

Command List

AT# Commands List for the

GenPro 2Xe

family of modems

GenPro 20e



GenPro 24e



Reference : EG_AT#_CL_003_UK

Revision : 003

Date : 15/06/2007

Document History

Revision	Modifications	Author	Date
000	CREATION	MRE	13/03/2007
001	Added examples for configuring and using the modem. Added information concerning the restrictions of use.	MRE	04/05/2007
002	Added chapters for SNTP (Simple Network Time Protocol) commands and examples.	MRE	01/06/2007
003	Added minutes offset for SNTP (Simple Network Time Protocol). Updated +EGNTPUTC command and examples. Added restriction concerning FTP server name.	MRE	15/06/2007

The main modifications in this document compared to its previous version, are easily identifiable on a monitor by means of the blue text.

CONTENTS

1	INTRODUCTION	7
1.1	References	7
1.2	Software limitations	7
1.3	Definitions and abbreviations	7
2	Dialling services	8
2.1	Parameters definition	8
2.1.1	APNPW	8
2.1.2	APNSERV	8
2.1.3	APNUN	9
2.1.4	GPRSCID	9
2.1.5	GPRSMODE	10
2.2	Call management	11
2.2.1	CONNECTIONSTOP – Stop communication	11
2.2.2	CONNECTIONSTART – Start communication	11
2.3	DISPLAYIP – Display IP addresses	13
2.3.1	Description	13
2.3.2	Syntax	13
2.3.3	Parameter list	13
2.4	VGPRS – Display GPRS parameters	14
2.4.1	Description	14
2.4.2	Syntax	14
2.4.3	Parameter list	14
3	FTP services	15
3.1	Parameters definition	15
3.1.1	FTPPORT	15
3.1.2	FTPMODE	15
3.1.3	FTPTYPE	16
3.1.4	FTPSERV	16
3.1.5	FTPUN	17
3.1.6	FTPPW	17
3.1.7	FTPGETFILENAME	18
3.1.8	FTPGETPATH	18
3.1.9	FTPPUTFILENAME	19
3.1.10	FTPPUTPATH	19
3.2	FTPGET – Get data from server	20
3.2.1	Description	20
3.2.2	Syntax	20
3.2.3	Parameter list	21
3.3	FTPPUT – Put data on server	22
3.3.1	Description	22
3.3.2	Syntax	22
3.3.3	Parameter list	23
3.4	VFTP – Display FTP parameters	24
3.4.1	Description	24
3.4.2	Syntax	24
3.4.3	Parameter list	24
4	TCP socket services	25
4.1	Parameters definition	25

4.1.1	DLEMODE	25
4.1.2	TCPPORT	25
4.1.3	TCPSEV	26
4.1.4	TCPTXDELAY	26
4.2	LTCPSTART – Open listening mode	27
4.2.1	Description	27
4.2.2	Syntax	27
4.2.3	Parameter list	28
4.3	LTCPSTOP – Close listening mode	28
4.3.1	Description	28
4.3.2	Syntax	28
4.3.3	Parameter list	28
4.4	OTCP – Open TCP connection	28
4.4.1	Description	28
4.4.2	Syntax	29
4.4.3	Parameter list	29
4.5	VTCP – Display TCP parameters	30
4.5.1	Description	30
4.5.2	Syntax	30
4.5.3	Parameter list	30
5	SNTP services	31
5.1	Parameters definition	31
5.1.1	EGNTPPORT	31
5.1.2	EGNTPUTC	31
5.1.3	EGNTPWAIT	32
5.2	EGNTP – Set modem's RTC to SNTP server time	33
5.2.1	Description	33
5.2.2	Syntax	33
5.2.3	Parameter list	34
6	Miscellaneous	35
6.1	VVERSION – Display TCP/IP software version	35
6.1.1	Description	35
6.1.2	Syntax	35
6.1.3	Parameter list	35
6.2	VSTATE – Display current status	35
6.2.1	Description	35
6.2.2	Syntax	35
6.2.3	Parameter list	36
6.3	VALL – Display all parameters	36
6.3.1	Description	36
6.3.2	Syntax	36
6.3.3	Parameter list	37
7	Examples	38
7.1	Configuration	38
7.1.1	GPRS	38
7.1.2	TCP	38
7.1.3	FTP	38
7.2	TCP client socket	39
7.2.1	Attachment to a GPRS network	39
7.2.2	Start GPRS connexion	39
7.2.3	Open TCP client	39
7.2.4	Close socket	39
7.2.5	Stop GPRS connexion	39

7.3	TCP server socket	40
7.3.1	Attachment to a GPRS network	40
7.3.2	Start GPRS connexion.....	40
7.3.3	Open TCP server.....	40
7.3.4	Close socket.....	40
7.3.5	Stop GPRS connexion.....	40
7.4	FTP file transfer	41
7.4.1	Attachment to a GPRS network	41
7.4.2	Start GPRS connexion.....	41
7.4.3	GET file "filename.txt" from FTP server.....	41
7.4.4	PUT file "filename.txt" on FTP server	41
7.4.5	Stop GPRS connexion.....	41
7.4.6	FTP server restrictions.....	41
7.4.7	<ETX> and <DLE> characters	41
7.5	SNTP date/time request	43
7.5.1	Attachment to a GPRS network	43
7.5.2	Start GPRS connexion.....	43
7.5.3	Set modem's RTC to SNTP server time	43
8	Restrictions of use	44
9	Response messages and error codes	45
9.1	Response messages	45
9.2	Error messages	45

DISCLAIMER OF WARRANTY

This Software is provided free of charge on an 'as is' basis. No warranty is given by ERCO&GENER in relation to the Software concerning the uses to which it may be put by you, the user, or its merchantability, fitness or suitability for any particular purpose or conditions; and/or that the use of the Software and all documentation relating thereto by the Licensee will not infringe any third party copyright or other intellectual property rights.

LIMIT OF LIABILITY

In no event shall ERCO&GENER be liable for any loss or damages whatsoever or howsoever caused arising directly or indirectly in connection with this license, the Software, its use or otherwise except to the extent that such liability may not be lawfully excluded. Notwithstanding the generality of the foregoing, ERCO&GENER expressly excludes liability for indirect, special, incidental or consequential loss or damage which may arise in respect of the Software or its use, or in respect of other equipment or property, or for loss of profit, business, revenue, goodwill or anticipated savings.

In its continuing research into improving its products, ERCO&GENER reserves the right to modify its products and documentation at any time.

TRADEMARKS

WAVECOM®, WISMO®, MUSE Platform® are filed or registered trademarks of Wavecom S.A. in France or in other countries. All other company and/or product names mentioned may be filed or registered trademarks of their respective owners.

This document is the sole and exclusive property of ERCO&GENER. Not to be distributed or divulged without prior written agreement. Ce document est la propriété exclusive de ERCO&GENER. Il ne peut être communiqué ou divulgué à des tiers sans son autorisation préalable.

1 INTRODUCTION

This document describes AT commands specific to the GenPro 2Xe family of modems.

For a complete technical description of these modems, refer to [R1].

1.1 References

[R1] – GenProXXe User Guide (EG_GenProxxe_988_UG_001_UK).

1.2 Software limitations

This software is designed to run on the Q2406B, Q24PL and Q24EX WISMO's only with the OS 6.57.

1.3 Definitions and abbreviations

APN	Access Point Name
<DLE>	Escape character
DNS	Domain Name Server
<ETX>	Escape character
FTP	File Transfer Protocol
GPRS	General Packet Radio Service
GSM	Global System for Mobile communication
IP	Internet Protocol
ISP	Internet Service Provider
POP	Post Office Protocol
PPP	Point-to-Point Protocol
PSTN	Public Switched Telephone Network
SMTP	Simple Mail Transfer Protocol
Stack	Low-level software
TCP	Transmission Control Protocol
SNTP	Simple Network Time Protocol

2 Dialling services

2.1 Parameters definition

2.1.1 APNPW

§ **Definition**

Access Point Name password parameter coming with the APNUN from the GSM operator for providing GPRS access.

§ **Setting / getting**

Set value : AT#APNPW=<Value>

Get value : AT#APNPW? or AT#VGPRS, AT#VALL

§ **Legal values**

Alphanumeric ASCII text string up to 64 characters.

§ **Default value**

There is no default value for this parameter.

2.1.2 APNSERV

§ **Definition**

Access Point Name parameter coming with the APNUN from the GSM operator for providing GPRS access.

§ **Setting / getting**

Set value : AT#APNSERV=<Value>

Get value : AT#APNSERV? or AT#VGPRS, AT#VALL

§ **Legal values**

Alphanumeric ASCII text string up to 96 characters.

§ **Default value**

There is no default value for this parameter.

2.1.3 APNUN

§ Definition

Access Point Name Username parameter coming with the APNUN from the GSM operator for providing GPRS access.

§ Setting / getting

Set value : AT#APNUN=<Value>

Get value : AT#APNUN? or AT#VGPRS, AT#VALL

§ Legal values

Alphanumeric ASCII text string up to 64 characters.

§ Default value

There is no default value for this parameter.

2.1.4 GPRSCID

§ Definition

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

§ Setting / getting

Set value : AT#GPRSCID=<Value>

Get value : AT# GPRSCID? or AT#VGPRS, AT#VALL

§ Legal values

Numeric between 1 and 4 inclusive.

§ Default value

1

2.1.5 GPRSMODE

§ Definition

Configure the activation of the software for switching between GSM or GPRS.

§ Setting / getting

Set value : AT#GPRSMODE=<Value>

Get value : AT# GPRSMODE? or AT#VGPRS, AT#VALL

§ Legal values

0 : The software is configured for a GSM use

1 : The software is configured for a GPRS use

§ Default value

1

§ Important note: Only GPRS mode is currently managed.

2.2 Call management

2.2.1 CONNECTIONSTOP – Stop communication

2.2.1.1 Description

This command directs the TCP/IP stack to end a GPRS or GSM communication previously established with a START command.

2.2.1.2 Syntax

Command syntax : AT#CONNECTIONSTOP

Command	Possible Responses	Notes
AT#CONNECTIONSTOP	OK	<i>Disconnect.</i>

2.2.1.3 Parameter list

No TCP-IP parameter is used for the execution of this command.

2.2.2 CONNECTIONSTART – Start communication

2.2.2.1 Description

This command directs the TCP/IP stack to dial out and establish the connection.

Upon receiving this signal, the TCP/IP stack automatically initiates a complete connection session according to the GPRSMODE parameter, selecting the GSM or GPRS mode.

- § In GSM mode, the TCP/IP stack will dial the number according to the Dial Option parameter (DIALN1 or DIALN2 depending on DIALSELECT). If an error occurs, the TCP/IP stack automatically attempts according to the REDIALCOUNT parameter. Once the physical layer is up, the TCP/IP stack runs the applicable protocol as specified in the PPPMODE parameter.
- § In GPRS mode, the TCP/IP stack will establish a GPRS session with the APN using APNUN, APNPW, GPRSCID parameter. Once the GPRS link is up, the product is connected to the Internet. The AT#CONNECTIONSTOP command allows to on hook and close the connection.

Important note: GPRS attachment must be performed before a CONNECTIONSTART command.

2.2.2.2 Syntax

Command syntax : AT#CONNECTIONSTART

Command (GPRS mode)	Possible Responses	Notes
AT#CONNECTIONSTART <i>Note: Request connection to GPRS network</i>	213.192.200.4 Ok_Info_GprsActivation	<i>IP address attributed to the TCP/IP Stack</i> <i>GPRS session established and product connected to the Internet</i>
AT#CONNECTIONSTART	#CME ERROR: 35866	<i>All connection attempts will return this message if the GPRS session can not be established</i>

AT#CONNECTIONSTART	#CME ERROR: 35865	<i>The product is not registered on the network</i>
AT#CONNECTIONSTART	#CME ERROR: 35868	<i>Aborted GPRS connection, check APN parameters.</i>

2.2.2.3 Parameter list

§ Read parameters

FOR GPRS MODE :
APNPW
APNSERV
APNUN
GPRSCID

2.3 DISPLAYIP – Display IP addresses

2.3.1 Description

This command allows the attached host to view the 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.

2.3.2 Syntax

Command syntax : AT#DISPLAYIP

Response syntax :

MY IP: xxx.xxx.xxx.xxx

PEER IP: xxx.xxx.xxx.xxx

OK

Command (GPRS mode)	Possible Responses	Notes
AT#DISPLAYIP <i>Note: Request for local and remote IP addresses</i>	MY IP: 1.2.3.4 Gateway IP: 1.0.3.5 OK	<i>PPPMYIP (IP address attributed to the TCP/IP Stack)</i>
AT# DISPLAYIP <i>Note: Request for local and remote IP addresses</i>	#CME ERROR: 35867	<i>No IP addresses have been attributed: no active connection or PPP/IPCP negotiation not yet completed</i>

2.3.3 Parameter list

§ Read parameters

PPPMYIP

2.4 VGPRS – Display GPRS parameters

2.4.1 Description

This command directs the TCP/IP stack to display all the parameters related to the GPRS configuration.

2.4.2 Syntax

Command syntax : AT#VGPRS

Command	Possible Responses	Notes
AT#VGPRS	#APNPW: "aces" #APNSERV: "a2myoperator.com" #APNUN: "a2b" #GPRSMODE: 1 #GPRSCID: 1 OK	<i>Display current parameters</i>

2.4.3 Parameter list

§ Read parameters

APNPW
APNSERV
APNUN
GPRSMODE
GPRSCID

3 FTP services

3.1 Parameters definition

3.1.1 FTPPORT

§ Definition

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

§ Setting / getting

Set value : AT#FTPPORT=<Value>

Get value : AT#FTPPORT? or AT#VFTP, AT#VALL

§ Legal 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 value

21

§ Note

This parameter should be changed only upon request of your network administrator. It applies for network infrastructure including Firewalls, Proxy or specific TCP port translation.

3.1.2 FTPMODE

§ Definition

Define the FTP soft behaviour for file transfer.
Active or Passive mode.

§ Setting / getting

Set value : AT#FTPMODE=<Value>

Get value : AT#FTPMODE? or AT#VFTP, AT#VALL

§ Legal values

0 : Ftp active mode

1 : Ftp passive mode

§ Default value

0

3.1.3 FTPTYPE

§ Definition

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.

§ Setting / getting

Set value : AT#FTPTYPE=<Value>

Get value : AT#FTPTYPE? or AT#VFTP, AT#VALL

§ Legal values

A : for FTP ASCII sessions

I : for FTP Binary sessions (upper case 'i' char)

§ Default value

I

§ Note

When this value is set to A, all the bytes sent to the FTP server will be 7 bits wide (NVT-ASCII: the MSB is set to 0). As a result, binary data containing 8-bit characters will be corrupted during the transfer if FTPTYPE is set to A.

3.1.4 FTPSERV

§ Definition

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.

§ Setting / getting

Set value : AT#FTPSERV=<Value>

Get value : AT#FTPSERV? or AT#VFTP, AT#VALL

§ Legal values

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

alphanumeric ASCII text string up to 64 characters if DNS is available.

§ Default value

There is no default value for this parameter.

3.1.5 FTPUN

§ Definition

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

§ Setting / getting

Set value : AT#FTPUN=<Value>

Get value : AT#FTPUN? or AT#VFTP, AT#VALL

§ Legal values

Alphanumeric ASCII text string up to 64 characters.

§ Default value

There is no default value for this parameter.

3.1.6 FTTPW

§ Definition

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

§ Setting / getting

Set value : AT#FTTPW=<Value>

Get value : AT#FTTPW? or AT#VFTP, AT#VALL

§ Legal values

Alphanumeric ASCII text string up to 64 characters.

§ Default value

There is no default value for this parameter.

3.1.7 FTPGETFILENAME

§ Definition

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

§ Setting / getting

Set value : AT#FTPGETFILENAME=<Value>

Get value : AT#FTPGETFILENAME? or AT#VFTP, AT#VALL

§ Legal values

Alphanumeric ASCII text string up to 64 characters.

§ Default value

There is no default value for this parameter.

3.1.8 FTPGETPATH

§ Definition

In order for the TCP/IP stack software to retrieve a file from the FTP server, the TCP/IP stack software must know the path of the relevant file. For example, it could be : /list

§ Setting / getting

Set value : AT#FTPGETPATH=<Value>

Get value : AT#FTPGETPATH? or AT#VFTP, AT#VALL

§ Legal values

Alphanumeric ASCII text string up to 64 characters.

§ Default value

There is no default value for this parameter.

§ Note

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

3.1.9 FTTPUTFILENAME

§ Definition

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.

§ Setting / getting

Set value : AT#FTTPUTFILENAME=<Value>

Get value : AT#FTTPUTFILENAME? or AT#VFTP, AT#VALL

§ Legal values

Alphanumeric ASCII text string up to 64 characters.

§ Default value

There is no default value for this parameter.

3.1.10 FTTPUTPATH

§ Definition

In order for the TCP/IP stack software to upload a file to the FTP server, the TCP/IP stack software must know the path of the relevant file. For example, it could be : /list

§ Setting / getting

Set value : AT#FTTPUTPATH=<Value>

Get value : AT#FTTPUTPATH? or AT#VFTP, AT#VALL

§ Legal values

Alphanumeric ASCII text string up to 64 characters.

§ Default value

There is no default value for this parameter.

§ Note

Depending on the FTP server, the value can be used for putting a file on the root directory of the FTP server.

3.2 FTPGET – Get data from server

3.2.1 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 completed, the TCP/IP stack closes the FTP connection.

Once an IP link established, the attached host can retrieve a file from 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 GET operation (with an automatic connect/disconnect) issued by a standard FTP client on a PC. The TCP/IP stack handles the global FTP get process by itself.

Note

- § Each <ETX> character present in the payload data of the FTP flow 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 FTP flow to remove these escape characters.

3.2.2 Syntax

Command syntax : AT#FTPGET

Command	Possible Responses
AT#FTPGET <i>Note: Start data reception</i>	Ok_Info_DataBegin <i>Note : The server is ready to send data to the TCP/IP stack. For the attached host, it notifies the switch from command to data mode.</i> DATA <i>Note: The data transmitted from the FTP server to the TCP/IP stack is sent over the serial port.</i> <ETX> <i>Note: Once the file transfer finished, the TCP/IP stack sends an ETX character over the serial port to notify the attached host the end of transfer : switch from data to command mode.</i> OK <i>Note: The FTP process was successfully completed.</i>
AT#FTPGET <i>Note: Start data reception</i>	#CME ERROR: 38027 <i>Note: The address of the FTP server has not been resolved by the secondary DNS server. The TCP/IP stack is not able to reach the primary and secondary DNS servers or a wrong FTP server address has been filled in.</i>
AT#FTPGET <i>Note: Start data reception</i>	#CME ERROR: <value> <i>Note: The connection to the FTP server. If this error occurs once the data transfer started, it is preceded by an ETX character.</i>

3.2.3 Parameter list

§ Read parameters

FTPGETFILENAME
FTPGETPATH
FTPPORT
FTPSERV
FTPTYPE
FTPMODE
FTPPW
FTPUN

3.3 FTTPUT – Put data on server

3.3.1 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 to 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 only interpret 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 in <DLE><DLE>.

3.3.2 Syntax

Command syntax : AT#FTTPUT

Command	Possible Responses
AT#FTTPUT <i>Note: Start data sending</i>	Ok_Info_DataBegin <i>Note : TCP/IP stack is ready to send data from the serial port to the remote FTP server. TCP/IP stack then immediately transfers all the data sent by the attached host to the remote FTP server. To notify the TCP/IP stack that all data has been sent, the attached host must send the <ETX> character.</i> <ETX> <i>Note: Notification from the host for end of data : switch from data mode to command mode.</i> OK <i>Note: The FTP process was successfully completed.</i>
AT#FTPGET <i>Note: Start data sending</i>	#CME ERROR: 38027 <i>Note: The address of the FTP server has not been resolved by the secondary DNS server. The TCP/IP stack is not able to reach the primary and secondary DNS servers or a wrong FTP server address has been filled in.</i>
AT#FTPGET <i>Note: Start data sending</i>	#CME ERROR: <value> <i>Note: The connection to the FTP server failed. If this error occurs once the data transfer started, it is preceded by an ETX character.</i>

3.3.3 Parameter list

§ Read parameters

FTPPUTFILENAME
FTPPUTPATH
FTPPORT
FTPSERV
FTPTYPE
FTPMODE
FTPPW
FTPUN

3.4 VFTP – Display FTP parameters

3.4.1 Description

This command directs the TCP/IP stack to display all the parameters related to the FTP client configuration.

3.4.2 Syntax

Command syntax : AT#VFTP

Command	Possible Responses
AT#VFTP <i>Note : View FTP parameters</i>	#FTPGETFILENAME: "" #FTPGETPATH: "." #FTPMODE: 0 #FTPPORT: 21 #FTPPUTFILENAME: "Testseb3.txt" #FTPPUTPATH: "." #FTPPW: "mypass" #FTPSERV: "mytestwebsite.com" #FTPTYPE = I #FTPUN: "myname" OK

3.4.3 Parameter list

§ Read parameters

FTPSERV
FTPPORT
FTPUN
FTPPW
FTPGETFILENAME
FTPGETPATH
FTPPUTFILENAME
FTPPUTPATH
FTPTYPE
FTPMODE

4 TCP socket services

Two TCP sockets may be active simultaneously. One has the id 1 and the other the id 2.

4.1 Parameters definition

4.1.1 DLEMODE

§ Definition

When performing a socket TCP, the attached host has the choice to code or not the ETX character.

§ Setting / getting

Set value : AT#DLEMODE= id,<Value>

Get value : AT#DLEMODE=id or AT#VTCP=id, AT#VALL

§ Legal id

{1, 2}

§ Legal values

0 : When DLEMODE is set to 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 end of connection from the TCP/IP stack.

1 : When DLEMODE is set to 1, the [ETX] character means a request or an indication of end of connection. As a consequence, [ETX] characters that are part of 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 value

1

4.1.2 TCPPORT

§ Definition

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

§ Setting / getting

Set value : AT#TCPPOINT= id,<Value>

Get value : AT#TCPPOINT=id or AT#VTCP=id, AT#VALL

§ Legal id

{1, 2}

§ **Legal 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 value**

0

4.1.3 TCPSERV

§ **Definition**

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.

§ **Setting / getting**

Set value : AT#TCPSERV=id,<Value>

Get value : AT#TCPSERV=id or AT#VTCP=id, AT#VALL

§ **Legal id**

{1, 2}

§ **Legal values**

32-bit number in dotted-decimal notation (i.e. xxx.xxx.xxx.xxx) or alphanumeric ASCII text string up to 64 characters if DNS is integrated.

§ **Default value**

0

4.1.4 TCPTXDELAY

§ **Definition**

This parameter 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. 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.

§ **Setting / getting**

Set value : AT#TCPTXDELAY=id,<Value>

Get value : AT#TCPTXDELAY=id or AT#VTCP=id, AT#VALL

§ **Legal id**

{1, 2}

§ **Legal values**

Integer multiple of 20 and between 0 and 32760 inclusive.

§ **Default value**

100

4.2 LTCPSTART – Open listening mode

4.2.1 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 (TCPPOINT).

Once opened, this TCP connection may be closed by the remote TCP peer or by the attached host via 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 only interpret an <ETX> character 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 as <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).

4.2.2 Syntax

Command syntax : AT#LTCPSTART=id, with id one of {1,2}

Command	Possible Responses
AT#LTCPSTART=1 <i>Note : Activate TCP socket 1 in listen mode</i>	Ok_Info_WaitingForData <i>Note : This message signals that a remote allowed TCP peer has opened the TCP socket. The TCP connection is now opened. All the data from the attached host / remote TCP server is then immediately transferred by the TCP/IP stack to the remote TCP server / attached host. Depending on the DLEMODE value, the attached host may close this TCP connection by sending an ETX character. If the remote TCP server closes the connection, the TCP/IP stack issues an ETX character on the serial port.</i>

AT#LTCPPORT=1	#CME ERROR: <value> <i>Note: An error has occurred during the TCP connection. This connection is being closed. If this error occurs once the TCP connection opened, it is preceded by an ETX character.</i>
---------------	--

4.2.3 Parameter list

§ Read parameters

- DLEMODE
- TCPPORT
- TCPSEV
- TCPTXDELAY

4.3 LTCPPORT – Close listening mode

4.3.1 Description

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

4.3.2 Syntax

Command syntax : AT#LTCPPORT=id, with id one of {1,2}

Command	Possible Responses
AT#LTCPPORT=1 <i>Note : Stop the TCP socket 1 from listening</i>	OK <i>Note : The local listening port is closed in the TCP/IP stack</i>

4.3.3 Parameter list

§ Read parameters

- DLEMODE
- TCPPORT
- TCPSEV
- TCPTXDELAY

4.4 OTCP – Open TCP connection

4.4.1 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**).

Notes on DLEMODE value

Depending in 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 the DLEMODE parameter is set to 0, the TCP/IP stack will never 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.

4.4.2 Syntax

Command syntax : AT# OTCP=id, with id one of {1,2}

Command	Possible Responses
AT#OTCP=1 <i>Note : Request opening of the TCP socket 1</i>	Ok_Info_WaitingForData <i>Note : This message signals that the TCP socket has been opened. All the data from the attached host / remote TCP server is then immediately transferred by the TCP/IP stack to the remote TCP server / attached host. Depending on the DLEMODE value, the attached host may close this TCP connection by sending an ETX character. If the remote TCP server closes the connection, the TCP/IP stack issues an ETX character on the serial port.</i>
	Ok_Info_SocketClosed OK <i>Note: The TCP socket is closed</i>
AT#OTCP=2	#CME ERROR: 38027 <i>Note: The address of the 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 server address has been filled in.</i>
AT#OTCP=2	#CME ERROR: <value> <i>Note: An error has occurred during the TCP connection. This connection is being closed .If this error occurs once the TCP connection opened, it is preceded by an ETX character.</i>

4.4.3 Parameter list

- § Read parameters

DLEMODE
 TCPPORT
 TCPSERV
 TCPTXDELAY

4.5 VTCP – Display TCP parameters

4.5.1 Description

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

4.5.2 Syntax

Command syntax : AT#VTCP=id, with id one of {1,2}

Command	Possible Responses
AT#VTCP=2 <i>Note : View TCP parameters of the TCP socket 2</i>	#DLEMODE: 2,1 #TCPSERV: 2,"" #TCPPOINT: 2,0 #TCPTXDELAY: 2,100 OK

4.5.3 Parameter list

§ Read parameters

DLEMODE
 TCPPORT
 TCPSERV
 TCPTXDELAY

5 SNTP services

SNTP is an acronym that stands for *Simple Network Time Protocol*. As its name suggests, it is a less complicated version of Network Time Protocol.

The commands described in this chapter allow the modem's internal real time clock to be set to that of a high precision and stable time reference.

SNTP uses the UDP protocol over port 123 to send a request to a SNTP server and receive its response.

5.1 Parameters definition

5.1.1 EGNTPPORT

§ Definition

To reach the SNTP server, the UDP/IP stack software must know the control port of the SNTP server to be used.

§ Setting / getting

Set value : AT+EGNTPPORT=<Value>

Get value : AT+EGNTPPORT?

§ Legal 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 UDP header.

§ Default value

123

§ Note

It would not normally be required to change this parameter as the default port number has been internationally reserved for this protocol.

5.1.2 EGNTPUTC

§ Definition

Set the UTC offset to be added to the obtained time when setting the modem's internal real time clock. [The command allows a minimum offset of 1 minute to be added.](#)

§ Setting / getting

Set value : AT+EGNTPUTC=<"hour">(, minutes)

Get value : AT+EGNTPUTC?

§ Legal values

hour from -11 to 12 hours

minutes from 0 to 59 minutes

§ Default value

hour = 0
minute = 0

5.1.3 EGNTWAIT

§ Definition

Set the timeout value when requesting date/time information from a SNTP server.

§ Setting / getting

Set value : AT+EGNTWAIT=<value>

Get value : AT+EGNTWAIT?

§ Legal values

From 10 to 300 seconds.

§ Default value

30

5.2 EGNTPT – Set modem's RTC to SNTP server time

5.2.1 Description

This command will initiate an SNTP date/time request. The response is used to set the modem's internal real time clock. Note that the UTC offset value (see AT+EGNTPUTC) is added to the SNTP hour before setting the RTC and display the result.

5.2.2 Syntax

Command syntax : AT+EGNTPT=<mode>(,<display>)
AT+EGNTPT=<mode>,<"server">,<timeout>(,<display>)

Command	Possible Responses
AT+EGNTPT=1 <i>Note: Start SNTP request</i>	OK <i>Note : A default SNTP server has been accessed and the response has been used to set the modem's internal RTC.</i>
AT+EGNTPT=1,1 <i>Note: Start SNTP request and display result</i>	07/06/01,12:08:02 OK <i>Note : A default SNTP server has been accessed and the response has been used to set the modem's internal RTC. This same result is displayed.</i>
AT+EGNTPT=2,"ntp.univ-lyon1.fr",20 <i>Note: Start SNTP request</i>	OK <i>Note : A user specified SNTP server has been accessed (with a timeout) and the response has been used to set the modem's internal RTC.</i>
AT+EGNTPT=2,"ntp.univ-lyon1.fr",20,1 <i>Note: Start SNTP request and display the result</i>	07/06/01,12:15:29 OK <i>Note : A user specified SNTP server has been accessed (with a timeout) and the response has been used to set the modem's internal RTC. This same result is displayed.</i>
AT+EGNTPT=0 <i>Note: Stop SNTP</i>	OK <i>Note : A started SNTP request has been halted.</i>
AT+EGNTPT=1 <i>Note: Start SNTP request</i>	ERROR <i>Note : The SNTP server has not been found and the request has timed out.</i>
AT+EGNTPT=1 <i>Note: Start SNTP request</i>	#CME ERROR: 35867 <i>Note : No IP addresses have been attributed: no active connection or PPP/IPCP negotiation not yet completed (see AT#CONNECTIONSTART)..</i>

<mode>

- 0 Stop SNTP get date/time request
- 1 Start SNTP date/time request using default server list (see <"server"> and <timeout> below)
- 2 Start SNTP date/time request using specified server name and timeout

<"server">

user specified server name of up to 64 characters used in mode 2. Default is empty.

<timeout>

User specified timeout of between 10 and 300 seconds used in mode 2. Default value 30 seconds.

<display>

0 or not specified

do not display SNTP get data/time result

1

display SNTP get data/time result

5.2.3 Parameter list

§ SNTP parameters

EGNTPPORT

EGNTPUTC

EGNTPWAIT

6 Miscellaneous

6.1 VVERSION – Display TCP/IP software version

6.1.1 Description

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

6.1.2 Syntax

Command syntax : AT#VVERSION

Response syntax : <OS version> <WIP library version> <Application version> <Date and time of generation>

Command	Possible Responses
AT#VVERSION	#VERSION: OS:V313 WIP:V2.00.12 API:LLC T V1.03 - May 3 2007 16:56:58
<i>Note : Request TCP/IP stack version</i>	OK

6.1.3 Parameter list

No TCP/IP parameters.

6.2 VSTATE – Display current status

6.2.1 Description

This command directs the TCP/IP stack to display its current status.

6.2.2 Syntax

Command syntax : AT#VSTATE

Command	Possible Responses
AT#VSTATE	#STATE: "IDLE"
	OK
	<i>Note : Idle state</i>
AT#VSTATE	#STATE: "CONNECTED"
	OK
	<i>Note : Connected to Internet. An IP address has been attributed to the TCP/IP stack</i>

AT#VSTATE	#STATE: "NO SERVICE" <i>Note: No radio connection made</i>
-----------	---

6.2.3 Parameter list

No TCP/IP parameters.

6.3 VALL – Display all parameters

6.3.1 Description

This command directs the TCP/IP stack to display all the AT# parameters.

The parameters are displayed by blocks of categories separated by a <CR><LF> sequence.

6.3.2 Syntax

Command syntax : AT#VALL

Command	Possible Responses
AT#VALL	<pre>#VERSION: OS:V313 WIP:V2.00.12 API:LLC T V1.03 - May 3 2007 16:56:58 #APNPW: "acces" #APNSERV: "a2bouygtel.com" #APNUN: "a2b" #GPRSMODE: 1 #GPRSCID: 1 #FTPGETFILENAME: "" #FTPGETPATH: "." #FTPMODE: 0 #FTPPORT: 21 #FTPPUTFILENAME: "Testseb3.txt" #FTPPUTPATH: "." #FTPPW: "mypassword" #FTPSERV: "mytestwebsite.com" #FTPTYPE = I #FTPUN: "mylogin" #DLEMODE: 1,1 #TCPPORT: 1,0 #TCPSERV: 1,"" #TCPTXDELAY: 1,100 #DLEMODE: 2,1 #TCPPORT: 2,0 #TCPSERV: 2,"" #TCPTXDELAY: 2,100</pre>

6.3.3 Parameter list

§ Read parameters

All parameters.

7 Examples

7.1 Configuration

AT#VALL (display complete current configuration)

7.1.1 GPRS

The parameters below are automatically saved to flash memory:

AT+CGREG=1 (activate the automatic display of +CGREG to be sure of the attachment)

AT#GPRSMODE=1 (the IP stack is used in GPRS mode)
AT#APNSERV="apn_serveur" (example for Orange: AT#APNSERV="internet-entreprise")
AT#APNUN="user_name_APN" (example for Orange: AT#APNUN="orange")
AT#APNPW="password_APN" (example for Orange: AT#APNPW="orange")

AT#VGPRS (display current GPRS configuration)

7.1.2 TCP

The parameters below are automatically saved to flash memory:

AT#TCPSERV=1,"255.255.255.255" (enter the IP address)
AT#TCPSERV=1,"distantserver.com" (or the URL of the remote TCP server)
AT#TCPPOINT=1,"1025" (enter the number of the remote TCP server)

AT#VTCP (display current TCP configuration)

7.1.3 FTP

The parameters below are automatically saved to flash memory:

AT#FTPMODE=0 (active mode)
AT#FTPSERV="server.ftp.fr" (address of FTP server)
AT#FTPUN="username" (user Name for FTP server)
AT#FTPPW="password" (password for FTP server)
AT#FTPPORT="21" (port number for FTP server)
AT#FTPGETPATH="." (get directory on FTP server. Here, the root directory)
AT#FTPPUTPATH="." (put directory on FTP server. Here, the root directory)
AT#FTPPUTFILENAME="filename.txt" (name of file to put on the FTP server)
AT#FTPGETFILENAME="filename.txt" (name of file to get from the FTP server)
AT#FTPTYPE="I" (binary mode. ASCII mode will truncate bytes to 7 bits)

AT#VFTP (display current FTP configuration)

7.2 TCP client socket

7.2.1 Attachment to a GPRS network

It is assumed that the modem is already connected in GSM (valid PIN code entered and GSM indicator is flashing).

```
AT+CGATT=1                (request attachment to GPRS network)
OK
+CGREG: 2
+CGREG: 1                  (attachment succeeded)
```

7.2.2 Start GPRS connexion

```
AT#CONNECTIONSTART        (start the GPRS connexion)

80.10.32.45                (IP address attributed by the network)
Ok_Info_GprsActivation    (GPRS connexion established)
```

7.2.3 Open TCP client

```
AT#OTCP=1                 (open socket 1 in client mode)
Ok_Info_WaitingForData
```

The socket is now open. Data may be sent and received.

7.2.4 Close socket

The socket is closed by locally sending the character <ETX> = Ctrl-C = 03 (Hex).

```
Ok_Info_SocketClosed
```

Note: To send the <ETX> character as part of data, it must be preceded by the character <DLE> = Ctrl-P = 10 (hex). In this case the <ETX> character will not be interpreted as an order to close the socket.

7.2.5 Stop GPRS connexion

```
AT#CONNECTIONSTOP        (stop the GPRS connexion)
OK
```

7.3 TCP server socket

7.3.1 Attachment to a GPRS network

It is assumed that the modem is already connected in GSM (valid PIN code entered and GSM indicator is flashing).

```
AT+CGATT=1                (request attachment to GPRS network)
OK
+CGREG: 2
+CGREG: 1                  (attachment succeeded)
```

7.3.2 Start GPRS connexion

```
AT#CONNECTIONSTART        (start the GPRS connexion)

80.10.32.45                (IP address attributed by the network. This address will be
                           used to configure a Winsock client in Hyper terminal for
                           example)

Ok_Info_GprsActivation    (GPRS connexion established)
```

7.3.3 Open TCP server

```
AT#LTCPSTART=1           (open server socket 1)
OK
```

The socket is now ready to receive a connexion request from TCP client. When the client socket connects, the server will output the message:

```
Ok_Info_WaitingForData
```

The socket is now open. Data may be sent and received.

7.3.4 Close socket

The connected client may close the socket by using the function "Deconnexion" in Hyper Terminal.

The socket may also be closed by sending the character <ETX> = Ctrl-C = 03 (Hex) either locally or from the client.

When closed, the server will output the message:

```
Ok_Info_SocketClosed
```

Note: a new socket connexion must started with the command AT#LTCPSTART=1

7.3.5 Stop GPRS connexion

```
AT#CONNECTIONSTOP        (stop the GPRS connexion)
OK
```


If the <ETX> character is placed in the middle of the file then the file will be cut at this point and transmission will end.

If, however, it is required that the <ETX> character be sent as a data byte, then:

- § the file transmission format must be in binary (AT#FTPTYPE="I"),
- § each <ETX> character in the data to be sent as data must be preceded by the <DLE> character.

The sequence <DLE><ETX> ensures that the <ETX> character is sent and transmission continues. Only the <ETX> character will be present in the remote file.

A similar requirement must be made for <DLE> characters in the data.

Transmission example:

```
Local file to send with AT#FTPPUT:  0123456<DLE><DLE>654321<DLE><ETX>123456<ETX>
Remote file stored on server:       0123456<DLE>654321<ETX>123456
```

File reception (AT#FTPGET) :

If the <ETX> character is not present at the end of the file, the IP stack will detect the end of transmission and generate the <ETX> character automatically. The serial port will thus output the file terminated by a single <ETX> character:

```
Ok_Info_DataBegin
datadatadatadatadatadatadatadatadatadatadat <ETX>
```

If the <ETX> character is already present at the end of the file, the IP stack will transform the <ETX> character to <DLE><ETX>. The serial port will output the file terminated with <DLE><ETX> then <ETX>:

```
Ok_Info_DataBegin
datadatdatadatadatadatadatadatadatadatadat<DLE><ETX> <ETX>
```

In a similar manner, received <DLE> characters will be transformed to <DLE><DLE> on the serial port. For example, if the file contains the sequence <DLE><ETX>, then it will be transformed to <DLE><DLE><DLE><ETX> on the serial port.

Reception example:

```
Remote file on server: 0123456<DLE>654321<ETX>123456
File received with AT#FTPGET : 0123456<DLE><DLE>654321<DLE><ETX>123456<ETX>
```

7.5 SNTP date/time request

7.5.1 Attachment to a GPRS network

It is assumed that the modem is already connected in GSM (valid PIN code entered and GSM indicator is flashing).

```
AT+CGATT=1          (request attachment to GPRS network)
OK
+CGREG: 2
+CGREG: 1          (attachment succeeded)
```

7.5.2 Start GPRS connexion

```
AT#CONNECTIONSTART  (start the GPRS connexion)

80.10.32.45         (IP address attributed by the network)
Ok_Info_GprsActivation (GPRS connexion established)
```

7.5.3 Set modem's RTC to SNTP server time

```
AT+EGNTPUTC=9,30    (Set UTC offset)
OK                  (UTC offset has been set to 9h30)

AT+EGNTP=1          (start procedure using default server list)
OK                  (modem's RTC has been set with UTC offset added)

AT+EGNTP=2,"mySntpServer",45 (start procedure with defined server and timeout)
OK                  (modem's RTC has been set with UTC offset added)

AT+EGNTP=2,"mySntpServer",45,1 (start procedure with defined server and timeout and display
07/06/01,12:54:36   response)
OK                  (SNTP response with UTC offset added)
                    (modem's RTC has been set)
```

8 Restrictions of use

Below is a list of known restrictions and limitations to be taken into account when using this application.

ATQ1

This command is not allowed.

ATV0

This command is not allowed.

+WIND: 13 message at start up

It is not possible to remove this message at the start-up of the application.

AT+CGATT=1

After having entered the command AT+CGATT=1 to connect to a network, the modem will reply "OK".

If the command AT#CONNECTIONSTART is then immediately entered, then the modem may reply with the message: "#CME ERROR: 35866".

To avoid this message, allow a delay of at least 500ms after the "OK" message and the command AT#CONNECTIONSTART.

AT#FTPSERV

This must be a valid and existing FTP server name. The application will abort an attempt to connect (AT#FTPGET or AT#FTPPUT) to an invalid or non-existent FTP server name and display the following error messages:

```
#CME ERROR: 0
ErrorHandler_ip: Error 17 (ADL Release memory error...)
ErrorHandler_ip: Error 17 (ADL Release memory error...)
```

9 Response messages and error codes

9.1 Response messages

Standard AT messages		
Numeric	Verbose	Description
	OK	Operation or command success
	NO CARRIER	No physical layer connection
	BUSY	Destination busy
	NO ANSWER	No answer from destination
	ERROR	Operation or command unsuccessful
	RING	Incoming call indication
	CONNECT 300	Physical layer connected at 300 baud
	CONNECT 1200	Physical layer connected at 1200 baud
	CONNECT 1200/75	Physical layer connected at 1200/75 baud
	CONNECT 2400	Physical layer connected at 2400 baud
	CONNECT 4800	Physical layer connected at 4800 baud
	CONNECT 9600	Physical layer connected at 9600 baud
	CONNECT 14400	Physical layer connected at 14400 baud

Information messages		
Numeric	Verbose	Description
	Ok_Info_DataBegin	Start of data
	Ok_Info_WaitingForData	Send data
	Ok_Info_SocketClosed	Socket connection closed successfully
	Ok_Info_GprsActivation	GPRS connection successful

9.2 Error messages

Error codes	
Numeric	Description
35840	Physical layer : Modem is already running
35841	Physical layer : GPRS session lost.
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
35868	Physical layer : GPRS connection aborted
36929	IP Connectivity library : Bad parameter configuration attempt
37122	IP Connectivity library: Another internal application is already running
38016	Distant : Open session attempt failed
38022	Distant : Change Directory attempt failed
38027	Distant : No answer from DNS servers or the domain name resolution could not be completed by the server.
49155	Internal error : Open GPRS session request failed