

BASIC COMMAND CODES

CODE	DESCRIPTION	FUNCTION
AT	Attention Code	Command line prefix; precedes command lines except +++ and A/ (Repeat Command).
A/	Repeat Command	Repeats the last command. Neither AT nor (ENTER) is necessary for this command.
A	Answer Immediate	Causes the modem to go off hook and answer without waiting for a ring.
ENTER	Carriage Return	Ends the command line and executes commands. Register 3 defines the carriage return character.
BACKSPACE	BACKSPACE	Deletes characters on the command line one by one. Register 5 defines the backspace character.
+++	Escape Code	Returns the modem to the command mode from the data mode. Register 2 defines the escape code character.

DIALING AND ANSWERING COMMANDS

COMMAND	DIALING	FUNCTION	
D	Dialing	Sets the modem to originate a call by dialing numbers and executing modifiers that follow D in the command line.	
M O D I F I E R S	P	Pulse Dialing	Sets the modem to pulse dialing mode.
	T	Tone Dialing	Sets the modem to tone dialing mode.
	@	Wait for Silence	Wait for a tone (ringback) followed by 5 seconds of silence before continuing.
	W	Wait for Tone	Wait for dial tone before continuing.
	,	Pause	Causes the modem to pause when dialing. Place it after the access code. Length of pause time is set by Register 8.
	!	Flash	Flash the switchhook for 0.5 seconds.
	S=n	Memory Dial	Dial the memory number stored in memory n (n = 1-3).
	;	Command	Returns the modem to command mode after dialing.

COMMANDS WITH PARAMETERS

COMMAND	PARAMETERS	FUNCTION
B	0 1 (Default)	Selects CCITT V.22 operation when communicating at 1200 bps. Selects BELL 103/212A operation when communicating at 1200 bps.
E	0 1 (Default)	Commands are not echoed Commands are echoed.
H	0 (Default) 1	On hook (hang up). Go off hook.
I	0 1 2	Requests product identification code. Performs checksum on firmware ROM; returns checksum. Tests the modem's firmware ROM and memory; return OK or ERROR.
M	0 1 (Default) 2 3	Speaker off. Speaker on until carrier detected. Speaker always on. Speaker on until carrier detected, except during dialing.
O	0 1	Return to on-line state. Return to on-line state and initiate retrain. *
Q	0 (Default) 1	Modem returns result codes. Modem does not return result codes.
V	0 1 (Default)	Numeric result codes Word result codes
X	0 1 2 3 4 (Default)	Result code set 0 Result code set 1 Result code set 2 Result code set 3 Result code set 4

SUMMARY OF THE X COMMAND CONDITIONS

FUNCTION	X0	X1	X2	X3	X4
BUSY detected	No	No	No	Yes	Yes
DIAL TONE detected	No	No	Yes	No	Yes
CONNECT message only	Yes	No	No	No	No
BLIND DIAL enabled	Yes	Yes	No	Yes	No

ADVANCED COMMANDS

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COMMAND	PARAMETERS	FUNCTION
&C	0 (Default) 1	DCD (Data Carrier Detect) always on. DCD on indicates presence of data carrier.
&D	0 1 2 3	Modem ignores DTR (Data Terminal Ready). Modem assumes command mode when on-to-off transition occurs. When on-line with a host system, modem goes on-hook and assumes command mode upon detecting an on-to-off transition on DTR. Modem assumes initialization state upon detecting an on-to-off transition on DTR.
&F	None	Resets the modem.
&P	0 (Default) 1	Pulse dial make/break ratio = 39/61 (USA). Pulse dial make/break ratio = 33/67 (UK/HK).
&S	0 (Default) 1	DSR (Data Set Ready) always on. DSR operates in accordance with EIA RS-232C specifications.
&T	0 (Default) 1 2-7 8	Terminate test in progress. Initiate local analog loopback test. Not supported. Initiate local analog loopback test with self test.

ADVANCED PROGRAMMING COMMANDS

COMMANDS WITH PARAMETERS

Some of the commands have parameters. The Parameter value, usually 0, 1, or 2, follows the command. When you do not select a command parameter, the modem assumes a value of 0. For example, command echo is disabled when you use the E command to select a parameter value of 0. Command echo is enabled when you designate a parameter value of 1. E used alone is the same as E0.

COMMAND	PARAMETERS	FUNCTION
B	0 1 (Default)	Selects CCITT V.22 operation when communicating at 1200 bps. Selects BELL 212A operation when communicating at 1200 bps.
E	0 1 (Default)	Commands are not echoed. Commands are echoed.
H	0 (Default) 1	On hook (hang up). Go off hook.
I	0 (Default) 1 2	Requests product identification code. Performs checksum on firmware ROM; returns checksum. Performs checksum on firmware ROM; return OK or

		ERROR.
L	0 1 2 (Default) 3	Low speaker volume. Low speaker volume. Medium speaker volume. High speaker volume.
M	0 1 (Default) 2 3	Speaker off. Speaker on until carrier detected. Speaker always on. Speaker on until carrier detected, except during dialing.
O	0 1	Return to on-line state. Return to on-line state and retrain.
Q	0 (Default) 1	Modem returns result codes. Modem does not return result codes.
V	0 1 (Default)	Numeric result codes. Word result codes.
X	0 1 2 3 4 (Default)	Result code Set 0. Result code Set 1. Result code Set 2. Result code Set 3. Result code Set 4.
Y	0 (Default) 1	Long space disconnect disabled. Long space disconnect enabled.
Z	0 (Default) 1	Recall stored profile 0. Recall stored profile 1.

Bn BELL/CCITT mode select

B0 CCITT V.22 operation at 1200 bps

B1 BELL 212A operation at 1200 bps (default)

Most 1200 bps modems in the United States operate using the BELL 212A specification. To communicate with a 1200 bps modem conforming to the international CCITT V.22 standard, enter B0 before dialing.

En Echo back characters in command mode

E0 no characters echoed back to the computer in command mode

E1 echoes back characters to the computer typed in command mode (default)

This command controls the echoing back of commands to your computer. In most personal computer applications, the default E1 is used so that you can see what you just typed. When running in half-duplex mode, you should use the E0 command to avoid having two copies of each character displayed on the screen.

Hn Activate switch-hook

H0 go on hook (hang up) (default)

H1 go off hook (pick up the phone)

This command makes the modem pick up or hang up the phone in the same way as a telephone handset is picked up to answer a call or placed back on the

switch hook to terminate a call.

You can use H0 to terminate a call.

You generally do not need to use the H1 command, since the modem automatically answers an incoming call if you have not set the S0 to 0.

In Request product code and ROM checksum

I0 display product code

I1 display ROM checksum

I2 display ROM checksum as OK or ERROR

You use this command as a diagnostic tool when troubleshooting the modem.

Ln Speaker Volume

L0 low speaker volume

L1 low speaker volume

L2 medium speaker volume (default)

L3 high speaker volume

This command controls the volume of your modems built-in speaker.

Mn Speaker on/off commands

M0 speaker always off

M1 speaker on until carrier detected (default)

M2 speaker always on

M3 disables speaker while dialing and when receiving carrier

You use the M commands to control the speaker in your computer when you use the modem. M0 turns the speaker off at all times. M1 lets you hear dial, ring, and connection. The M2 command turns on the speaker at all times, which might be useful in debugging transmission problems. M3 lets you monitor just the ring and connection process.

On Place modem in the on-line data mode

O0 modem returns to on-line state

O1 modem returns to on-line state and initiates an equalizer retrain sequence

When connected to another modem, you might need to go back into command mode (using +++) to give the modem a command. After you complete the commands, an ATO or ATO1 command returns the modem to the on-line condition.

NOTE: Retraining lets two 2400-bps modems resynchronize themselves. The modems accomplish this by outputting a signal sequence which consists of a 0011 pattern. Depending on the parity/data bit configuration you are using at the time, the retrain patterns are displayed as question marks or up arrows.

Qn Enable/disable result codes

Q0 result codes sent (default)

Q1 no result codes sent

You use the Q commands to enable or disable result codes (such as OK, CONNECT 2400, ERROR, and so on). In the Q0 default mode the modem returns result codes. In Q1 mode, the modem does not send result codes.

Vn Set result codes format

V0 selects numeric result codes

V1 selects verbal result codes (default)

See "Command Results" for a list of command result codes.

Xn Select extended result code set

By using the X commands, you can enable and disable the following modem

functions: no dialtone detect, bust detect, blind dial capability, and send only the CONNECT message. Refer to the table below:

COMMAND FUNCTIONS

FUNCTION	X0	X1	X2	X3	X4
Busy detected	NO	NO	NO	YES	YES
Dial tone detected	NO	NO	YES	NO	YES
Connect message only	YES	NO	NO	NO	NO
Blind dial enabled	YES	YES	NO	YES	NO

Sending only the CONNECT message complies with Hayes SmartModem 300 compatibility. When you select X1 through X4 the modem returns the full range of connect messages.

When blind dialing, the modem dials regardless of the presence of absence of a dial tone. The modem waits the number of seconds determined by Register S6, which has a default of 2 seconds.

When you enable X2 or X4 the modem monitors the line for a dial tone instead of blind dialing. The dial tone must last at least 2 seconds. If the modem does not detect a dial tone (or not enough dial tone time) within 5 seconds, it cancels the call and returns the NO DIALTONE result code.

Yn Long Space Disconnect option

Y0 Long Space Disconnect disabled (default)

Y1 Long Space Disconnect enabled

This option affects how your modem treats breaks in the carrier signal. If you enable this option, then your modem disconnects from the phone line whenever it loses the carrier.

Zn Recall stored profile

Z0 recall stored profile 0 (default)

Z1 recall stored profile 1

Zn makes the modem load modem settings you stored using the &W0 command. You must wait at least 2 seconds after you send this command before you send another command. Your modem ignores any commands you place after the Z command on the command line.

COMMAND	PARAMETERS	FUNCTION
&C	0 (Default) 1	DCD (Data Carrier Detect) always on. DCD on indicates presence of data carrier.
&D	0 (Default) 1 2 3	Modem ignores DTR (Data Terminal Ready). Modem assumes command mode when on-to-off transition is detected on DTR. When on-line with a host system, modem goes on-hook and assumes command mode upon detecting an on-to-off transition on DTR. Modem initializes upon detecting an on-to-off transition on DTR.
&F	None	Resets the modem to the factory default values for all S registers and commands.

&G	0 (Default) 1 2	No guard tone. 550 Hz guard tone. 1800 Hz guard tone.
&M	0 (Default) 1 2 3	Asynchronous communications mode. Reserved. Reserved. Reserved.
&P	0 (Default) 1	Pulse dial make:break ratio 39:61 (USA). Pulse dial make:break ratio 33:67 (UK/HK).
&Q	0 (Default) 1 2 3	Idle: Normal; On-line: Asynchronous. Idle: Normal; On-line: Reserved. Idle: Dial w/DTR high, Hang-up w/DTR low; On-line: Reserved. Idle: Talk/Data, DTR high or low; On-line: Reserved.
&S	0 (Default) 1	DSR (Data Set Ready) always on. DSR operates in accordance with EIA.
&T	See "Modem Test Commands"	
&V		Display active and stored profiles.
&W	0 (Default) 1	Store active profile as profile 0. Store active profile as profile 1.
&Y	0 (Default) 1	Select profile 0 on power up. Select profile 1 on power up.
&Z		Store telephone number in location 0 (default), 1, 2. or 3. See details for example.

&Cn Data Carrier Detect (DCD) control

&C0 DCD always on (default)

&C1 DCD follows state of data carrier

When n=0, the modem ignores the hardware signal, and operates as though a carrier is always present.

When n=1 the modem operates according to the actual hardware DCD signal.

&Dn Data Terminal Ready (DTR) control

&D0 The modem ignores DTR (default).

&D1 The modem goes into command mode if an on-to-off transition is detected on DTR.

&D2 When on line with a host system, the modem goes on hook and assumes command mode upon detecting an on-to-off transition on DTR. Auto answer does not function when DTR is off (low).

&D3 An on-to-off transition on DTR causes the modem to go through an initialization sequence. Default values for all commands and registers are reinstated.

The modem ignores any DTR transition that lasts for less than the value contained in Register S25. The factory setting is 5/100 of a second.

&F Restore default configuration

The &F command restores the factory default values to all registers and commands.

&Gn Guard Tone Option

&G0 No guard tone (default)

&G1 550 Hz guard tone

&G2 1800 Hz guard tone

This command controls the guard tones when your modem is in a CCITT mode. The modem never sends a tone in Bell modes.

&Mn Communications Mode Option

We provided this command for compatibility with earlier versions of the command set. Refer to the &Q command.

&Pn Pulse dial make/break ratio select

&P0 U.S. setting, 39% make/61% break (default)

&P1 U.K./Hong Kong setting, 33% make/67% break

This command determines the ratio of off hook (make) to on hook (break) intervals when pulse dialing.

&Qn Communications Mode Option

	Idle State	On-Line State
&Q0	Normal	Asynchronous (default)
&Q1	Normal	Reserved
&Q2	Dial when DTR high; Hang up when DTR low	Reserved
&Q3	Talk/Data when DTR high or low	Reserved

The &Q command selects the communications modes and is the current extended version of the &M command. The &Qn command determines how the modem treats transmitted and received information when it is on line. The command also establishes some call setup procedures.

&Sn Data Set Ready (DSR) control

&S0 DSR always on (default)

&S1 DSR operates in accordance with EIA RS-232C specifications

As soon as your modem detects a carrier signal from the other modem, DSR is asserted. As soon as the carrier is confirmed as valid, DCD (carrier detect) is asserted (high). Both are de-asserted (low) at the same time when the connection is broken.

NOTE: It is possible to assert DSR, but never establish DCD, resulting in a failed connection.

&T Modem Test Commands

See the "Modem Test Commands" chapter for complete information about this command.

&V Display Active and Stored Profiles

The &V command causes the modem to display the active and stored profiles (commands and register settings) and stored phone numbers.

&Wn Store Profiles

&W0 Store active profile as user profile 0.

&W1 Store active profile as user profile 1.

The &W command writes the storable parameters of the active configuration to non-volatile memory. The current values of the following commands and registers are stored:

Commands: Bn, Cn, En, Fn, Ln, Mn, P or T, Qn, Vn, Yn, Xn, &Cn, &Dn, &Gn, &Jn, &Ln, &Mn, &Pn, &Qn, &Rn, &Sn, &T4 or &T5, and &Xn
Registers: S0, S14, S18, S21, S22, S23, and S26

&Yn Select Stored Profile on Power Up

&Y0 Use user profile 0 on power up

&Y1 Use user profile 1 on power up

The &Y command selects which stored profile is used at modem power up or a hard reset. The selected &Y command survives a power outage.

&Zn=x Store Telephone Number

&Z0=x Store telephone number (x) in telephone memory 0

&Z1=x Store telephone number (x) in telephone memory 1

&Z2=x Store telephone number (x) in telephone memory 2

&Z3=x Store telephone number (x) in telephone memory 3

The &Z command lets you store up to four telephone numbers for later auto-dialing using the DS command. For example, to store 817-555-1234 in telephone memory 0:

AT&Z0=8175551234<ENTER>

(smm 07/28/93)

(smm 08/26/93)