

AT COMMAND SUMMARY TABLES

This section contains summary tables of all AT commands, S-registers, and manufacturing-only commands.

Table 1. Data Mode Command Summary

Note	Command	Function	Default	Range	Reported by &Vn
**	A/	Repeat last command	none	–	no
	A	Answer	none	–	no
	Cn	Carrier control option	1	0, 1	no
	C0	Transmit carrier always off			
	C1	Normal transmit carrier			
	D	Dial command	none	–	no
*	En	Command mode echo	1	0, 1	yes
	E0	Disables echo			
	E1	Enables echo			
	Fn	Online echo	1	0, 1	no
	F0	Enables online echo			
	F1	Disables online echo			
	Hn	Switch hook control	0	0, 1	no
	H0	Hangs up the telephone line			
	H1	Picks up the telephone line			
	In	Identification/checksum option	0	0–7, 10–11, 14, 20–23	no
	I0	Reports product code			
	I1	Reports modem chip firmware version			
	I2	Verifies ROM checksum			
	I3	Reports chipset name			
	I4	Reserved			
	I5	Reserved for modem chip hardware configuration			
	I6	Country code			
	I7	Version of board manufacturer firmware			
	I8	Reserved			
	I10	Modem board configuration — bits set by board manufacturer			
	I11	Modem board configuration — bits set by board manufacturer			
	I14	SAFE device			
	I20	V.90 state			
	I21	DSP patch level			
	I22	Ambient Technologies manufacturer name			

Table 1. Data Mode Command Summary (cont.)

Note	Command	Function	Default	Range	Reported by &Vn
	I23	Ambient Technologies product model			
*	Ln	Speaker volume control	2	0–3	yes
	L0	Low speaker volume			
	L1	Low speaker volume			
	L2	Medium speaker volume			
	L3	High speaker volume			
*	Mn	Speaker control	1	0–3	yes
	M0	Speaker always off			
	M1	Speaker on until carrier present			
	M2	Speaker always on			
	M3	Speaker off during dialing; speaker on until carrier present			
	On	Go online	0	0, 1, 3	no
	O0	Returns modem to Data mode			
	O1	Retrains equalizer and then returns to Data mode			
	O3	Renegotiates rate and then returns to Data mode			
*	P	Select pulse dialing	none	–	yes
*	Qn	Result code display control	0	0, 1	yes
	Q0	Enables result codes			
	Q1	Disables result codes			
	Sn	Select an S-register	none	0–33	no
	Sn=x	Write to an S-register	none	n=0–33 x=0–255	no
	Sn?	Read from an S-register	none	0–33	no
*	T	Select tone dialing	none	–	no
*	Vn	Result code form	1	0, 1	yes
	V0	Choose numeric form			
	V1	Choose verbose (text) form			
*	Wn	Response code data rate	0	0–4	yes
	W0	Reports DTE speed response codes			
	W1	Reports DTE speed response codes			
	W2	Reports DCE speed response codes			
	W3	Reports DTE speed response codes and information on error correction and data compression			
	W4	Reports protocol, data compression, and DTE data rate			

Table 1. Data Mode Command Summary (cont.)

Note	Command	Function	Default	Range	Reported by &Vn
*	Xn	Result code type	4	0–4	yes
	X0	Enables result codes 0–4; disables detection of busy and dial tone			
	X1	Enables result codes 0–5, 10, and above; disables busy and dial tone detection			
	X2	Enables result codes 0–6 and 10 and above; disables busy detection and enables dial tone detection			
	X3	Enables result codes 0–5, 7, and 10 and above; enables busy detection and disables dial tone detection			
	X4	Enables result codes 0–7 and 10 and above; enables busy and dial tone detection			
*	Yn	Long space disconnect	0	0, 1	yes
	Y0	Disables long space disconnect			
	Y1	Enables long space disconnect			
	Zn	Recall stored profile	0	0, 1	no
	Z0	Resets modem and recalls user profile 0			
	Z1	Resets modem and recalls user profile 1			
*	&Cn	DCD (data carrier detect) option	1	0, 1	yes
	&C0	Ignores remote modem status; DCD always on			
	&C1	DCD set according to remote modem status			
	&Dn	DTR (data terminal ready) option	2	0–3	yes
	&D0	In Async mode, modem ignores DTR			
	&D1	Modem switches from data mode to command mode when an on-to-off transition of DTR occurs			
	&D2	When DTR switches off, the modem goes on-hook and disables Auto-answer mode; when DTR switches on, auto-answer is enabled			
	&D3	Turning off DTR re-initializes the modem and resets values except UART registers			
	&F	Load factory defaults	none	–	no

Table 1. Data Mode Command Summary (cont.)

Note	Command	Function	Default	Range	Reported by &Vn
*	&Gn	Guard tone option (1200 bps and 2400 bps only)	0	0–2	yes
	&G0	Disables guard tone			
	&G1	Enables 550-Hz guard tone			
	&G2	Enables 1800-Hz guard tone			
	&Kn	Select serial flow control	3	0, 3, 4	yes
	&K0	Disables flow control			
	&K3	Bidirectional hardware flow control			
	&K4	XON/XOFF software flow control			
*	&Pn	Dial pulse ratio	0	0, 1	yes
	&P0	Sets 10-pps pulse dial with 39%/61% make-break			
	&P1	Sets 10-pps pulse dial with 33%/67% make-break			
*	&Sn	DSR (data set ready) option	0	0, 1	yes
	&S0	DSR is always active			
	&S1	DSR active only during handshaking and when carrier is lost			
	&Tn	Self test commands	0	0–1, 8	no
	&T0	Terminates test in progress			
	&T1	Initiates local analog loopback			
*	&Un	Disable Trellis coding	0	0, 1	yes
	&U0	Enables Trellis coding with QAM as fall-back			
	&U1	QAM modulation only			
	&Vn	View active and stored profiles	0	0, 1, 3	no
	&V0	View active profile and stored profile 0			
	&V1	View active profile and stored profile 1			
	&Wn	Stored active profile	0	0, 1	no
	&W0	Store in user profile 0			
	&W1	Store in user profile 1			
*	&Yn	Select stored profile on power up	0	0, 1	yes
	&Y0	Recall stored profile 0 on power-up			
	&Y1	Recall stored profile 1 on power-up			
	&Zn=x	Store telephone number (up to 30 digits) to location 'n' (0–3)	none	n = 0–3 x = 0–9 A B C D # * T P R W @ , ! ;	no
*	%En	Auto-retrain control	1	0, 1	yes
	%E0	Disables auto-retrain			
	%E1	Enables auto-retrain			

Table 1. Data Mode Command Summary (cont.)

Note	Command	Function	Default	Range	Reported by &Vn
*	%Gn	Rate renegotiation	1	0, 1	yes
	%G0	Disabled			
	%G1	Enabled			
*	-Cn	Generate data mode calling tone	0	0–2	yes
	-C0	Calling tone disabled			
	-C1	1300-Hz calling tone enabled			
	-C2	V.8 calling tone and 1300-Hz calling tone			
	+A8E=m	V.8 and V.8 bis operation controls	1,1,C1,0,0	See note	no
*	+DS=m	Controls V.42 bis data compression	3,0,2048,6	See note	yes
	+GMI?	Identify modem manufacturer	none	–	no
	+GMM?	Identify product model	none	–	no
	+GMR?	Identify product revision	none	–	no
	+MS=m	Modulation selections	V90, 1, 0, 0, 0, 0	See note ^a	no

^a For Data mode, the factory default setting is AT+MS=V90, 1, 0, 0, 0, 0 to send at speeds of 33,600 bps or below and receive at speeds of 53,333 bps and below.

* Value saved in NVRAM. **Command not preceded by an 'AT'.

Table 2. V.42 / V.42 bis MNP[®] Command Summary

Note	Command	Function	Default	Range	Reported by &Vn
*	%An	Set auto-reliable fallback character	13	0–127	yes
*	%Cn	MNP 5 data compression control	1	0, 1	yes
	%C0	No compression			
	%C1	Enables MNP5 data compression			
*	\An	MNP block size	3	0–3	yes
	\A0	Maximum 64 characters			
	\A1	Maximum 128 characters			
	\A2	Maximum 192 characters			
	\A3	Maximum 256 characters			
*	\Cn	Set auto-reliable buffer	0	0–2	yes
	\C0	No data buffering			
	\C1	Four-second buffer until 200 characters in the buffer or detection of a SYN character			
	\C2	No buffering. Connects non-V.42 modems to V.42 modem			
*	\Gn	Set modem port flow control	0	0, 1	yes

Table 2. V.42 / V.42 bis MNP[®] Command Summary (cont.)

Note	Command	Function	Default	Range	Reported by &Vn
	\G0	Disables port flow control			
	\G1	Sets port flow control to XON/XOFF			
*	\Jn	bps rate adjust control	0	0, 1	yes
	\J0	Disables rate adjust			
	\J1	Enables rate adjust			
*	\T0	Disables inactivity timer	0	0–90	yes
*	\Xn	Set XON/XOFF pass-through	0	0, 1	yes
	\X0	Processes flow control characters			
	\X1	Processes flow control characters and passes to local or remote			
*	-Jn	Set V.42 detect phase	1	0, 1	yes
	-J0	Disables the V.42 detect phase			
	-J1	Enables the V.42 detect phase			
*	"Hn	V.42 bis compression control	3	0–3	yes
	"H0	Disables V.42 bis			
	"H1	Enables V.42 bis only when transmitting data			
	"H2	Enables V.42 bis only when receiving data			
	"H3	Enables V.42 bis for both transmitting and receiving data			
	"On	V.42 bis string length	32	6–250	yes
	+ES=m	Error control selection	3,0,2	See note	no

* Value saved in NVRAM.

Table 3. Fax Identity Command Summary

Command	Function	Default	Range	Reported by &Vn
+FMDL?	Identifies product model	none	–	no
+FMFR?	Identifies modem manufacturer	none	–	no
+FMI?	Identifies modem manufacturer	none	–	no
+FMM?	Identifies product model	none	–	no
+FMR?	Identifies product version number	none	–	no
+FREX?	Identifies product version number	none	–	no

Table 4. Fax Class 1 Command Summary

Command	Function	Default	Range	Reported by &Vn
+FCLASS=1	Mode selection	0	0, 1, 8	no
+FRH=n	Receive HDLC data	none	3	no
+FRM=n	Receive data	none	24, 48, 72, 73, 74, 96, 97, 98, 121, 122, 145, 146	no
+FRS=n	Wait for silence	none	1–255	no
+FTH=n	Transmit HDLC data	none	3	no
+FTM=n	Transmit data	none	24, 48, 72, 73, 74, 96, 97, 98, 121, 122, 145, 146	no
+FTS=n	Stop transmission and pause	none	0–255	no

Table 5. IS-101 Voice Command Summary

Command	Function	Default	Range	Reported by &Vn
+FCLASS=8	Voice mode selection	0	0, 1, 8	no
+FLO=n	Flow Control Select	1	0–2	no
+VBT=m	Buffer threshold setting	192, 320	192, 320	no
+VCID=n	Caller ID selection	0*	0–2	no
+VDR=m	Distinctive Ring selection	0,0	0–255, 0–255	no
+VEM=m	Event reporting and masking	'C' BB860980 BFE63883 BB863EE0	–	no
+VGM=n	Speakerphone microphone gain	128	121–131	no
+VGR=n	Receive gain selection	128	121–131	no
+VGS=n	Speakerphone speaker gain	128	121–131	no
+VGT=n	Volume selection	128	121–131	no
+VIP	Initialize parameter	–	–	no
+VIT=n	DTE/DCE inactivity timer	0	0–255	no
+VLS=n	Hardware type control	0	0–15	no
+VNH=n	Automatic hang-up control	0	0–2	no
+VRA=n	Ringback-goes-away timer	50	0–50	no
+VRN=n	Ringback-never-appeared timer	10	0–255	no
+VRX	Record mode	none	–	no
+VSD=m	Silence detection (quiet and silence)	128, 50	See note	no
+VSM=m	Compression method selection	140, 8000, 0, 0	See note	no
+VSP=n	Speakerphone on/off control	0	0, 1	no
#VSPS=n	Speakerphone type selection	1	0, 1	no
+VTD=n	Beep tone duration timer	100	5–255	no

Table 5. IS-101 Voice Command Summary (cont.)

+VTS=m	DTMF and tone generation	none	See note	no
+VTX	Play mode	none	–	no

* The noted parameters, commands, and responses depend on the capability to receive.

Table 6. Voice DTE→DCE Character Pairs

Response	Hex Code	Function
<NUL>	00	Do nothing
<DLE>	10	Two contiguous <DLE><DLE> codes indicate a single <DLE> in the data stream
<SUB>	1A	<DLE><DLE> in data stream
<ETX>	03	End transmit data state
/	2F	Start of DTMF tone shielding
	7F	DTMF transition to off
u	75	Bump up the volume
d	64	Bump down the volume
<ESC>	1B	End receive data state
!	21	Receive data abort
<CAN>	18	Clear transmit buffer of voice data
?	3F	Transmit buffer space available query

Table 7. Voice DTE←DCE Character Pairs

Response	Hex Code	Function
<DLE>	10	Single <DLE> character in the data stream
<SUB>	1A	<DLE><DLE> in data stream
<ETX>	3	End of Record mode data
X	58	Packet header for 'Complex Event Detection Report'
.	2E	Packet terminator for the 'Complex Event Detection Report'
/	2F	Start of DTMF tone shielding
	7F	DTMF transition to off
0–9	30–39	DTMF tones 0–9
A–D	41–44	DTMF tones A–D
*	2A	DTMF tone *
#	23	DTMF tone #
o	6F	Receive buffer overrun
c	63	1100-Hz fax calling tone
e	65	1300-Hz data calling tone

Table 7. Voice DTE←DCE Character Pairs (cont.)

Response	Hex Code	Function
h	68	Local phone goes on hook
H	48	Local phone goes off hook
s	73	Presumed hang-up silence time-out
q	71	Presumed end-of-message quiet time-out
l	6C	Loop current interruption
L	4C	Loop current polarity reversal
r	72	Ringback
b	62	Busy/reorder/fast busy
d	64	Dial tone detected
u	75	Transmit buffer under-run
p	70	Line voltage increase (extension phone goes on-hook)
P	50	Line voltage decrease (extension phone goes off-hook)
a	61	Fax or data answer tone (2100 Hz)
f	66	Data answer detected (2225 Hz)
R	52	Incoming ring
% ' (,)	25, 26, 27, 28, 29	Manufacturer-specified

Table 8. Dial Modifiers

Command	Function
0 to 9	Dialing digits
A, B, C, D, *, #	Tone dial characters
P	Pulse dial
R	Reverse Originate mode
S=n	Dial NVRAM telephone number
T	Tone dial
W	Wait for dial tone
,	Pause
!	Flash hook
@	Wait for quiet answer
;	Return to command state
- ()	Ignored by modem

Table 9. S-Register Summary

Note	Register	Function	Default	Range	Units	Reported by &Vn
*	S0	No. of rings to auto-answer on	0	0–255	ring	yes
	S1	Ring count	0	0–255	ring	yes
*	S2	Escape character	43	0–127	ASCII	yes
	S3	Carriage return character	13	0–127	ASCII	yes
	S4	Line feed character	10	0–127	ASCII	yes
	S5	Backspace character	8	0–32, 127	ASCII	yes
*	S6	Wait before dialing	2	2–255	second	yes
*	S7	Wait for carrier	60	1–255	second	yes
*	S8	Pause time for dial modifier	2	0–255	second	yes
*	S9	Carrier recovery time	6	1–255	0.1 second	yes
*	S10	Lost carrier hang up delay	14	1–255	0.1 second	yes
*	S11	DTMF dialing speed	70	50–255	ms	yes
*	S12	Guard Time	50	0–255	(0.02 second)	yes
*	S14	Bit-mapped options	138	–	–	no
	S16	Modem test options	0	–	–	no
*	S18	Modem test timer	0	0–255	second	yes
*	S21	Bit-mapped options	48	–	–	no
*	S22	Bit-mapped options	118	–	–	no
*	S23	Bit-mapped options	none	–	–	no
*	S25	Detect DTR change	5	0–255	0.01 second	yes
*	S30	Disconnect inactivity timer	0	0–255	minute	yes
*	S31	Bit-mapped options	49	–	–	no
*	S33	Sleep mode timer	10	0–90	second	yes

* Value saved in NVRAM.

Table 10. DTE-Modem Data Rate Response Codes

Numeric Code	Verbose Code
0	OK
1	CONNECT
2	RING
3	NO CARRIER
4	ERROR
5	CONNECT 1200
6	NO DIALTONE
7	BUSY

Table 10. DTE-Modem Data Rate Response Codes (cont.)

Numeric Code	Verbose Code
8	NO ANSWER
9	CONNECT 600
10	CONNECT 2400
11	CONNECT 4800
12	CONNECT 9600
13	CONNECT 14400
14	CONNECT 19200
18	CONNECT 57600
22	CONNECT 1200/75
23	CONNECT 75/1200
24	CONNECT 7200
25	CONNECT 12000
28	CONNECT 38400
31	CONNECT 115200
32	FCERROR
33	CONNECT 33333
34	CONNECT 37333
35	CONNECT 41333
36	CONNECT 42666
37	CONNECT 44000
38	CONNECT 45333
39	CONNECT 46666
42	CONNECT 48000
43	CONNECT 49333
45	RINGBACK
53	CONNECT 50666
54	CONNECT 52000
55	CONNECT 53333
56	CONNECT 54666
57	CONNECT 56000
58	CONNECT 57333
59	CONNECT 16800
60	CONNECT 21600
62	CONNECT 24000
63	CONNECT 26400
64	CONNECT 28800
65	CONNECT 31200
66	CONNECT 33600
67	COMPRESSION: V.42BIS

Table 10. DTE-Modem Data Rate Response Codes (cont.)

Numeric Code	Verbose Code
68	COMPRESSION: MNP5
69	COMPRESSION: NONE
70	PROTOCOL: NONE
74	PROTOCOL: V80 SAM
77	PROTOCOL: LAP-M
80	PROTOCOL: MNP
81	PROTOCOL: MNP 2
82	PROTOCOL: MNP 3
83	PROTOCOL: MNP 2,4
84	PROTOCOL: MNP 3,4
98	CPON=
99	CPOF=
100	DRON=
101	DROF=
See Note	CONNECT (DTE data rate)/(modulation)/(error correction)/(data compression) / TX:(DCE transmit data rate) / RX:(DCE receive data rate)

NOTE: The **W3** AT command reports the special verbose code listed, which is used to evaluate the modem connection. The **W0**, **W1**, **W2**, and **W4** AT commands report all other 'CONNECT' messages. When the modem is configured for text responses **V1**, the **W3** verbose response provides information about the DTE data rate, connection modulation, error correction protocol, data compression, and modem-to-modem data rate. When the modem is configured for **W3** and numeric responses **V0**, the modem responds as if it were set up for **W0**.

Table 11. Manufacturing-Only Command Summary ^a

Note	Command	Function	Default	Range
*	*NCnn	Country Select	0	–
	!P=m	Set plug-and-play board serial number	none	0–255, 0–255, 0–255, 0–255
*	S91	Select transmit level	10	9–16
*	S92	DTMF transmit level	10	0–15
	#VGP0=n	Read/write to general-purpose pins 0–7	See note	–
	#VGP1=n	Read/write to general-purpose pins 8–15	See note	–
	#VGP2=n	Read/write to general-purpose pins 16–23	See note	–

^a These commands are meant to be used by the board manufacturer and not in generic applications software for end users.

* Value saved in NVRAM.

NOTE: Default values for **#VGP0–2 =n** are dependent on board design.