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Card Type	Modem (asynchronous)
Chipset	PCtel HSP/V.34+
I/O Options	Voice, speakerphone
Maximum Data Rate	33.6Kbps
Maximum Fax Rate	14.4Kbps
Data Modulation	Bell 103A, 212A
	ITU-T V.21, V.22, V.22bis, V.23, V.32, V.32bis, V.34
Fax Modulation	ITU-T V.17, V.21CH2, V.27ter, V.29
Error Correction/Compression	MNP5, V.42, V.42bis
Fax Class	Class I
Data Bus	16-bit ISA
Card Size	Full height, half length
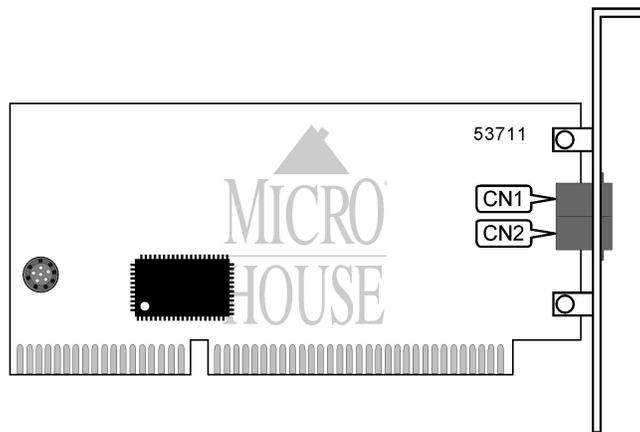
CONNECTIONS			
Function	**Label**	**Function**	**Label**
Telephone line out	CN1	Telephone line in	CN2

SUPPORTED STANDARD COMMANDS
Basic AT Commands
+++, 'comma', A/
A, E, H, L, M, N, O, P, Q, T, V, W, X, Y, Z
&C, &D, &F, &G, &K, &P, &S, &T, &W, &Y, &Z
Extended AT Commands
\A, \B, \G, \K, \L, \N
%C, %L, %Q
Special AT Commands
#CID
S-Registers
S0, S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S18, S25, S30, S32, S33, S38, S86, S91
Note: See MHI help file for complete information.

UNIDENTIFIED COMMANDS	
Command	**Default**
S34	13

Proprietary AT Command Set

AUTO-RETRAIN - AUTO-FALLBACK/FALL-FORWARD	
Type:	Configuration
Format:	AT [cmds] %E*n* [cmds]
Description:	Controls auto-retrain mode and fallback/fall-forward.
Command	**Function**
%E0	Auto-retrain disabled.
%E1	Auto-retrain enabled.
í %E2	Auto-retrain and auto-fallback/fall-forward enabled.
%E3	Auto-retrain and fast hangup enabled.

COMMUNICATION PROTOCOLS	
Type:	Configuration
Format:	AT [cmds] B*n* [cmds]
Description:	Selects the communication protocol for low-speed data calls.
Command	**Protocol**
B0	Modem will use ITU-T V.22 at 1200bps.
í B1	Modem will use Bell 212A at 1200bps.
B2	Modem will use ITU-T V.23 at 1200/75bps.

COUNTRY CODE	
Type:	Configuration
Format:	AT [cmds] %I*n* [cmds]
Description:	Sets the modem's country code to the country specified.
Command	**Function**
%I1	Set country code for the United States.
%I2	Set country code for France.
%I3	Set country code for Germany.
%I4	Set country code for Italy.
%I5	Set country code for Sweden.
%I6	Set country code for the United Kingdom.
%I7	Set country code for Japan.
%I8	Set country code for Australia.
%I9	Set country code for Spain.
%I10	Set country code for Taiwan.
%I11	Set country code for Singapore.
%I12	Set country code for Korea.
%I13	Set country code for Switzerland.
%I14	Set country code for Norway.
%I15	Set country code for the Netherlands.
%I16	Set country code for Belgium.
%I17	Set country code for Canada.
%I18	Set country code for Ireland.
%I19	Set country code for Portugal.

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COUNTRY CODE (CON'T)	
Command	**Function**
%I20	Set country code for Poland.
%I21	Set country code for Hungary.
%I22	Set country code for Finland.
%I23	Set country code for Denmark.

CPU ALLOCATION	
Type:	Configuration
Format:	AT [cmds] %N*n* [cmds]
Default:	7
Range:	0 - 9
Unit:	10% of total CPU time
Description:	Selects the maximum amount of CPU processing time the modem will use. Setting %N to 0 disables dynamic CPU allocation.

DIAL	
Type:	Immediate
Format:	AT [cmds] D<#>;[cmds]
Description:	Dials the telephone number indicated according to any modifiers included in the string.
Command	**Function**
DL	Re-dial last number.
DS=*n*	Dial stored telephone number *n*.
DW	Dialing resumed following dial tone detection.
D,	Dialing paused for amount of time specified in S8 register.
D!	Flash function initiated. Modem commanded to go off-hook for specified time before returning on-hook.
D@	Wait for Quiet Answer function enabled. Modem waits until a "quiet answer," a ring-back signal followed by silence up to the time specified in S7, is received prior to executing the rest of the dial string.
D^	Calling tone enabled for this call.
D;	Modem returned to idle state after dialing. The semicolon can only be placed at the end of the dial command.

DISPLAY CHIPSET MANUFACTURER	
Type:	Immediate
Format:	AT [cmds] #MFR? [cmds]
Description:	Displays the voice chipset manufacturer's name.

DISPLAY CHIPSET MODEL NAME	
Type:	Immediate
Format:	AT [cmds] #MDL? [cmds]
Description:	Displays the model name of the modem's voice chipset.

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DISPLAY CHIPSET REVISION	
Type:	Immediate
Format:	AT [cmds] #REV? [cmds]
Description:	Displays the revision level of the modem's voice chipset.

DISPLAY INFORMATION	
Type:	Immediate
Format:	AT [cmds] I*n* [cmds]
Description:	Displays information requested about the modem.

Command	Function
I0	Displays product identification code.
I1	Displays hardware variation code.
I2	Displays internal code.
I3	Displays firmware revision.
I4	Displays feature bitmap.

DISPLAY PROFILES	
Type:	Immediate
Format:	AT [cmds] &V*n* [cmds]
Description:	Displays the stored profile requested.

Command	Function
&V0	Displays the active profile.
&V1	Displays stored profiles.
&V2	Displays phone numbers stored with the &Z command.

ESCAPE SEQUENCE - INVALID SEQUENCE	
Type:	Configuration
Format:	AT [cmds] *Q*n* [cmds]
Description:	Sets the modem's response when an invalid TIES escape sequence is entered, but the OK response code has already been sent.

Command	Function
*Q0	Modem returns CONNECT response.
*Q1	Modem does not return CONNECT response.

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LINE SPEED	
Type:	Register
Format	AT [cmds] S37=n [cmds]
Description:	Sets the maximum allowable data exchange rate attempted during handshake process.

Command	Function
í S37=0	Auto-detect fastest common speed.
S37=3	Set speed to 300bps.
S37=4	Set speed to 1200bps.
S37=6	Set speed to 2400bps.
S37=7	Set speed to 4800bps.
S37=8	Set speed to 7200bps.
S37=9	Set speed to 9600bps.
S37=10	Set speed to 12Kbps.
S37=11	Set speed to 14.4Kbps.
S37=12	Set speed to 28.8Kbps.

MODE SELECTION	
Type:	Immediate
Format:	AT [cmds] #CLS=n [cmds]
Description:	Selects which mode the modem will operate in.

Command	Function
#CLS=0	Modem will operate in data mode.
#CLS=1	Modem will operate in fax class 1 mode.
#CLS=8	Modem will operate in voice mode.

TEST MODE - PTT	
Type:	Immediate
Format:	AT [cmds] %Pnn [cmds]
Description:	Send PTT test signals for line tests.

Command	Function
%P00	Send DTMF digit 0.
%P01	Send DTMF digit 1.
%P02	Send DTMF digit 2.
%P03	Send DTMF digit 3.
%P04	Send DTMF digit 4.
%P05	Send DTMF digit 5.
%P06	Send DTMF digit 6.
%P07	Send DTMF digit 7.
%P08	Send DTMF digit 8.
%P09	Send DTMF digit 9.
%P10	Send DTMF digit A.
%P11	Send DTMF digit B.
%P12	Send DTMF digit C.
%P13	Send DTMF digit D.
%P14	Send DTMF digit *.

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TEST MODE - PTT (CON'T)	
Command	**Function**
%P15	Send DTMF digit #.
%P16	Send V.21 channel 1 mark symbol.
%P17	Send V.21 channel 2 mark symbol.
%P18	Send V.23 backward channel mark symbol.
%P19	Send V.23 forward channel mark symbol.
%P20	Send V.22 originate mark symbol.
%P21	Send V.22bis originate mark symbol.
%P22	Send V.22 answer signal with guard tone if required.
%P23	Send V.22bis answer signal with guard tone if required.
%P24	Send V.21 channel 1 space symbol.
%P25	Send V.21 channel 2 space symbol.
%P26	Send V.23 backward channel space symbol.
%P27	Send V.23 forward channel space symbol.
%P28	Send V.32 9600bps carrier.
%P29	Send V.32bis 14.4Kbps carrier.
%P30	Send silence (on-line), i.e., go off-hook.
%P31	Send V.25 answer tone.
%P32	Send 1800 Hz guard tone.
%P33	Send 1300Hz V.25 calling tone.
%P34	Send 1100Hz fax calling tone.
%P35	Send V.21 channel 2 mark symbol.
%P36	Send V.27ter 2400bps carrier.
%P37	Send V.27ter 4800bps carrier.
%P38	Send V.29 7200bps carrier.
%P39	Send V.29 9600bps carrier.
%P40	Send V.17 7200bps long train carrier.
%P41	Send V.17 7200bps short train carrier.
%P42	Send V.17 9600bps long train carrier.
%P43	Send V.17 9600bps short train carrier.
%P44	Send V.17 12Kbps long train carrier.
%P45	Send V.17 12Kbps short train carrier.
%P46	Send V.17 14.4Kbps long train carrier.
%P47	Send V.17 14.4Kbps short train carrier.
%P48	Send V.34 2400bps carrier.
%P49	Send V.34 4800bps carrier.
%P50	Send V.34 7200bps carrier.
%P51	Send V.34 9600bps carrier.
%P52	Send V.34 12Kbps carrier.
%P53	Send V.34 14.4Kbps carrier.
%P54	Send V.34 16.8Kbps carrier.
%P55	Send V.34 19.2Kbps carrier.
%P56	Send V.34 21.6Kbps carrier.
%P57	Send V.34 24Kbps carrier.
%P58	Send V.34 26.4Kbps carrier.

TEST MODE - PTT (CON'T)	
Command	**Function**
%P59	Send V.34 28.8Kbps carrier.
%P60	Send V.32bis 9600bps carrier.
%P61	Send V.32bis 12Kbps carrier.
%P62	Send Bell 212A originate carrier.
%P63	Send Bell 212A answer carrier.
%P64	Send Bell 103 originate mark signal.
%P65	Send Bell 103 originate space signal.
%P66	Send Bell 103 answer mark symbol.
%P67	Send Bell 103 answer space symbol.
%P99,*n*	**Range:** 0 - 23
	Unit: 150 Hz
	Description: The modem will return the strength of the signal at the specified frequency.

SPEAKERPHONE OPTIONS		
Type:	Configuration	
Format:	AT [cmds] #SPK=*x*,*y*,*z* [cmds]	
Description:	Sets various options for speakerphone functions.	
Command	**Function**	
x=0	Microphone enabled.	
x=1	Microphone disabled.	
x=2	Microphone enabled with maximum gain, speaker disabled.	
y	**Default:**	5
	Range:	0 - 16
	Unit:	-2 dBm
	Description:	Sets the attenuation level for speaker output in voice mode. A value of 16 will mute the speaker.
z=0	Microphone gain set to 0 dBm.	
z=1	Microphone gain set to 6 dBm.	
z=2	Microphone gain set to 9.5 dBm.	
z=3	Microphone gain set to 12 dBm.	

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TONE DETECTION		
AT [cmds] #VTD=*x,y,z* [cmds]		
x,y,z 63		
0 - 63		
Sets which tones the tone detection will report.		
The value of *x* sets the tone detection modes in voice transmit mode, *y* sets the voice command mode.		

Value		Function
	0	DTMF tones are not detected.
í 1		DTMF tones are detected.
	0	V.25 1300Hz calling tone is not dete
	í 1	V.25 1300Hz calling tone is detected
	0	T.30 1100Hz fax tone is not detecte
	í 1	T.30 1100Hz fax tone is detected.
	0	V.25/T.30 2100Hz answer tone is no
	í 1	V.25/T.30 2100Hz answer tone is de
	0	Bell 2225Hz answer tone is not dete
	í 1	Bell 2225Hz answer tone is detected
	0	Call progress tones are not detected
	í 1	Call progress tones are detected.

TONE GENERATOR - DIRECT ENTRY	
Type:	Immediate
Format:	AT [cmds] #VTS=[*m*, *n*, *x*]
Range:	*m* 200-3000, *n* 200-3000, *x* 0-255
Unit:	*m* 1 Hz, *n* 1 Hz, *x* .1 second
Description:	Generates a dual-frequency tone for duration *x* at frequencies *m* and *n*.

TONE GENERATOR - TIMED PHONE KEYS	
Type:	Immediate
Format:	AT [cmds] #VTS={*a*, *n*}
Range:	*a* 0-9, A-D, #, *; *x* 0-255
Unit:	*x* .1 second
Description:	Generates the DTMF tone for duration *x* for the character *a*.

TONE GENERATOR LENGTH	
Format	AT [cmds] #VBT=*n* [cmds]
Default:	10
Range:	0 - 40
Unit:	0.1 second
Description:	Sets the length of DTMF tones that are generated.

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TRELLIS CODING	
Type:	Configuration
Format:	AT [cmds] &U*n* [cmds]
Description:	Selects whether the modem will use trellis coding.
Command	**Function**
í &U0	Trellis coding enabled.
&U1	Trellis coding disabled.

V.34 BAUD RATE	
Type:	Configuration
Format:	AT [cmds] S35=*n* [cmds]
Description:	Sets the maximum baud rate for V.34.
Command	**Function**
í S35=0	Maximum baud rate set to 2400 baud.
S35=1	Maximum baud rate set to 2743 baud.
S35=2	Maximum baud rate set to 2800 baud.
S35=3	Maximum baud rate set to 3000 baud.
S35=4	Maximum baud rate set to 3200 baud.
S35=5	Maximum baud rate set to 3429 baud.

VOICE BUFFER SPACE	
Type:	Configuration
Format:	AT [cmds] #VSK=*n* [cmds]
Default:	255
Range:	0 - 255
Unit:	1 byte
Description:	Sets the amount of data the modem can send into the buffer after the XOFF signal is sent.

VOICE DEVICE	
Type:	Configuration
Format:	AT [cmds] #VLS=*n* [cmds]
Description:	Selects the I/O device for the DSP chip.
Note:	This modem may not support all options listed below. The #VLS? command will display the available options.
Command	**Function**
í #VLS=0	Telephone line and handset used for voice I/O.
#VLS=1	Telephone handset used for voice I/O.
#VLS=2	Internal speaker only used for voice I/O.
#VLS=3	External microphone only used for voice I/O.
#VLS=4	Telephone line and handset used for voice I/O; internal speaker enabled.
#VLS=6	Speakerphone used for voice I/O.

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VOICE - DISPLAY BUFFER SIZE	
Type:	Immediate
Format:	AT [cmds] #VBQ? [cmds]
Description:	Displays the size of the voice buffer.

VOICE - DISPLAY COMPRESSION TYPE	
Type:	Immediate
Format:	AT [cmds] #VCI? [cmds]
Description:	Displays the type of compression currently in use.

VOICE GAIN LEVEL	
Type:	Configuration
Format:	AT [cmds] #RG=*hhhh* [cmds]
Default:	7FFF
Range:	0000 - 7FFF
Unit:	Unidentified (hexadecimal)
Description:	Sets the gain level for recording audio in voice mode.

VOICE - LOCAL SERIAL PORT SPEED	
Type:	Configuration
Format:	AT [cmds] #BDR=*n* [cmds]
Default:	0
Range:	0 - 48
Unit:	2400bps
Description:	Sets the speed of the local serial port when in voice mode. A value of 0 indicates that the modem should auto-detect the correct serial port speed.

VOICE RE-RING DETECT TIME	
Type:	Configuration
Format:	AT [cmds] #VRA=*n* [cmds]
Default:	70
Range:	0-255
Unit:	10 mS
Description:	Sets the maximum time the modem will wait for the remote station to ring again before it assumes that it has gone off-hook.

VOICE RECEIVE	
Type:	Immediate
Format:	AT [cmds] #VRX
Description:	Commands the modem to begin receiving voice data.

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VOICE RING DETECT TIME	
Type:	Configuration
Format:	AT [cmds] #VRN=*n* [cmds]
Default:	Unidentified
Range:	Unidentified
Unit:	Unidentified
Description:	Sets the maximum time the modem will wait for the remote station to ring before it assumes that it went off-hook before it rang.

VOICE SILENCE DETECTION TIME	
Type:	Configuration
Format:	AT [cmds] #VSP=*n* [cmds]
Default:	Unidentified
Range:	0 - 255
Unit:	.1 second
Description:	Sets the minimum amount of silence that the modem will detect.

VOICE SILENCE DETECTION THRESHOLD	
Type:	Configuration
Format:	AT [cmds] #VSS=*n* [cmds]
Description:	Sets the threshold of sensitivity that the modem uses to determine silence detection.
Command	**Function**
#VSS=0	Silence detection disabled.
#VSS=1	Minimum silence detection sensitivity.
#VSS=2	Standard silence detection sensitivity.
#VSS=3	Maximum silence detection sensitivity.

VOICE TRANSMISSION LEVEL	
Type:	Configuration
Format:	AT [cmds] #TL=*hhhh* [cmds]
Default:	3FFF
Range:	0000 - 7FFF
Unit:	Unidentified (hexadecimal)
Description:	Sets the transmission level for sending audio in voice mode.

VOICE TRANSMIT	
Type:	Immediate
Format:	AT [cmds] #VTX
Description:	Commands the modem to begin transmitting voice data.