Command Function

A/ - Re-execute Command

The modem behaves as though the last command line had been re-sent by the DTE. "A/" will repeat all the commands in the command buffer.

The principal application of this command is to place another call (using the Dial command) that failed to connect due to a busy line, no answer, or a wrong number. This command must appear alone on a command line. This command should not be terminated by a carriage return.

A - Answer

The modem will go off-hook and attempt to answer an incoming call if correct conditions are met. Upon successful completion of answer handshake, the modem will go on-line in answer mode. This command may be affected by the state of Line Current Sense, if enabled. (Most countries do not require Line Current Sense.)

Dn - Dial

This command directs the modem to go on-line, dial according to the string entered and attempt to establish a connection. If no dial string is supplied, the modem will go on-line and attempt the handshake in originate mode.

Dial Modifiers. The valid string parameters are described below. Punctuation characters may be used for clarity, with parentheses, hyphen, and spaces being ignored.

0-9	DTMF digits 0 to 9.
*	The 'star' digit (tone dialing only).
#	The 'gate' digit (tone dialing only).
A-D	DTMF digits A, B, C, and D. Some countries may prohibit sending of these digits during dialing.
L	Re-dial last number: the modem will re-dial the last valid telephone number. The L must be immediately after the D with all the following characters ignored).
P	Select pulse dialing: pulse dial the numbers that follow until a "T" is encountered. Affects current and subsequent dialing. Some countries prevent changing dialing modes after the first digit is dialed.
T	Select tone dialing: tone dial the numbers that follow until a "P" is encountered. Affects current and subsequent dialing. Some countries prevent changing dialing modes after the first digit is dialed.

Command	Function
S=n	Dial the number stored in the directory (n=0 to 3). (See &Z.)
!	Flash: the modem will go on-hook for a time defined by the value of S29. Country requirements may limit the time imposed.
W	Wait for dial tone: the modem will wait for dial tone before dialing the digits following "W". If dial tone is not detected within the time specified by S7 (US), the modem will abort the rest of the sequence, return on-hook, and generate an error message.
@	Wait for silence: the modem will wait for at least 5 seconds of silence in the call progress frequency band before continuing with the next dial string parameter. If the modem does not detect these 5 seconds of silence before the expiration of the call abort timer. (S7), the modem will terminate the call attempt with a NO ANSWER message. If busy detection is enabled, the modem may terminate the call with the BUSY result code. If answer tone arrives during execution of this parameter, the modem handshakes.
&	Wait for credit card dialing tone before continuing with the dial string. If the tone is not detected within the time specified by S7 (US models) or S6 (W-class models), the modem will abort the rest of the sequence, return on - hook , and generate an error message.
,	Dial pause: the modem will pause for a time specified by S8 before dialing the digits following ",".
;	Return to command state. Added to the end of a dial string, this causes the modem to return to the command state after it processes the portion of the dial string preceding the ",". This allows the user to issue additional AT commands while remaining off-hook. The additional AT commands may be placed in the original command line following the "," and/or may be entered on subsequent command lines. The modem will enter call progress only after an additional dial command is issued without the "," terminator. Use "H" to abort the dial in progress, and go back on-hook.

Command	Function
^	Toggles calling tone enable/disable: applicable to current dial attempt only.
( )	Ignored: may be used to format the dial string.
-	Ignored: may be used to format the dial string.
<space>	Ignored: may be used to format the dial string.

En - Command Echo

The modem enables or diables the echo of characters to the DTE according to the parameter supplied. The parameter value, if valid, is written to S14 bit 1.

E0	Disabies command echo.
E1	Enables command echo. (Default.)

Result Codes:

OK	n=0 or 1.
ERROR	Otherwise.

Hn - Disconnect (Hang-Up)

This command initiates a hang up sequence.

This command may not be available for some countries due to PTT restrictions.

H0	The modem will release the line if the modem is currently on-line, and will terminate any test (AT&T) that is in progress. Country specific, modulation specific, and error correction protocol specific (S38) processing is handled outside of the H0 command.
H1	If on-hook, the modem will go off-hook and enter command mode. For US models, the modem will remain off-hook. For W-class models, the modem will return on-hook after a period of time determined by S7.

Result Codes:

OK	n=0 or 1
ERROR	Otherwise.

Command Function

In - Identification

The modem reports to the DTE the requested result according to the command parameter. These settings are preprogrammed by the manufacturer.

I0	Reports product code.
I1	ROM Checksum
I2	ROM Checksum Test
I3	Firmware Version
I4	Manufacturer ID
I5	Country Code
I6	Data Pump Model and Internal Code Version

Ln - Speaker Volume

The modem sets the speaker volume control according to the parameter supplied. The parameter value, if valid, is written to S22 bits 0 and 1.

L0	Low volume.
L1	Low volume. (Default.)
L2	Medium volume.
L3	High volume.

Result Codes:

OK	n=0 to 3.
ERROR	Otherwise.

Command **Function**

Mn - Speaker Control

This command selects when the speaker will be on or off. The parameter value, if valid, is written S22 bits 2 and 3.

M0 Speaker is always off.

M1 Speaker is on during call establishment, but off when receiving carrier. (Default.)

M2 Speaker is always on.

M3 Speaker is off when receiving carrier and during dialing, but on during answering.

Result Codes:

OK n=0 to 3.
ERROR Otherwise.

On - Return to On-Line Data Mode

This command determines how the modem will enter the on-line data mode. If the modem is in the on-line command mode, the enters the on-line data mode with or without a retrain. If the modem is in the off-line command mode (no connection), ERROR is reported.

O0 Enters on-line data mode without a retrain. Handling is determined by the Call Establishment task. Generally, if a connection exists, this command connects the DTE back to the remote modem after an escape (+++).

O1 Enters on-line data mode with a retrain before returning to on-line data mode.

Result Codes:

OK n=o or 1 and a connection exists.

ERROR Otherwise or if not connected.

Command **Function**

Sn - Read/Write S-Register
The modem selects an S-Register, performs an S-Register read or write function, or reports the value of an S-Register.

n Establishes S-Register n as the last register accessed.

n=v Sets S-Register n to the value v.

n? Reports the value of the S-Register n.

The parameter n can be omitted, in which case the last S-Register accessed will be assumed. The S can be omitted for AT= and AT?, in which case the last S-Register accessed will be assumed.

For example:

ATS7 establishes S7 as the last accessed register.
AT=40 sets the contents of the last register accessed to 40.
ATS=20 sets the contents of the last register accessed to 20.

If the number "n" is beyond the range of the S-Registers available, the modem will return the ERROR message. The value "v" is "MOD"ed with 256. If the result is outside the range permitted for a given S-Register the values will be stored, but functionally the lower and higher limits will be observed. Input and output are always in decimal format. Note that some S-Registers are read-only.

Vn - Result Code Form
This command selects the sending of short-form or long-form result codes to the DTE.

V0 Enables short-form (terse) result codes. Line feed is not issued before a short form result code.

V1 Enables long-form (verbose) result codes. (Default.)

Result Codes:

OK n=0 or 1.

ERROR Otherwise

Command **Function**

Wn - Connect Message Control
This command controls the format of CONNECT messages. The parameter value, if valid, is written to S31 bits 2 and 3. Note that the Wn command can be overridden by register S95 bits (see S95 description).

W0 Upon connection, the modem reports only the DTE speed (e.g., CONNECT 57600). Subsequent responses are disabled. (Default.)

W1 Upon connection, the modem reports the line speed, the error correction protocol, and the DTE speed, respectively. Subsequent responses are disabled.

W2 Upon connection, the modem reports the DCE speed (e.g., CONNECT 33600). Subsequent responses are disabled.

Result Codes:

OK	n=0,1, or 2.
ERROR	Otherwise.

Xn - Extended Result Codes:
This command selects which subset of the result messages will be used by the modem to inform the DTE of the results of commands.

Blind dialing is enabled or disabled by country parameters. If the user wishes to enforce dial tone detection, a "W" can be placed in the dial string (see D command). Note that the information below is based upon the default implementation of the X results table. Table 3-1 indicates the messages which are enabled for each X value.

X0 Disables monitoring of busy tones unless forced otherwise by country requirements; send only OK, CONNECT, RING, NO CARRIER, ERROR, and NO ANSWER result codes. Blind dialing is enabled/disabled by country parameters. If busy tone detection is enforced and busy tone is detected, NO CARRIER will be reported. If dial tone detection is enforced or selected and dial tone is not detected, NO CARRIER will be reported instead of NO DIAL TONE.

Command	Function
X1	Disables monitoring of busy tones unless forced otherwise by country requirements; send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER, and CONNECT XXXX (XXXX=rate). Blind dialing enabled/disabled by country parameters. If busy tone detection is enforced and busy tone is detected, NO CARRIER will be reported instead of BUSY. If dial tone detection is enforced or selected and dial tone is not detected, NO CARRIER will be reported instead of NO DIAL TONE.
X2	Disables monitoring of busy tones unless forced otherwise by country requirements; send only OK, CONNECT, RING, NO CARRIER, ERROR, NO DIALTONE, NO ANSWER, and CONNECT XXXX. If busy tone detection is enforced and busy tone is detected, NO CARRIER will be reported instead of BUSY. If dial tone detection is enforced or selected and dial tone is not detected, NO DIAL TONE will be reported instead of NO CARRIER.
X3	Enables monitoring of busy tones; send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER, and CONNECT XXXX. Blind dialing is enabled/disabled by country parameters. If dial tone detection is enforced and dial tone is not detected, NO CARRIER will be reported.
X4	Enables monitoring of busy tones; send all messages.

Result Codes:

OK	n=0 to 4.
ERROR	Otherwise.

Command **Function**

Table 3-1. Select Long or Short Response Codes Via the "Vn" Command

Short Form	Long Form	n Value in ATXn Command					Notes
		0	1	2	3	4	
0	OK	x	x	x	x	x	
1	CONNECT	x	x	x	x	x	
2	RING	x	x	x	x	x	
3	NO CARRIER	x	x	x	x	x	
4	ERROR	x	x	x	x	x	
5	CONNECT 1200	1	x	x	x	x	
6	NO DIALTONE	3	3	x	x	x	
7	BUSY	3	3	3	x	x	
8	NO ANSWER	x	x	x	x	x	
9	C0NNECT 0600	1	x	x	x	x	
10	CONNECT 2400	1	x	x	x	x	
11	CONNECT 4800	1	x	x	x	x	
12	CONNECT 9600	1	x	x	x	x	
13	CONNECT 7200	1	x	x	x	x	
14	CONNECT 12000	1	x	x	x	x	
15	CONNECT 14400	1	x	x	x	x	
16	CONNECT 19200	1	x	x	x	x	
17	CONNECT 38400	1	x	x	x	x	
18	CONNECT 57600	1	x	x	x	x	
19	CONNECT 115200	1	x	x	x	x	
20	CONNECT 230400	x	x	x	x	x	Note 4
22	CONNECT 75TX/1200RX	1	x	x	x	x	
23	CONNECT 1200TX/75RX	1	x	x	x	x	
24	DELAYED	4	4	4	4	x	
32	BLACKLISTED	4	4	4	4	x	
33	FAX	x	x	x	x	x	
35	DATA	x	x	x	x	x	
40	CARRIER 300	x	x	x	x	x	
44	CARRIER 1200/75	x	x	x	x	x	
45	CARRIER 75/1200	x	x	x	x	x	
46	CARRIER 1200	x	x	x	x	x	
47	CARRIER 2400	x	x	x	x	x	
48	CARRIER 4800	x	x	x	x	x	
49	CARRIER 7200	x	x	x	x	x	
50	CARRIER 9600	x	x	x	x	x	
51	CARRIER 12000	x	x	x	x	x	
52	CARRIER 14400	x	x	x	x	x	
53	CARRIER 16800	x	x	x	x	x	Note 2
54	CARRIER 19200	x	x	x	x	x	Note 2
55	CARRIER 21600	x	x	x	x	x	Note 2
56	CARRIER 24000	x	x	x	x	x	Note 2
57	CARRIER 26400	x	x	x	x	x	Note 2
58	CARRIER 28800	x	x	x	x	x	Note 2

Command **Function**

Table 3-1. Result Codes (Continued)

Short Form	Long Form	n Value in ATXn Command					Notes
		0	1	2	3	4	
59	CONNECT 16800	1	x	x	x	x	Note 2
61	CONNECT 21600	1	x	x	x	x	Note 2
62	CONNECT 24000	1	x	x	x	x	Note 2
63	CONNECT 26400	1	x	x	x	x	Note 2
64	CONNECT 28800	1	x	x	x	x	Note 2
66	COMPRESSION: CLASS 5	x	x	x	x	x	
67	COMPRESSION: V.42 bis	x	x	x	x	x	
69	COMPRESSION: NONE	x	x	x	x	x	
70	PROTOCOL: NONE	x	x	x	x	x	
77	PROTOCOL: LAPM	x	x	x	x	x	
78	CARRIER 31200	x	x	x	x	x	Note 3
79	CARRIER 33600	x	x	x	x	x	Note 3
80	PROTOCOL: ALT	x	x	x	x	x	
81	PROTOCOL: ALT-CELLULAR	x	x	x	x	x	
84	CONNECT 33600	1	x	x	x	x	Note 3
91	CONNECT 31200	1	x	x	x	x	Note 3
150	CARRIER 32000	x	x	x	x	x	Note 4
151	CARRIER 34000	x	x	x	x	x	Note 4
152	CARRIER 36000	x	x	x	x	x	Note 4
153	CARRIER 38000	x	x	x	x	x	Note 4
154	CARRIER 40000	x	x	x	x	x	Note 4
155	CARRIER 42000	x	x	x	x	x	Note 4
156	CARRIER 44000	x	x	x	x	x	Note 4
157	CARRIER 46000	x	x	x	x	x	Note 4
158	CARRIER 48000	x	x	x	x	x	Note 4
159	CARRIER 50000	x	x	x	x	x	Note 4
160	CARRIER 52000	x	x	x	x	x	Note 4
161	CARRIER 54000	x	x	x	x	x	Note 4
162	CARRIER 56000	x	x	x	x	x	Note 4
165	CONNECT 32000	x	x	x	x	x	Note 4
166	CONNECT 34000	x	x	x	x	x	Note 4
167	CONNECT 36000	x	x	x	x	x	Note 4
168	CONNECT 38000	x	x	x	x	x	Note 4
169	CONNECT 40000	x	x	x	x	x	Note 4
170	CONNECT 42000	x	x	x	x	x	Note 4
171	CONNECT 44000	x	x	x	x	x	Note 4
172	CONNECT 46000	x	x	x	x	x	Note 4
173	CONNECT 48000	x	x	x	x	x	Note 4
174	CONNECT 50000	x	x	x	x	x	Note 4
175	CONNECT 52000	x	x	x	x	x	Note 4
176	CONNECT 54000	x	x	x	x	x	Note 4
177	CONNECT 56000	x	x	x	x	x	Note 4
+F4	+FCERROR	x	x	x	x	x	

Command **Function**

Table 3-1 Notes:

1. An 'x' in a column indicates that the message (either the long form if verbose, or the value only for short form) will be generated when that particular value of 'n' (shown at the top of the column) has been selected by the use of ATXn. If the column is blank, then no message will be generated for that x option. A numeral indicates which less explicit message (verbose or short form) will be output for that X option. (Also, see Section 3.3).

2. RC288 and higher rate modems.

3. RC336 and higher rate modems.

4. RC56 modems.

Zn - Soft Reset and Restore Profile

The modem performs a soft reset and restores (recalls) the configuration profile according to the parameter supplied. If no parameter is specified, zero is assumed.

Z0	Soft reset and restore stored profile 0.
Z1	Soft reset and restore stored profile 1.

Result Codes:

OK	n= 0 or 1
ERROR	Otherwise.

&Fn - Restore Factory Configuration (Profile)

The modem loads the factory default configuration (profile). The factory defaults are identified for each command and in the S-Register descriptions. A configuration (profile) consists of a subset of S-Registers.

&F0	Restore factory configuration 0.
&F1	Restore factory configuration 1.

Result Codes:

OK	
ERROR	If the modem is connected.

Command **Function**

&Kn - Flow Control

This command defines the DTE/DCE (terminal/modem) flow control mechanism. The parameter value, if value, is written to S39 bits 0, 1, and 2.

&K0 Disables flow control.

&K3 Enables RTS/CTS flow control. (Default for data modem modes.)

&K4 Enables XON/XOFF flow control.

&K5 Enables transparent XON/XOFF flow control.

&K6 Enables both RTS/CTS and XON/XOFF flow control. (Default for fax modem and voice modes.)

&Mn - Asynchronous / Synchronous Mode Selection

This command determines the DTR operating mode. The modem treats the &M command as a subset of the &Q command.

&M0 Selects direct asynchronous operation. Note that the command sequence &M0\N0 selects a normal buffered mode, but the command sequence \N0&M0 selects direct mode. This is because the \N0 command is analogous to the &Q6 command.

&M1 Selects synchronous connect mode with async off-line command mode.

&M2 Selects synchronous connect mode with async off-line command mode. Same as &M1 except that &M2 enables DTR dialing of directory slot 0. The modem will disconnect if DTR is OFF for more than the period in S25 (in units of hundredths of a second): the data connection will be synchronous.

&M3 Selects synchronous connect mode. This mode allows DTR to act as a talk/data switch. The call is manually initiated while DTR is inactive. When DTR becomes active, the handshake proceeds in originate or answer mode according to S14 bit 7.

Result Codes:

OK n=0 to 3.
ERROR Otherwise

Command **Function**

&Qn - Sync/Async Mode
This command is an extension of the &M command and is used to control the connection modes permitted.

Note: When the &Q0 to &Q4 command is issued to select the mode, the subsequent connect message will report the DCE speed regardless of the W command and S95 settings.

&Q0 Selects direct asynchronous operation.

&Q1 Selects synchronous connect mode with async off-line command mode.

&Q2 Selects synchronous connect mode with async off-line command mode and enables DTR dialing of directory 0.

&Q3 Selects synchronous connect mode with async off-line command mode and enables DTR to act as Talk/Data switch.

&Q5 The modem will try to negotiate an error-corrected link. The modem can be configured using S36 to determine whether a failure will result in the modem returning on-hook or will result in fallback to an asynchronous connection.

&Q6 Selects asynchronous operation in normal mode (speed buffering).

Result Codes:
OK n=0 to 6

ERROR Otherwise.

&Rn - RTS/CTS Option
This selects how the modem controls CTS. CTS operation is modified if hardware flow is selected (see &K command).

&R0 In sync mode, CTS tracks the state of the RTS; the RTS-to-CTS delay is defined by S26. In async mode, CTS acts according to V.25 bis handshake.

&R1 In sync mode, CTS is always ON (RTS transitions are ignored). In async mode, CTS will only drop if required by flow control. (Default.)

Result Codes:
OK n=0 or 1.

ERROR Otherwise.

Command **Function**

&V - Display Current Configuration and Stored Profiles

Reports the current (active) configuration, the stored (user) profiles, and the first four stored telephone numbers. The stored profiles and telephone numbers are not displayed if the NVRAM is not installed or is not operational as detected by NVRAM test during reset processing.

Result Code:
OK

&Wn - Store Current Configuration

Saves the current (active) configuration (profile), including S-Registers, in one of the two user profiles in NVRAM as denoted by the parameter value. This command will yield an ERROR message if the NVRAM is not installed or is not operational as detected by the NVRAM test.

The current configuration is comprised of a list of storable parameters illustrated in the &V command. These settings are restored to the active configuration upon receiving an Zn command or at power up (see &Yn command).

&W0 Store the current configuration as profile 0.

&W1 Store the current configuration as profile 1.

Result Codes:
OK n=0 or 1.

ERROR Otherwise.

Command **Function**

&Yn - Designate a Default Reset Profile
Selects which user profile will be used after a hard reset.

&Y0 The modem will use profile 0.

&Y1 The modem will use profile 1.

Result Codes:
OK n =0 to 1.

ERROR For n ≤ 1, or if NVRAM is not installed or is not operational.

&Zn=x - Store Telephone Number
The modem can store up to four telephone numbers and each telephone number dial string can contain up to 35 digits.

&Zn=x n= 0 to 3 and x= dial string. (Requires 256-byte NVRAM.)

Result Codes:
OK For n ≤ 3, and x ≤ 35 digits.

ERROR If n > 3, 35 digits, or if NVRAM is not installed or is not operational.

%En - Enable/Disable Line Quality Monitor and Auto-Retrain or Fallback/Fall Forward
Controls whether or not the modem will automatically monitor the line quality and request a retrain (%E1) or fall back when line quality is insufficient or fall forward when line quality is sufficient (%E2).

If enabled, the modem attempts to retrain for a maximum of 30 seconds.

%E0 Disable line quality monitor and auto-retrain.

%E1 Enable line quality monitor and auto-retrain.

%E2 Enable line quality monitor and fallback/fall forward. (Default.)

Result Codes:
OK n=0, 1, or 2.

ERROR Otherwise.

Command **Function**

+MS - Select Modulation

This extended-format command selects the modulation and, optionally, enables or disables automode, specifies the lowest and highest connection rates, selects μ-Law or A-Law codec type, and enables or disables robbed bit signaling generation (server modem) or detection (client modem) using one to five subparameters. The command format is:

+MS= <mod> [,[<automode>][,[<min_rate>][,[<max_rate>][,[<x_law>][,[<rb_signaling>]]]]]]<CR>

Notes:

1. For 14400 bps and lower speeds, the Nn command and S37 register can alternatively be used, in which case the +MS subparameters will modified to reflect the Nn and S37=x settings. Use of the Nn and S37=x commands is not recommended but is provided for compatibility with existing communication software. (S37 is not updated by the +MS command.)

2. Subparameters not entered (enter a comma only or <CR> to skip the last subparameter) remain at their current values.

Reporting Selected Options

The modem can send a string of information to the DTE consisting of selected options using the following command:

+MS?

The response is:

+MS: <mod>,<automode>,<min_rate>,<max_rate>,<x_law>,<rb_signaling>

For example,

+MS: 56,1,300,56000,0,0 [RC56 default values]
+MS: 11,1,300,33600,0,0 [RC336 default values]
+MS: 10,1,300,14400,0,0 [RC144 default values]

Reporting Supported Options

The modem can send a string of information to the DTE consisting of supported options using the following command:

+MS=?

The response is:

+MS: (list of supported <mod> values), (list of supported <automode> values), (list of supported <min_rate> values), (list of supported <max_rate>values), (list of supported <x_law> values), (list of supported <rb_signaling> values)

For example,

+MS: (0,1,2,3,9,10,11,56,64,69),(0,1),(300-33600),(300-56000),(0,1),(0,1) [RC56]
+MS: (0,1,2,3,9,10,11,64,69),(0,1),(300-33600),(300-33600),(0,1),(0,1) [RC336]
+MS: (0,1,2,3,9,10,64,69),(0,1),(300-14400),(300-14400),(0,1),(0,1) [RC144]

Command **Function**

Subparameter Definitions

1. <mod>= A decimal number which specifies the preferred modulation (automode enabled) or the modulation (automode disabled) to use in originating or answering connection. The options are:

<mod>	Modulation	Possible Rates (bps)1	Notes
0	v.21	300	
1	v.22	1200	
2	v.22 bis	2400 or 1200	
3	v.23	1200	See note 2
9	v.32	9600 or 4800	
10	v.32 bis	14400, 12000, 9600, 7200, or 4800	Default RC144
11	v.34	33600, 31200, 28800, 26400, 24000 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800 or 2400	Default for RC56/ RC336/RC288 [RC56/RC336/ RC288 only]
56	K56flex	56000, 54000, 52000, 50000, 48000, 46000, 44000, 42000, 40000, 38000, 36000, 34000, 32000	[RC56 only]
64	Bell 103	300	
69	Bell 212	1200	

NOTES:

1. See optional <automode>, <min_rate>, and <max_rate> subparameters.
2. For V.23, originating modes transmit at 75 bps and receive at 1200 bps; answering modes transmit at 1200 bps and receive at 75 bps. The rate is always specified as 1200 bps.

The modem may also automatically switch to another modulation (automode), subject to the following constraints:

a. The modem may not be able to automatically switch from the current modulation (specified by <mod>) to some other modulation. For example, there is no standard way to automode from Bell 103 to V.23.

b. The DTE may disable automode operation (see <automode> on the next page.

c. The DTE may constrain the range of modulation available by specifying the lowest and highest rates (see <min_rate> and <max_rate> on the next page).

Command **Function**

Subparameter Definitions (Continued)

2. <automode> is an optional numeric value which enables or disables automatic modulation negotiation using V.8 bis/V.8 or V.32 bis Annex A. The options are:

<automode>	Option Selected	Notes
0	Automode disabled	
1	Automode enabled using V.8 bis/V.8 or V.32 Annex A	Default

The default value is 1, which enables automode. Note, however, there are modulations for which there is no automatic negotiation, e.g., Bell 212 (<mod> =69).

For <automode> = 0 (automode disabled, i.e., fixed modulation):

a. If <max_rate> is within the rates supported by the selected modulation, the selected rate is that specified by <max_rate>. For example:

+MS=10,0,1200,4800 selects V.32 bis 4800 bps fixed rate.

b. If <max_rate> is greater than the highest speed supported by the modulation specified by <mod>, the starting rate is the highest rate supported by the selected modulation. For example:

+MS=10,0,2400,14400 selects V.32 bis 14400, 12000, 9600, 7200 or 4800 bps.

c. To emulate issuance of the N0S37=x command sequence to select fixed mode operation, specify the <max_rate> and <min_rate> both to be the (same) requested speed, and <mod> to be the modulation for that speed. For example:

+MS=11,0,16800,16800 selects V.34 16800 bps fixed mode (no comparable S37 command).
+MS=10,0,12000,12000 selects V.32 bis 12000 bps fixed mode (same as N0S37=10).

For <automode> = 1 (automode enable, i.e., automatically selected speed and modulation):

The modem connects at the highest possible rate in accordance with V.8 bis/V.8, or V.32 bis Annex A if V.8 bis/V.8 is not supported by the remote modem.

a. If <max_rate> is greater than the highest rate supported by the modultion specified by <mod>, the modem automodes down from the highest rate of the selected modulation. For example:

+MS=10,1,1200,24000 selects automoding down from V.32 bis 14400 bps.

Command **Function**

Subparameter Definitions (Continued)

b. To emulate issuance of the N1S37=x sequence command, specify the modulation and the rate to start automoding down from using <mod> and <max_rate>, respectively. Set <min_rate> to 300 to allow automoding all the way down to V.21 300 bps. For example:

+MS=11,1,300,16800 selects automode starting at V.34 16800 bps (no comparable S37 command).
+MS=9,1,300,12000 selects automode starting at V.32 bis 12000 bps (same as N1S37=10).

3. <min_rate> is an optional number which specifies the lowest rate at which the modem may establish a connection. The value is decimal coded, in units of bps, e.g., 2400 specifies the lowest rate to be 2400 bps. The default is 300 for 300 bps.

4. <max_rate> is an optional number which specifies the highest rate at which the modem may establish a connection. The value is decimal coded, in units of bps, e.g., 14400 specifies the highest rate to be 14400 bps. The default is 28800 for 28800 bps.

5. <x_law> is an optional number which specifies the codec type. The options are:

0 = μ-Law
1= A-Law
Note that ATZ will reset the <x_law> selection to 0 (μ-Law).

6. <rb_signaling> is an optional number which enables or disables robbed bit signaling generation in a server modem or enables or disables robbed bit signaling detection in a client modem. The options are:

0 = Robbed bit signaling generation (server modem) or detection (client modem) disabled (default)
1 = Robbed bit signaling generation (server modem) or detection (client modem) enabled

Result Codes:

OK	Valid subparameter string
ERROR	Otherwise.

Command **Function**

4.2. S-REGISTER DEFINITIONS

S0 - Number of Rings to Auto-Answer
Sets the number of the rings required before the modem automatically answers a call. Setting this register to zero disables auto-answer mode.

Range: 0-255 rings
Default: 0

S1 - Ring Counter
S1 is incremented each time the modem detects a ring signal on the telephone line. S1 is cleared if no rings occur over an eight second interval.

Range: 0-255 rings
Default: 0

S2 - Escape Character
S2 holds the decimal value of the ASCII character used as the escape character. The default value corresponds to an ASCII '+'. A value over 127 disables the escape process, i.e., no escape character will be recognized.

S3 - Carriage Return Character
Sets the command line and result code terminator character. Pertains to asynchronous operation only.

Range: 0-127, ASCII decimal
Default: 13 (Carriage Return)

S4 - Line Feed Character
Sets the character recognized as a line feed. Pertains to asynchronous operation only. The Line Feed control character is output after the Carriage Return control character is verbose result codes are used.

Range: 0-127, ASCII decimal
Default: 10 (Line Feed)

Command **Function**

S5 - Backspace Character

Sets the character recognized as a backspace. Pertains to asynchronous operation only. The modem will not recognize the Backspace character if it is set to a value that is greater than 32 ASCII. This character can be used to edit a command line. When the echo command is enabled, the modem echoes back to the local DTE the Backspace character, an ASCII space character and a second Backspace character; this means a total of three characters are transmitted each time the modem processes the Backspace character.

Range: 0-32, ASCII decimal
Default: 8 (Backspace)

S7 - Wait Time For Carrier After Dial, For Silence, or For Dial Tone After "W" Dial Modifier (Us Models)

1. Sets the length of time, in seconds, that the modem will wait for carrier before hanging up. The timer is started when the modem finishes dialing (originate), or 2 seconds after going off-hook (answer). In originate mode, the timer is reset upon detection of answer tone if allowed by country restrictions.

2. Sets the length of time, in seconds, that modem will wait for silence when encountering the @ dial modifier before continuing with the next dial string parameter.

3. For US models, S7 sets the length of time, in seconds, that the modem will wait for dial tone when encountering a "W" dial modifier before continuing with the next dial string parameter.

Range: 1-255 seconds
Default: 50

S8 - Pause Time For Dial Delay

Sets the time, in seconds, that the modem must pause when the "," dial modifier is encountered in the dial string.

Range: 0-255 seconds
Default: 2

S9 - Carrier Detect Response Time

Sets the time, in tenths of a second, that the carrier must be present before the modem considers it valid and turns on RLSD. As this time is increased, there is less chance to detect a false carrier due to noise from the telephone line.

Range: 1-255 tenths of a second
Default: 6 (0.6 second)

Command **Function**

S10 - Lost Carrier To Hang Up Delay
Sets the length of time, in tenths of a second, that the modem waits before hanging up after a loss of carrier. This allows for a temporary carrier loss without causing the local modem to disconnect. When register S10 is set to 255, the modem functions as if a carrier is always present.

The actual interval the modem waits before disconnecting is the value in register S10 minus the value in register S9. Therefore, the S10 value must be greater than the S9 value or else the modem disconnects before it recognizes the carrier.

Range: 1-255 tenths of a second
Default: 14 (1.4 seconds)

S11 - DTMF Tone Duration
Sets the duration of tones in DTMF dialing (US models only). This value has no effect on pulse dialing.
For W-class models, this parameter is a country parameter loaded by ConfigurACE.

Range: 50-255 milliseconds
Default: 95 (95 milliseconds)

S24 - Sleep Inactivity Timer
Sets the length of time, in seconds, that the modem will operate in normal mode with no detected telephone line or DTE line activity before entering low-power sleep mode. The timer is reset upon any DTE line or telephone line activity. If the S24 value is zero, neither DTE line nor telephone inactivity will cause the modem to enter the sleep mode.

Range: 0-255 seconds
Default: 0

S32 - XON Character
Sets the value of the XON character.

Range: 0-255, ASCII decimal
Default: 17 (11h)

S33 - XOFF Character
Sets the value of the XOFF character.

Range: 0-255, ASCII decimal
Default: 19 (13H)

The following AT Commands are for the Speaker Phone & SVD models only.

Command Function

-SSE=n - Enable/Disable DSVD

This command enables or disables DSVD (digital simultaneous voice and data) in modem models supporting DSVD. The syntax is AT-SSE=n, where n is a number from 0 to 1.

-SSE=0 Disables DSVD (default)
-SSE=1 Enables DSVD.

Result Codes:
OK n=0 to 1.
ERROR Otherwise.

#CIDn - Caller ID

Enables or disables Caller ID.

#CID=0 Disables Caller ID. (Default.)
#CID=1 Enables Caller ID with formatted presentation to the DTE. The modem will present the data items in a <Tag><Value> pair format. The expected pairs are data, time, caller code (telephone number), and name.
#CID=2 Enables Caller ID with unformatted presentation to the DTE. The modem will present the entire packet of information, excluding the leading U's, in ASCII printable hex numbers.

Result Codes:
OK n=0 or 2.
ERROR Otherwise.

Inquiries

#CID? Retrieves the current Caller ID mode from the modem.
#CID=? Returns the mode capabilities of the modem in a list with each element separated by commas.

Formatted Form Reporting

The modem presents the data in the <tag> = <value> pair format as described in the table below. Spaces are present on both sides of the equal sign.

Tag Description
Date ATE=MMDD where MM is the month number (01 to 12) and DD is the day number (01..31).

TIME TIME=HHMM where HH is the hour number (00 to 23) and MM is the minute number (00 to 59).

Command **Function**

NMBR NMBR= <number> or P or O where <number> is the telephone number of the caller, where P indicates that the calling number information is not available since the originating caller has requested private service, and where O indicates that the calling number information is not available or out of service at the calling location.

NAME NAME= <listing name> where <listing name> is the subscription name.

MESG MESG= <data tag> <length of message> <data> <checksum> in printable ASCII hex numbers. This tag indicates a data item not listed above. The message is only possible for Multiple Message Format.

Notes:

1. The modem does not present any Caller ID information if the DCE detects a checksum error in the Caller ID packet.

2. In the event of an unrecognized data tag, the modem will present the data in ASCII hex numbers following the MESG tag.

Example of Formatted Form Reporting

1. The following example illustrates the standard Caller ID message packet.

RING

DATE = 0321
TIME = 1405
NMBR = 5045551234
NAME = A N OTHER

RING

RING

2. The following example illustrates the case where the tag of the packet is not recognized by the modem.

RING

MESG = 060342424231

RING

RING

Command **Function**

Unformatted Form Reporting

The modem presents all information and packet control information found in the message. The modem, however, excludes the leading U's (channel seizure information) from the presentation. The packet is presented in ASCII printable hex numbers, the modem does not insert spaces, or line feeds, for formatting between bytes or words of the packet.

The modem does not detect the checksum of the packet.

Example of Unformatted Form Reporting

RING

041230333232323430353931343535313233343 5

RING

RING

If you have any questions or comments call the Viking Components Customer Support Staff available 24 hours a day, 7 days a week at (800) 845-8777.

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