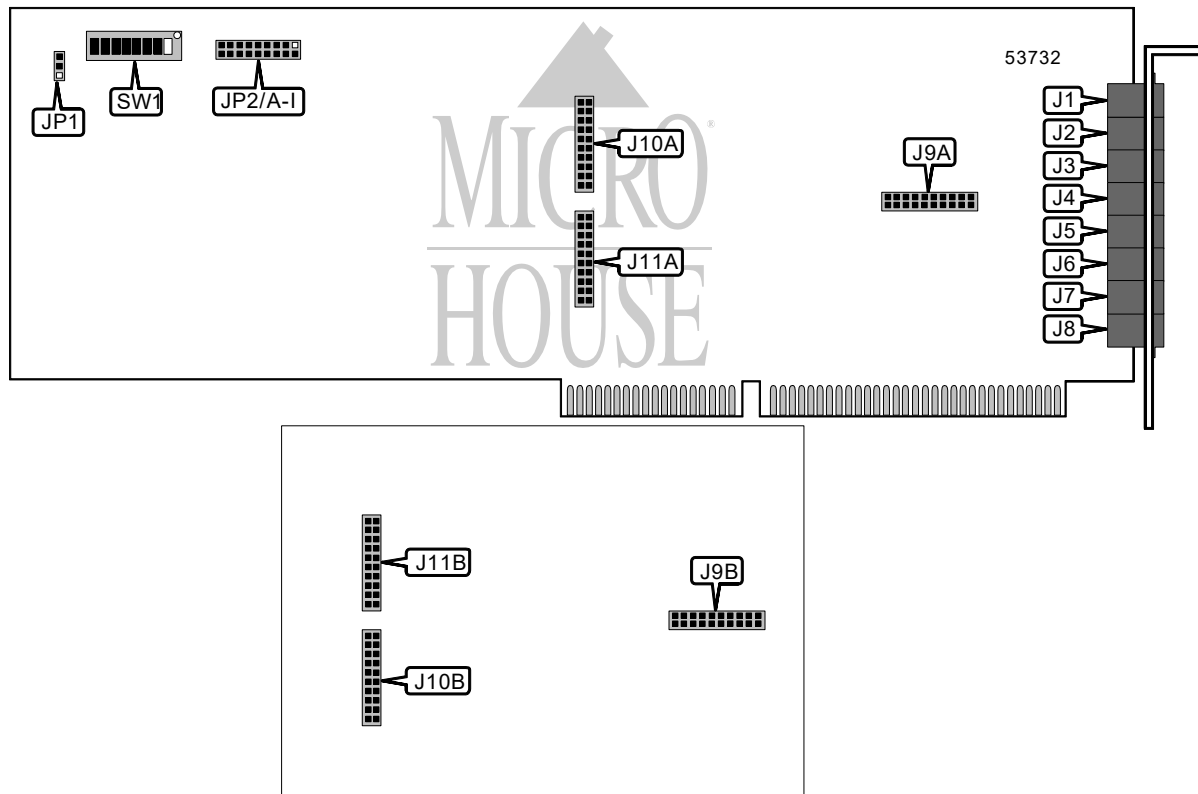


MULTI-TECH SYSTEMS, INC.

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Card Type	Modem (asynchronous)
Processor Type	80186
Processor Speed	16MHz
Chip Set	Unidentified
Maximum Onboard Memory	256KB RAM
Maximum Data Rate	33.6Kbps x 4 (8 with daughtercard)
Maximum Fax Rate	14.4Kbps x 4 (8 with daughtercard)
Data Bus	16-bit ISA
Fax Class	Class II
Data Modulation Protocol	Bell 103A/212A ITU-T V.22, V.22bis, V.32, V.32bis, V.34 AT&T V.32terbo
Fax Modulation Protocol	ITU-T V.17, V.21CH2, V.27ter, V.29
Error Correction/Compression	MNP5, V.42, V.42bis



CONNECTIONS			
Function	Label	Function	Label
Telephone line 1 out	J1	Telephone line 8 out	J8
Telephone line 2 out	J2	Header to daughterboard J9B	J9A
Telephone line 3 out	J3	Header to main board J9A	J9B
Telephone line 4 out	J4	Header to daughterboard J10B	J10A
Telephone line 5 out	J5	Header to main board J10A	J10B
Telephone line 6 out	J6	Header to daughterboard J11B	J11A
Telephone line 7 out	J7	Header to main board J11A	J11B

Note: J5 through J8 will not be active unless the daughtercard is installed.

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USER CONFIGURABLE SETTINGS		
Setting	Label	Position
i Daughtercard is not installed	JP1	Pins 1 & 2 closed
Daughtercard is installed	JP1	Pins 2 & 3 closed

INTERRUPT SELECTION									
Setting	JP2/A	JP2/B	JP2/C	JP2/D	JP2/E	JP2/F	JP2/G	JP2/H	JP2/I
2	Closed	Open	Open	Open	Open	Open	Open	Open	Open
i 3	Open	Closed	Open	Open	Open	Open	Open	Open	Open
4	Open	Open	Closed	Open	Open	Open	Open	Open	Open
5	Open	Open	Open	Closed	Open	Open	Open	Open	Open
7	Open	Open	Open	Open	Closed	Open	Open	Open	Open
10	Open	Open	Open	Open	Open	Closed	Open	Open	Open
11	Open	Open	Open	Open	Open	Open	Closed	Open	Open
12	Open	Open	Open	Open	Open	Open	Open	Closed	Open
15	Open	Open	Open	Open	Open	Open	Open	Open	Closed

BASE I/O ADDRESS SELECTION								
Setting	SW1/1	SW1/2	SW1/3	SW1/4	SW1/5	SW1/6	SW1/7	SW1/8
000h	On	On	On	On	On	On	On	On
008h	Off	On	On	On	On	On	On	On
010h	On	Off	On	On	On	On	On	On
018h	Off	Off	On	On	On	On	On	On
020h	On	On	Off	On	On	On	On	On
i 200h	On	On	On	On	On	On	Off	On
7D8h	Off	Off	On	Off	Off	Off	Off	Off
7E0h	On	On	Off	Off	Off	Off	Off	Off
7E8h	Off	On	Off	Off	Off	Off	Off	Off
7F0h	On	Off	Off	Off	Off	Off	Off	Off
7F8h	Off	Off	Off	Off	Off	Off	Off	Off
Note: A total of 256 base address settings are available. The switches are a binary representation of the decimal memory addresses. SW1/8 is the Most Significant Bit and switch SW1/1 is the Least Significant Bit. The switches have the following decimal values: SW1/8=1024, SW1/7=512, SW1/6=256, SW1/5=128, SW1/4=64, SW1/3=32, SW1/2=16, SW1/1=8. Turn off the switches and add the values of the switches that are off to obtain the correct memory address. (Off=1, On=0)								

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SUPPORTED STANDARD COMMANDS	
Basic AT Commands	
+++ , 'comma' , A/	
A, B, D, E, H, O, P, T, V, W, X, Y, Z	
&D, &F, &G, &P, &S, &T, &W	
S-Registers	
S0, S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S30	
Note: See MHI documentation for complete information.	

Proprietary AT Command Set

ANSWER/ORIGINATE MODE	
Type:	Configuration
Format:	AT [cmds] Rn [cmds]
Description:	Selects whether the modem will answer and originate calls in normal or reversed mode.
Command	Function
i R0	Modem will answer calls in answer mode and originate calls in originate mode.
R1	Modem will answer calls in originate mode and originate calls in answer mode.

AUTO-RELIABLE FALLBACK	
Type:	Configuration
Format:	AT [cmds] \$Fn [cmds]
Description:	Selects whether error correction can be disabled by a <CR> while handshaking.
Command	Function
\$F0	Auto-reliable fallback disabled.
i \$F1	Auto-reliable fallback enabled.

AUTO-RELIABLE TIME BUFFER CONFIGURATION	
Type:	Configuration
Format:	AT [cmds] \$An [cmds]
Description:	Controls the handling of incoming data during auto-reliable time period.
Command	Function
i \$A0	Data is discarded.
\$A1	Data is buffered.

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BREAK LENGTH	
Type:	Configuration
Format:	AT [cmds] S17= <i>n</i> [cmds]
Default:	250
Range:	0 - 250
Unit:	10 mS
Description:	Sets the length of the break signal the modem will send to the local serial port.

BUFFER SIZE	
Type:	Configuration
Format:	AT [cmds] &B <i>n</i> [cmds]
Description:	Selects the modem's transmit/receive buffer size.
Command	Function
<i>i</i> &B0	Normal buffer size.
&B1	Small buffer size.

CD SIGNAL	
Type:	Configuration
Format:	AT [cmds] &C <i>n</i> [cmds]
Description:	Configures the behavior of the carrier detect signal.
Command	Function
&C0	CD forced high.
<i>i</i> &C1	CD normal.
&C2	CD forced high except during disconnect.
&C4	Modem resets on low CD.

CLEAR DOWN SIGNAL	
Type:	Configuration
Format:	AT [cmds] &CD <i>n</i> [cmds]
Description:	Selects whether the modem will send a clear down signal when disconnecting.
Command	Function
<i>i</i> &CD0	Modem will not send clear down signal.
&CD1	Modem will send clear down signal.

COMMAND SET	
Type:	Configuration
Format:	AT &Q <i>n</i>
Description:	Selects standard Hayes or custom command sets.
Command	Function
<i>i</i> &Q0	Multi-Tech custom command set enabled.
&Q1	Standard Hayes command set enabled.

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COMPRESSION	
Type:	Configuration
Format:	AT &En
Description:	Selects data compression.
Command	Function
&E14	Data compression disabled.
i &E15	Data compression enabled.

COMPRESSION MODE	
Type:	Configuration
Format:	AT #Ln
Description:	Selects active compression protocols.
Command	Function
i #L0	MNP and V.42 negotiation enabled.
#L1	MNP negotiation enabled.
#L2	V.42 negotiation enabled.
#L3	V.42 enabled with no negotiation.

CTS SIGNAL	
Type:	Configuration
Format:	AT [cmds] &Rn [cmds]
Description:	Controls the behaviour of the CTS signal.
Command	Function
&R0	CTS normal.
i &R1	CTS forced high in command mode.
&R2	CTS forced low for 1 second during disconnect.

CTS SIGNAL	
Type:	Configuration
Format:	AT [cmds] &RFn [cmds]
Description:	Selects the function of the CTS signal.
Command	Function
&RF0	CTS follows RTS.
i &RF1	CTS normal.

DATA LENGTH	
Type:	Configuration
Format:	AT [cmds] \$EBn [cmds]
Description:	Selects 10- or 11-bit mode.
Command	Function
i \$EB0	Sets 10-bit mode.
\$EB1	Sets 11-bit mode.

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DATA PARITY	
Type:	Configuration
Format:	AT [cmds] #P <i>n</i> [cmds]
Description:	Sets the parity of the serial port.
Command	Function
<i>i</i> #P0	No parity.
#P1	Odd parity.
#P2	Even parity.

DATA PUMP TONE	
Type:	Configuration
Format:	AT [cmds] \$FC <i>n</i> [cmds]
Description:	Selects whether the data pump will transmit a 5 second 2100Hz tone.
Command	Function
\$FC0	Data pump will not transmit tone.
<i>i</i> \$FC1	Data pump will transmit tone.

DIAL STORED PHONE NUMBER	
Type:	Immediate
Format:	AT [cmds] Na [Nb, Nc...]
Description:	Dials stored phone number(s). If the first number is busy, the modem will proceed to the next number in the list.

DISCONNECT SIGNAL DROP - PBX	
Type:	Register
Format:	AT [cmds] S24= <i>n</i> [cmds]
Default:	20
Range:	0 - 255
Unit:	50 ms
Description:	Sets the time to drop the DTR, CTS, and DCD signals on disconnect when modem is connected to a PBX.

DISPLAY CONFIGURATION	
Type:	Immediate
Format:	AT L <i>n</i>
Description:	Displays modem configuration.
Command	Function
L5	Displays all settings.
L6	Displays the values of all S-registers.
L7	Displays extended parameters.
L8	Displays current diagnostics.
L9	Displays current signal strength.
L10	Displays current signal-to-noise ratio.
L11	Displays current noise level.

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DISPLAY INFORMATION	
Type:	Immediate
Format:	AT [cmds] ln [cmds]
Description:	Displays information requested about the modem.
Command	Function
I0	Displays product identification code.
I1	Displays firmware revision.
I2	Displays product name.
I3	Factory use only.
I5	Displays DSP chip version.
I9	Displays modem features.

DSR SIGNAL	
Type:	Configuration
Format:	AT [cmds] &SF <i>n</i> [cmds]
Description:	Selects the function of the DSR signal.
Command	Function
i &SF0	DSR is set to CD.
&SF1	DSR is independent of CD.

DTR DIALING	
Type:	Configuration
Format:	AT [cmds] \$D <i>n</i> [cmds]
Description:	Selects the DTR dialing function.
Command	Function
i \$D0	DTR dialing disabled.
\$D1	DTR dialing enabled.

DTR SIGNAL DROP	
Type:	Register
Format:	AT [cmds] S25= <i>n</i> [cmds]
Default:	0
Range:	0 - 255
Unit:	100 ms
Description:	Sets the time to drop the DTR signal on disconnect. A value of 0 sets this to 50 mS.

ESCAPE SEQUENCE BUFFER SIZE	
Type:	Register
Format:	AT [cmds] S34= <i>n</i> [cmds]
Default:	10
Range:	0-60
Unit:	1 byte
Description:	Sets the size of the buffer used to store entered commands during an escape sequence.

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ESCAPE SEQUENCE RESPONSE	
Type:	Configuration
Format:	AT [cmds] %En [cmds]
Description:	Sets the response that the modem will give to an escape sequence.
%E4	OK response to command escape disabled.
i %E5	OK response to command escape enabled.

ESCAPE SEQUENCE TIMEOUT	
Type:	Register
Format:	AT [cmds] S32=n [cmds]
Default:	20
Range:	0-255
Unit:	1 second
Description:	Sets the maximum amount of time the modem will wait for a <CR> while executing an escape sequence.

ESCAPE SEQUENCE TYPE	
Type:	Configuration
Format:	AT [cmds] %En [cmds]
Description:	Sets the type of command escape sequence the modem will recognise.
Command	Function
%E0	Command escape disabled.
i %E1	TIES escape (+++AT...)
%E2	<BREAK> AT method.
%E3	Both TIES and BREAK methods.

FALLBACK MODE	
Type:	Configuration
Format:	AT [cmds] #Fn [cmds]
Description:	Sets direction of fallback.
Command	Function
#F0	Fallback disabled.
#F1	Fallback from 33.6Kbps to 2400bps as line quality degrades.
i #F2	Fallback from 2400bps to 33.6Kbps as line quality improves.

FLOW CONTROL	
Type:	Configuration
Format:	AT [cmds] &En [cmds]
Description:	Selects flow control.
Command	Function
&E12	Flow control disabled.
i &E13	Flow control enabled.

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FLOW CONTROL - ENQ/ACK	
Type:	Configuration
Format:	AT [cmds] &En [cmds]
Description:	Selects ENQ/ACK pacing.
Command	Function
i &E8	Enables ENQ/ACK pacing.
&E9	Disables ENQ/ACK pacing.

FLOW CONTROL IN NORMAL MODE	
Type:	Configuration
Format:	AT [cmds] &En [cmds]
Description:	Selects XON/XOFF flow control for non-error-correcting connections.
Command	Function
i &E10	XON/XOFF disabled for non-error-correcting connections.
&E11	XON/XOFF enabled for non-error-correcting connections.

FLOW CONTROL TYPE	
Type:	Configuration
Format:	AT [cmds] &En [cmds]
Description:	Sets type of flow control used by modem.
Command	Function
&E3	Flow control disabled.
i &E4	CTS/RTS flow control enabled.
&E5	XON/XOFF flow control enabled.

HANDSHAKE ATTEMPTS	
Type:	Configuration
Format:	AT [cmds] #An [cmds]
Description:	Configures the initial handshake phase.
Command	Function
i #A0	Attempts speeds in order: 33.6Kbps, 31.2Kbps, 28.8Kbps, 24Kbps, 21.6Kbps, 19.2Kbps, 16.8Kbps, 14.4Kbps, 12Kbps, 9600bps, 4800bps, 2400bps, 1200bps, 300bps.
#A1	Attempts only 33.6Kbps.
#A2	Attempts speeds in order: 33.6Kbps, 31.2Kbps, 28.8Kbps, 24Kbps, 21.6Kbps, 19.2Kbps, 16.8Kbps, 14.4Kbps, 12Kbps, 9600bps, 4800bps.
#A3	Attempts speeds in order: 2400bps, 1200bps, 300bps.

HELP SCREENS	
Type:	Immediate
Format:	AT \$Hn
Description:	Shows modem help screens.
Command	Function
\$H1	Shows help screen 1.
\$H2	Shows help screen 2.
\$H3	Shows help screen 3.

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LOCAL SERIAL PORT SPEED	
Type:	Configuration
Format:	AT [cmds] \$SBnnn [cmds]
Description:	Sets serial port speed.
Command	Function
\$SB300	Sets 300bps speed.
\$SB1200	Sets 1200bps speed.
\$SB2400	Sets 2400bps speed.
\$SB4800	Sets 4800bps speed.
\$SB9600	Sets 9600bps speed.
\$SB19200	Sets 19.2Kbps speed.
\$SB38400	Sets 38.4Kbps speed.
\$SB57600	Sets 57.6Kbps speed.
i \$SB115200	Sets 115.2Kbps speed.

LOCK SERIAL PORT	
Type:	Configuration
Format:	AT [cmds] \$BA <i>n</i> [cmds]
Description:	Sets operation of serial port speed.
Command	Function
i \$BA0	Serial speed locked at rate set by \$SB.
\$BA1	Serial speed follows connect speed, ignoring \$SB.

LOGIN PASSWORD	
Type:	Configuration
Format:	AT [cmds] #lxxxx
Description:	Sets the login password to xxxx. The password must be between 6 and 10 characters, case sensitive. It defaults to MULTI-TECH.

MAXIMUM BLOCK SIZE FOR TRANSMISSION	
Type:	Configuration
Format:	AT [cmds] &BS <i>n</i> [cmds]
Description:	Sets the maximum transmittable block size for data compression modes.
Command	Function
&BS0	Maximum block size is 64 characters.
i &BS1	Maximum block size is 256 characters in MNP mode and 128 characters in LAPM mode.

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MAXIMUM LINE SPEED	
Type:	Configuration
Format:	AT \$MBnnn
Description:	Sets the maximum allowable data exchange rate attempted during handshake process.
Command	Function
\$MB75	Sets V.23 (1200bps/75bps bi-directional).
\$MB300	Sets 300bps maximum connect speed.
\$MB1200	Sets 1200bps maximum connect speed.
\$MB2400	Sets 2400bps maximum connect speed.
\$MB4800	Sets 4800bps maximum connect speed.
\$MB9600	Sets 9600bps maximum connect speed.
\$MB14400	Sets 14.4Kbps maximum connect speed.
\$MB19200	Sets 19.2Kbps maximum connect speed.
\$MB28800	Sets 28.8Kbps maximum connect speed.
i \$MB33600	Sets 33.6Kbps maximum connect speed.

REDIAL	
Type:	Immediate
Format:	A:
Description:	Redials the last number dialed until it is no longer busy.
Note:	Do not precede this command with AT or follow it with <CR>.

REMOTE CONFIGURATION CHARACTER	
Type:	Register
Format:	AT [cmds] S13=n [cmds]
Default:	37
Range:	0 - 127
Unit:	1 ASCII character
Description:	Defines the character that, when sent four times within the guard time set by S12, will notify the remote modem that a remote configuration session has been requested.

RESULT CODES	
Type:	Configuration
Format:	AT [cmds] Qn [cmds]
Description:	Enables modem to send result codes to the DTE.
Command	Function
i Q0	Result codes enabled.
Q1	Result codes disabled.
Q2	Dumb answer mode enabled.

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RETRANSMIT FAIL ACTION	
Type:	Configuration
Format:	AT [cmds] \$R <i>n</i> [cmds]
Description:	Sets whether the modem gives up on a bad connection.
Command	Function
i \$R0	Hang up after 12 failed retransmissions.
\$R1	Do not hang up after 12 failed retransmissions.

SETUP PASSWORD	
Type:	Configuration
Format:	AT [cmds] #Sxxxx
Description:	Sets the setup password to xxxx. The password must be between 6 and 10 characters, case sensitive. It defaults to MODEMSETUP.

TEST MODES	
Type:	Immediate
Format:	AT [cmds] U <i>n</i> [cmds]
Description:	Performs test modes.
Command	Function
U0	Begin local analog loopback test in originate mode.
U1	Begin local analog loopback test in answer mode.
U2	Request remote digital loopback
U3	Begin local digital loopback.

TIME UNTIL OFF HOOK ON HIGH DTR	
Type:	Register
Format:	AT [cmds] S37= <i>n</i> [cmds]
Default:	0
Range:	0-255
Unit:	1 second
Description:	Sets the amount of time the modem will wait to pick up after the DTR signal goes high.

TIME UNTIL ON HOOK ON LOW DTR	
Type:	Register
Format:	AT [cmds] S36= <i>n</i> [cmds]
Default:	0
Range:	0-255
Unit:	1 second
Description:	Sets the amount of time the modem will wait to hang up after the DTR signal goes low.

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TRELLIS CODING	
Type:	Configuration
Format:	AT [cmds] #T <i>n</i> [cmds]
Description:	Selects whether the modem will use trellis coding.
Command	Function
#T0	Trellis coding disabled.
i #T1	Trellis coding enabled.

V.32terbo CONTROL	
Type:	Configuration
Format:	AT [cmds] #V <i>n</i> [cmds]
Description:	Controls the V.32terbo protocol in answer mode.
Command	Function
i #V0	V.32terbo enabled.
#V1	V.32terbo disabled.

V.34 LINE PROBE	
Type:	Configuration
Format:	AT [cmds] %DP <i>n</i> [cmds]
Description:	Selects whether the modem will read line probe information from the DSP chip during handshaking.
Command	Function
i %DP0	Line probe information not read during handshaking.
%DP1	Line probe information read during handshaking.

V.34 LINE PROBE - DISPLAY	
Type:	Immediate
Format:	AT [cmds] %DF <i>n</i> [cmds]
Description:	Displays V.34 line probe data.
Command	Function
%DF0	Displays V.34 line probe data in graph format.
%DF1	Displays V.34 line probe data in table format.

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V.34 - MAXIMUM LINE SPEED	
Type:	Register
Format:	AT [cmds] S48= <i>n</i> [cmds]
Description:	Sets the maximum line speed the modem will attempt to connect at when in V.34 mode.
Command	Function
i S48=0	Modem will attempt to connect at 33.6Kbps.
S48=4	Modem will attempt to connect at 4800bps.
S48=9	Modem will attempt to connect at 9600bps.
S48=12	Modem will attempt to connect at 12Kbps.
S48=14	Modem will attempt to connect at 14.4Kbps.
S48=16	Modem will attempt to connect at 16.8Kbps.
S48=19	Modem will attempt to connect at 19.2Kbps.
S48=21	Modem will attempt to connect at 21.6Kbps.
S48=26	Modem will attempt to connect at 26.4Kbps.
S48=28	Modem will attempt to connect at 28.8Kbps.
S48=31	Modem will attempt to connect at 31.2Kbps.
S48=33	Modem will attempt to connect at 33.6Kbps.

V.42 FAILURE REACTION	
Type:	Configuration
Format:	AT [cmds] &E <i>n</i> [cmds]
Description:	Sets the modem's reaction if it fails to connect with V.42.
Command	Function
&E0	Error correction disabled.
i &E1	Modem will fall back to normal mode.
&E2	Modem will not fall back to normal mode.

XOFF SEND	
Type:	Configuration
Format:	AT [cmds] #X <i>n</i> [cmds]
Description:	Selects how XOFF signal is sent.
Command	Function
i #X0	Single XOFF character are sent until the DTE responds.
#X1	Multiple XOFF characters are sent until the DTE responds.

XON/XOFF PASS-THROUGH	
Type:	Configuration
Format:	AT [cmds] &E <i>n</i> [cmds]
Description:	Selects whether XON/XOFF signals are sent to remote modem.
Command	Function
i &E6	XON/XOFF signals trapped by local modem.
&E7	XON/XOFF passed through local modem.