Note: The prefix is appended to the NMEA message before transit

Default: **" "**

Responses: OK

Otherwise ERROR

#GPSURAIS – Set GPS Unique Remote Asset Identification String

Description: This command is used to set a unique remote access identification string for each device or vehicle.

Syntax: **AT#GPSURAIS="<value>"**

AT#GPSURAIS? or AT#VGPS or AT#VALL

Values: Up to 20 characters in an alphanumeric string

Note: The ID precedes the GPSPREFIX.

Default: **" "**

Responses: OK

Otherwise ERROR

#GPSINTERVAL – Set GPS Server Transmission Interval

Description: This command sets the interval of time between messages transmitted to the server.

Syntax: **AT#GPSINTERVAL=<value>**

AT#GPSINTERVAL? or AT#VGPS or AT#VALL

Values: 0 to 65535 (seconds)

Default: **0** (Disabled)

Responses: OK

Otherwise ERROR

#GPSPW – Set GPS Host Login Password

Description: This command sets the GPS host login password, if required. Some GPS hosts may require a simple password login mechanism.

Syntax: **AT#GPSPW="<value>"**

AT#GPSPW? or AT#VGPS or AT#VALL

Values: Alphanumeric ASCII text string up to 64 characters.

Default: No default.

Responses: OK

Otherwise ERROR

#GPSGPGGA – Enable/Disable GPGGA Message

Description: This command enables or disables the reporting of NMEA GPGGA messages.

Syntax: **AT#GPSGPGGA =<value>**

AT#GPSGPGGA? or AT#VGPS or AT#VALL

Values: 0 - Disable

1 - Enable

Default: **1**

Responses: OK

Otherwise ERROR

#GPSGPGLL – Enable/Disable GPGLL Message

Description: This command enables or disables the reporting of NMEA GPGLL messages.

Syntax: **AT#GPSGPGLL =<value>**

AT#GPSGPGLL? or AT#VGPS or AT#VALL

Values: 0 - Disable

1 - Enable

Default: **0**

Responses: OK

Otherwise ERROR

#GPSGPGSA – Enable/Disable GPGSA Message

Description: This command enables or disables the reporting of NMEA GPGSA messages.

Syntax: **AT#GPSGPGSA =<value>**

AT#GPSGPGSA? or AT#VGPS or AT#VALL

Values: 0 - Disable

1 - Enable

Default: **0**

Responses: OK

Otherwise ERROR

#GPSGPGSV – Enable/Disable GPGSV Message

Description: This command enables or disables the reporting of NMEA GPGSV messages.

Syntax: **AT#GPSGPGSV =<value>**

AT#GPSGPGSV? or AT#VGPS or AT#VALL

Values: 0 - Disable

1 - Enable

Default: **0**

Responses: OK

Otherwise ERROR

#GPSGPRMC – Enable/Disable GPRMC Message

Description: This command enables or disables the reporting of NMEA GPRMC messages.

Syntax: **AT#GPSGPRMC =<value>**

AT#GPSGPRMC? or AT#VGPS or AT#VALL

Values: 0 - Disable

1 - Enable

Default: **0**

Responses: OK

Otherwise ERROR

#GPSGPVTG – Enable/Disable GPVTG Message

Description: This command enables or disables the reporting of NMEA GPVTG messages.

Syntax: AT#GPSGPVTG=<value>

AT#GPSGPVTG? or AT#VGPS or AT#VALL

Values: **0** - Disable

1 - Enable

Default: **0**

Responses: OK

Otherwise ERROR

#GPSINTERVALLOC – GPS Local Transmission Interval

Description: This command sets the interval of time between messages transmitted to the local port.

Syntax: **AT# GPSINTERVALLOC =<value>**

AT# GPSINTERVALLOC? or AT#VGPS or AT#VALL

Values: 0 to 65535 (seconds)

Default: **0** (Disabled)

Responses: OK

Otherwise ERROR

#GPSGETMESSAGE – Get Queued GPS Message

Description: This command gets the current queued GPS message. The response depends on which messages have been enabled.

Syntax: **AT#GPSGETMESSAGE**

Responses: #GPSGETMESSAGE:

<enabled NMEA messages with prefix and urais>

OK

GPS Message Syntax

GPS message syntax that is sent from the UIP device to the backend server:

<GPSPREFIX><GPSURAIS><NMEA_MESSAGE><CR><LF>

Where

<GPSPREFIX> is the unique prefix. Length is 0 to 4 characters (Character format or requirements usually provided by backend service)

<GPSURAIS> is the unique remote asset identification string. Length is 0 to 20 characters (This string may be provided by the backend service)

<NMEA_MESSAGE> is a standard NMEA sentence received from the internal GPS receiver

<CR><LF> is a Carriage Return and a Line feed

The message that will be transmitted can be viewed with the #GPSGETMESSAGE command. The difference from the viewed message and the transmitted message will be the NMEA message parameters due to timestamp changes and or location changes.

The <GPSPREFIX><GPSURAIS><NMEA_MESSAGE><CR><LF> is a popular format used by numerous services. Along with the format, the following rules are followed:

- Typical transmission protocol is UDP (format provided by backend service) due to low overhead, however TCP is available
- Multiple GPS message can and will be transmitted granted the specific message type is enabled (GPSGPVTG, GPSGPRMC, etc)
- Typical minimum message type needed by the backend services is usually the GPRMC or GPGGA and GPVTG messages (Requirement provided by the backend server)
- Do not use the $ character in either the <GPSPREFIX> or <GPSURAIS> sections
- Typical transmission intervals to the backend service are 5sec and greater (requirement provided by backend server)

GPS Message Examples

The following examples use a <GPSPREFIX> configured to && and a <GPSURAIS> configured with ID1111

&&ID1111$GPGSA,A,3,07,09,11,20,28,31,,,,,,,3.0,2.2,2.1*36<CR><LF>

&&ID1111$GPGSV,3,1,09,04,40,193,41,07,79,354,50,08,02,171,00,09,28,305,31*78<CR><LF>

&&ID1111$GPGSV,3,2,09,11,15,048,45,20,21,078,37,24,08,205,27,28,55,122,46*77<CR><LF>

&&ID1111$GPGSV,3,3,09,31,67,052,43*43<CR><LF>

&&ID1111$GPGGA,223750.00,4502.2467,N,09302.4844,W,1,05,5.4,287.0,M,-27.6,M,,*58<CR><LF>

&&ID1111$GPRMC,223750.00,A,4502.2467,N,09302.4844,W,57.00,97.29,131104,2.5,E,A*20<CR><LF>

GPS Configuration Examples

AT#GPSPREFIX="&&"<CR>	**Prefix (Requirements provided by backend service)**
AT#GPSURAIS="ID1111"<CR>	**Unique ID (Requirements provided by backend service)**
AT#GPSGPRMC=1<CR>	**Enable GPRMC message (Requirements provided by backend service)**
AT#GPSGPGGA=0<CR>	**Disable GPGGA message (Requirements provided by backend service)**
AT#GPSGPGLL=0<CR>	**Disable GPGLL message (Requirements provided by backend service)**
AT#GPSGPGSA=0<CR>	**Disable GPGSA message (Requirements provided by backend service)**
AT#GPSGPGSV=0<CR>	**Disable GPGSV message (Requirements provided by backend service)**
AT#GPSGPVTG=0<CR>	**Disable GPGLL message (Requirements provided by backend service)**
AT#VGPS<CR>	**View settings**

Note: The following command starts the GPS sending. The message will be sent if the UIP device is connected to the network. (CONNECTIONSTART has been issued)

AT#GPSINTERVAL=5<CR>	**Timer in seconds that the device will contact the remote server**
AT#GPSINTERVAL=0<CR>	**Disables sending messages**

The following example message would be sent over the network using UDP every 5 seconds (The $GPRMC would have different data however).

&&ID1111$GPRMC,223750.00,A,4502.2467,N,09302.4844,W,57.00,97.29,131104,2.5,E,A*20<CR><LF>

Application Note – GPS NMEA Messages

Introduction

The *NMEA (National Marine Electronics Association) 0183 Standard* is a standard protocol for interfacing navigational devices; e.g., GPS and DGPS receivers over a serial interface. The complete document of this standard may be obtained from NMEA at http://www.nmea.org. We wish to thank SkyTraq Technology, Inc. for providing the following summary of NMEA Messages.

NMEA Protocol Overview

Message Format

The structure of an NMEA message is shown below.

	Checksum Range			
Start of Sequence	**Address Field**	**Data Field(s)**	**Checksum Field**	**End of Sequence**
$ or !	<Address>	[,<data field>] [,<data field>]	*<checksum>	<CR><LF>

Start of Sequence

All sentences begin with the sentence start delimiter character "$" or "!".

Address Field

The address field defines the sentence. Characters with digits and upper case letters are allowed in the address field. The address field is required. It cannot be a null field. This field is subdivided into 2 fields.

<XX>	<XXX>
Talker Identifier	Sentence Formatter

Talker Identifier is always **GP** for a GPS receiver. The sentence formatter defines the format and the type of data.

Data Field(s)

Data fields are delimited by a "," and contain valid characters specified in NMEA 0183 standard. It can consist of fields of variable lengths.

Checksum

The checksum field is the 8-bit exclusive OR (no start or stop bits) of all characters in the sentence. Checksum consists of 2 characters and is represented as a hex number.

End of Sequence

All sentences always end with sentence termination delimiter character "$" or "!".

SUPPORTED MESSAGE LIST

The following NMEA messages are supported.

Sentence	Descriptions
GGA	Global Positioning System Fix Data
GLL	Geographic Position – Latitude/Longitude
GSA	GNSS DOP and Active Satellites
GSV	GNS Satellites in View
RMC	Recommended Minimum Specific GNSS Data
VTG	Course Over Ground and Ground Speed

NMEA MESSAGES

The full descriptions of supported NMEA messages are provided at the following paragraphs.

GGA – Global Positioning System Fix Data

Time, position and fix related data for a GPS receiver.

Structure: $GPGGA,hhmmss.sss,ddmm.mmmm,a,dddmm.mmmm,a,x,xx,x.x,x.x,M,,,,xxxx*hh<CR><LF>

Example: $GPGGA,111636.932,2447.0949,N,12100.5223,E,1,11,0.8,118.2,M,,,,0000*02<CR><LF>

Name	Example	Description
Message ID	$GPGGA	GGA Protocol Header
UTC Time	111636.932	UTC of position in hhmmss.sss format, (000000.000 ~ 235959.999)
Latitude	2447.0949	Latitude in ddmm.mmmm format
N/S Indicator	N	Latitude hemisphere indicator, 'N' = North, 'S' = South
Longitude	12100.5223	Longitude in dddmm.mmmm format
E/W Indicator	E	Longitude hemisphere indicator, 'E' = East, 'W' = West
GPS quality indicator	1	0: position fix unavailable 1: valid position fix, SPS mode 2: valid position fix, differential GPS mode 3: GPS PPS Mode, fix valid 4: Real Time Kinematic. System used in RTK mode with fixed integers 5: Float RTK. Satellite system used in RTK mode. Floating integers 6: Estimated (dead reckoning) Mode 7: Manual Input Mode 8: Simulator Mode
Satellites Used	11	Number of satellites in use, (00 ~ 12)
HDOP	0.8	Horizontal dilution of precision, (00.0 ~ 1023)
Altitude	118.2	Antenna Altitude above/below mean sea level (geoid), (-9999.9 ~ 17999.9)
Units	M	Unit of antenna altitude (meters)
Null	,,	Field not available on GPS cards
Null	,,	Field not available on GPS cards
DGPS Station ID	0000	Differential reference station ID, 0000 ~ 1023 (NULL when DGPS not used)
Checksum	02	
<CR><LF>	<CR><LF>	End of message (termination)

GLL – Latitude/Longitude

Latitude and longitude of current position, time, and status.

Structure: $GPGLL,ddmm.mmmm,a,dddmm.mmmm,a,hhmmss.sss,A,a*hh<CR><LF>

Example: $GPGLL,2447.0944,N,12100.5213,E,112609.932,A,A*57<CR><LF>

Name	Example	Description
Message ID	$GPGLL	GLL Protocol Header
Latitude	2447.0949	Latitude in ddmm.mmmm format
N/S Indicator	N	Latitude hemisphere indicator 'N' = North 'S' = South
Longitude	12100.5213	Longitude in dddmm.mmmm format
E/W Indicator	E	Longitude hemisphere indicator 'E' = East 'W' = West
UTC Time	112609.932	UTC Time in hhmmss.sss format (000000.000 ~ 235959.999)
Status	A	Status, 'A' = Data valid; 'V' = Data not valid
Mode Indicator	A	Mode indicator 'N' = Data not valid 'A' = Autonomous mode 'D' = Differential mode 'E' = Estimated (dead reckoning) mode 'M' = Manual input mode 'S' = Simulator mode
Checksum	*57	
<CR><LF>	<CR><LF>	End of message (termination)

GSA – GNSS DOP and Active Satellites

GPS receiver operating mode, satellites used in the navigation solution reported by the GGA or GNS sentence and DOP values.

Structure: $GPGSA,A,x,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx,x.x,x.x,x.x*hh<CR><LF>

Example: $GPGSA,A,3,05,12,21,22,30,09,18,06,14,01,31,,1.2,0.8,0.9*36<CR><LF>

Name	Example	Description
Message ID	$GPGSA	GSA Protocol Header
Mode	A	Mode 'M' = Manual, forced to operate in 2D or 3D mode 'A' = Automatic, allowed to automatically switch 2D/3D
Mode	3	Fix type 1 = Fix not available 2 = 2D 3 = 3D
Satellite used 1~12	05,12,21,22, 30,09,18,06, 14,01,31,,	Satellite ID number, 01 to 32 of satellite used in solution, up to 12 transmitted
PDOP	1.2	Position dilution of precision (00.0 to 99.9)
HDOP	0.8	Horizontal dilution of precision (00.0 to 99.9)
VDOP	0.9	Vertical dilution of precision (00.0 to 99.9)
Checksum	*36	
<CR><LF>	<CR><LF>	End of message (termination)

GSV – GNSS Satellites in View

Number of satellites (SV) in view, satellite ID numbers, elevation, azimuth, and SNR value. Four satellites maximum per transmission.

Structure: $GPGSV,x,x,xx,xx,xx,xxx,xx,…,xx,xx,xxx,xx *hh<CR><LF>

Example: $GPGSV,3,1,12,05,54,069,45,12,44,061,44,21,07,184,46,22,78,289,47*72<CR><LF>
$GPGSV,3,2,12,30,65,118,45,09,12,047,37,18,62,157,47,06,08,144,45*7C<CR><LF>
$GPGSV,3,3,12,14,39,330,42,01,06,299,38,31,30,256,44,32,36,320,47*7B<CR><LF>

Name	Example	Description
Message ID	$GPGSV	GSV Protocol Header
Number of messages[1]	3	Total number of GSV messages to be transmitted in this group (1-3)
Message Number[1]	1	Message number in this group of GSV messages
Satellites in View[1]	12	Total number of satellites in view (00 ~ 12)
Satellite ID	05	Satellite ID number, GPS: 01 ~ 32, SBAS: 33 ~ 64 (33 = PRN120)
Elevation	54	Satellite elevation in degrees, (00 ~ 90)
Azimuth	069	Satellite azimuth angle in degrees, (000 ~ 359)
SNR	45	C/No in dB (00 ~ 99). Null when not tracking
,, ,, ,,	12,44,061,44,2 1,07,184,46,22 ,78,289,47	Next Satellite ID number, elevation, azimuth, SNR Next Satellite ID number, elevation, azimuth, SNR Last Satellite ID number, elevation, azimuth, SNR
Checksum	*72	
<CR><LF>	<CR><LF>	End of message (termination)

[1]Depending on the number of satellites tracked, multiple messages of GSV data may be required. In some software versions, the maximum number of satellites reported as visible is limited to 12, even though more may be visible.

RMC – Recommended Minimum Specific GNSS Data

Time, date, position, course and speed data provided by a GNSS navigation receiver.

Structure: $GPRMC,hhmmss.sss,A,dddmm.mmmm,a,dddmm.mmmm,a,x.x,x.x,ddmmyy,,,a*hh<CR><LF>

Example: $GPRMC,111636.932,A,2447.0949,N,12100.5223,E,000.0,000.0,030407,,,A*61<CR><LF>

Name	Example	Description
Message ID	$GPRMC	RMC Protocol Header
UTC time	111636.932	UTC of position in hhmmss.sss format (000000.00 ~ 235959.999)
Status	A	Status: 'V' = Navigation receiver warning; 'A' = Data Valid
Latitude	2447.0949	Latitude in dddmm.mmmm format d
N/S indicator	N	Latitude hemisphere indicator: 'N' = North, 'S' = South
Longitude	12100.5223	Longitude in dddmm.mmmm format
E/W Indicator	E	Longitude hemisphere indicator: 'E' = East, 'W' = West
Speed over ground	000.0	Speed over ground in knots (000.0 ~ 999.9)
Course over ground	000.0	Course over ground in degrees (000.0 ~ 359.9)
UTC Date	030407	UTC date of position fix, ddmmyy format
	,	Magnetic variation, degrees
	,	East or West
Mode indicator	A	'N' = Data not valid 'A' = Autonomous mode 'D' = Differential mode 'E' = Estimated (dead reckoning) mode 'M' = Manual input mode 'S' = Simulator mode
Checksum	*61	
<CR><LF>	<CR><LF>	End of message (termination)

VTG – Course Over Ground and Ground Speed

The Actual course and speed relative to the ground.

Structure: GPVTG,x.x,T,,M,x.x,N,x.x,K,a*hh<CR><LF>

Example: $GPVTG, 000.0,T,,M,000.0,N,0000.0,K,A*3D<CR><LF>

Name	Example	Description
Message ID	$GPVTG	VTG Protocol Header
Course	000.0	True course over ground in degrees (000.0 ~ 359.9)
Reference	T	True
Course	,	Measured heading (degrees)
Reference	M	Magnetic
Speed	000.0	Speed over ground in knots (000.0 ~ 999.9)
Units	N	Knots
Speed	0000.0	Speed over ground in kilometers per hour (0000.0 ~ 1800.0)
Units	K	Kilometers per hour
Mode	A	'N' = not valid 'A' = Autonomous mode 'D' = Differential mode 'E' = Estimated (dead reckoning) mode 'M' = Manual input mode 'S' = Simulator mode
Checksum	*3D	
<CR><LF>	<CR><LF>	End of message (termination)

Part 7 – Appendixes

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Appendix B – Response Message Examples **110**

Appendix A – Response Messages & Error Codes

Response Messages

Standard AT Messages		
Numeric	**Verbose**	**Description**
0	OK	Operation or command success
3	NO CARRIER	No physical layer connection
7	BUSY	Destination busy
8	NO ANSWER	No answer from destination
4	ERROR	Operation or command unsuccessful
2	RING	Incoming call indication

Information Messages		
Numeric	**Verbose**	**Description**
1025	Ok_Info_DataBegin	Start of data
1028	Ok_Info_WaitingForData	Send data
3074	Ok_Info_SocketClosed	Socket connection closed successfully
3072	Ok_Info_NoMail	No mail to retrieve on server
3073	Ok_Info_Mail	Mail ready to be retrieved on server
3077	Ok_Info_PPP	PPP connection successful

Error Codes

Error Codes	
Numeric	**Description**
34817	Bad command : Unknown command
34819	Bad command : Syntax error
34824	Bad command : EEPROM write failed
34881	Bad command : Command too long
34882	Bad command : Bad command argument value
34883	Bad command : High level Internet configuration only command
35840	Physical layer : Modem is already running
35862	Physical layer : Timeout, no activity on network connection
35865	Physical layer : Module is not attached to the network
35866	Physical layer : Invalid event during activation process
35867	Physical layer : Physical layer connection is currently not active
35869	Physical layer : Invalid incoming call type
35870	Physical layer : Incoming call CLI not provided
36872	IP Connectivity library internal error : internal resource unavailable.
36929	IP Connectivity library : Bad parameter configuration attempt
37122	IP Connectivity library : Another internal application is already running
37123	IP Connectivity library : Service is running. Unable to set parameter
37124	IP Connectivity library : Data buffer oversized
37125	IP Connectivity library : No UDP datagram received
37952	Distant : TCP session closed (TCP Context cancelled)
37964	Distant : No response from server
37966	Distant : TCP session closed by peer (FIN received from peer)
38016	Distant : Open session attempt failed
38017	Distant : Data send attempt failed
38018	Distant : Close session attempt failed
38023	Distant : File deletion attempt failed
38024	Distant : Data retrieve attempt failed
38025	Distant : Email retrieve attempt failed
38026	Distant : Email header receive failed
38027	Distant : No answer from DNS servers or domain name resolution could not be completed by the server.
38028	Distant : Sender email address rejected by server
38029	Distant : Recipient email address rejected by server
38030	Distant : CC Recipient email address rejected by server
38031	Distant : Email body send request rejected by server
38080	Distant : Username rejected by server
38081	Distant : Password rejected by server

Appendix B – Response Message Examples

Sending/Retrieving Email Response Messages

Sending an Email: AT#PUTMAIL

Commands	Responses
AT#SMTPSERV="smtp.domain.com" Note: SMTP server used	OK
AT#DOMAIN="domain.com" Note: Domain name	OK
AT#SENDERNAME="Test module" Note: Sender name	OK
AT#SENDERADDR="module@domain.com" Note: Sender email address	OK
AT#SMTPUN="Name" Note: SMTP user name	OK
AT#SMTPPW="Password" Note: SMTP user password	OK
AT#SMTPORT="Port" Note: Port used by SMTP server	OK
AT#REC1=recipient@domain.com or AT#REC2 or AT#REC3 Note: Recipient email address	OK
AT#CCREC1=ccrecipient@domain.com or AT#CCREC2 or AT#CCREC3 Note: Carbon Copy recipient	OK
AT#SUBJ1="Email Subject" Note: Email Subject	OK
1. AT#PUTMAIL Note: Send an email (type the email text and then the end sequence)	Ok_Info_WaitingForData Note: The software is ready to receive incoming data (not echoed) *At the end of date, the* [CR][LF] . [CR][LF] sequence ends the email. This sequence can be sent by a keyboard using: ENTER CTRL+ENTER . ENTER CTRL+ ENTER
OR 1. AT#BODY1 (or AT#BODY2 or AT#BODY3) Note: Write an email for a predefined message. AND 2. AT#SENDMAIL1 (or AT#SENDMAIL2, AT#SENDMAIL3) Note: Send the predefined message.	OK OK

Retrieving an Email: AT#GETMAIL

Commands	Responses
AT#POP3SERV="pop3.domain.com" Note: POP3 server used	OK
AT#POP3UN="module@domain.com" Note: POP3 username (not always the complete email address). It is the POP3 login	OK
AT#POP3PW="password" Note: POP3 password	OK
AT#POP3PORT="110" Note: POP3 port	OK
AT#GETMAIL Note: Retrieve an email	Ok_Info_Mail Note: The software switches from command mode to data mode for receiving the email content. Data Data . Note: At the end of data, the [CR][LF] . [CR][LF] sequence notifies the end of the data mode OK Note: The email is successfully retrieved

FTP: Download / Upload Files Response Messages

Upload a file to an FTP Server: AT#FTPPUT

Commands	Responses
AT#FTPSERV="ftp.domain.com" Note: FTP server used	OK
AT#FTPUN="ftplogin" Note: FTP username	OK
AT#FTPPW="ftppassword" Note: FTP password	OK
AT#FTPPUTFILENAME="upload.text" Note: Name of the file that will be written in the FTP server	OK
AT#FTPPUTPATH="." Note: Path in the server where the file will be written	OK
AT#FTPPUT Note: FTP put	Ok_Info_WaitingForData Note: Switch from command to data mode. The host can send the data that will compose the file. (Data not echoed). To notify the end of data, the host has to send [ETX] (CTRL+C on the keyboard). This character is echoed. OK
Note: End of data notified	OK

Download a file from an FTP Server: AT#FTPGET

Commands	Responses
AT#FTPSERV="ftp.domain.com" Note: FTP server used	OK
AT#FTPUN="ftplogin" Note: FTP username	OK
AT#FTPPW="ftppassword" Note: FTP password	OK
AT#FTPGETFILENAME="upload.text" Note: Name of the file stored in the FTP server	OK
AT#FTPGET Note: FTP get	Ok_Info_DataBegin Note: Switch from command to data mode. The data is sent over the serial port. To end of data is notified by [ETX] sent over the serial port. It switches from data to command mode. Character is echoed. OK

TCP Socket Response Messages

Open a TCP socket between machines. One machine acts as a caller (TCP client); the other acts as a listener (TCP server). Both machines have to be connected to the Internet and set to the same TCP port.

Act as a TCP Server: AT#LTCPSTART

Commands	Responses
AT#TCPSERV=1,"255.255.255.255" Note: No filter of the incoming TCP client	OK
AT#TCPPORT=1,"23" Note: TCP port between the TCP client and the TCP server must be the same	OK
AT#LTCPSTART=1 Note: Launch the listening mode; waiting for an incoming TCP connection from a TCP client	OK Ok_Info_WaitingForData Note: Message sent over the serial port in case of successful TCP socket opening (Telnet for example in the IP address)
Data Note: Data flow is bidirectional	Data Note: Data flow is bidirectional
Note: The socket can be closed locally by the attached host sending an [ETX] character (CTRL+C on the keyboard)	OK
	Note: The socket can be closed by the remote Ok_Info_SocketClosed OK

Act as a TCP Client: AT#OTCP

Commands	Responses
AT#TCPSERV=1,"xxx.xxx.xxx.xxx" Note: No filter of the incoming TCP client	OK
AT#TCPPORT=1,"23" Note: TCP port between the TCP client and the TCP server must be the same	OK
AT#OTCP=1 Note: Open as a TCP client, a socket TCP with remote TCP server	Ok_Info_WaitingForData Note: Message notifying the socket opening and the switch in data mode
Data Note: Data flow is bidirectional	Data Note: Data flow is bidirectional
Note: The socket can be closed locally by the attached host sending an [ETX] character (CTRL+C on the keyboard)	OK
	Note: The socket can be closed by the remote Ok_Info_SocketClosed OK

Note: You can close the socket locally or remotely.

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