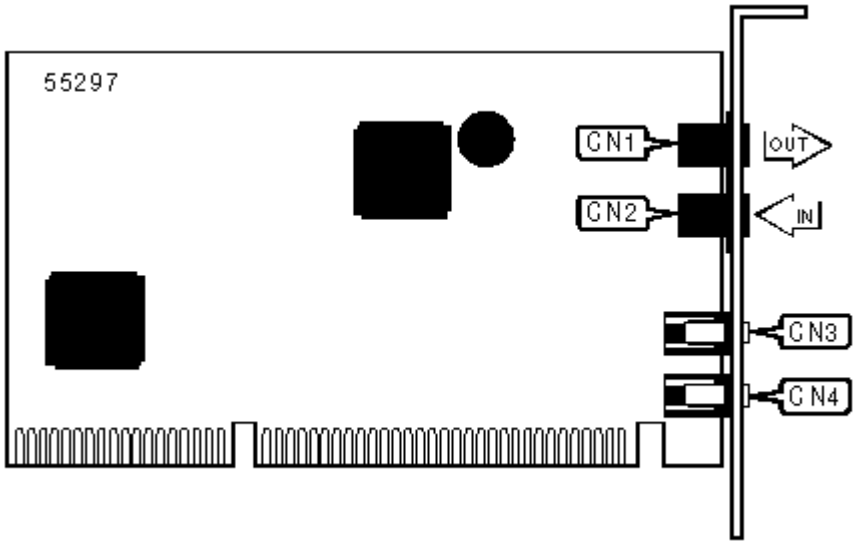
MULTI-TECH SYSTEMS, INC.

MT5634ZPW, MT3356ZPW, MT3334ZPW

Card Type	Modem
Chip Set	Unidentified
I/O Options	Line in, line out, microphone in, speaker out
Maximum Modem Rate	56Kbps
Maximum Fax Rate	14.4Kbps
Data Modulation Protocol	Bell 103/212A ITU-T V.22, V.22bis, V.32ter, V.32bis, V.34, 56Kflex
Fax Modulation Protocol	ITU-T V.17, V.27ter, V.29
Error Correction/Compression	MNP5, V.42, V.42bis
Fax Class	Class I
Data Bus	16-bit ISA



CONNECTIONS

Function	Label	Function	Label
Line out (RJ-11)	CN1	Speaker out	CN3
Line in (RJ-11)	CN2	Microphone in	CN4

SUPPORTED COMMAND SET

Basic AT Commands

AT, ■+++■, A/

A, C, E, F, H, M, Q, V

&C, &F, &G, &V, &Z

Extended AT Commands

\V

Special Commands

-C

S Registers

S0, S1, S2, S3, S4, S5, S10, S30

Note: See MHI Help File for full command documentation.

Proprietary AT Command Set

AUTO-MODE DETECTION

Type: Configuration

Format: AT [cmds] N*n* [cmds]

Description: Selects various options for the automatic detection and negotiation of protocols during the handshake process if the modem is communicating with a remote modem of dissimilar speed.

Command	Function
N0	In originate mode, handshake begins at line speed designated by the S37 register and the B command
■ N1	In originate mode, handshake begins at line speed designated by the S37 register. and the B command Modem can shift to a slower speed if necessary.

AUXILLARY RELAY CONTROL

Type: Configuration

Format: AT [cmds] &J [cmds]

Description: Controls auxiliary relay

Command	Function
&J0	Auxiliary relay remains open

COMMUNICATION PROTOCOLS

Type: Configuration

Format: AT [cmds] B*n* [cmds]

Description: Selects the communication protocol for data calls

Command	Protocol

B0	Modem will use ITU-T V.22 at 1200bps.
B1	Modem will use Bell 212A at 1200bps.
B2	ITU-T V.23 reverse channel disabled
B3	ITU-T V.23 reverse channel disabled
B15	Modem will use ITU-T V.21 at 300bps.
B16	Modem will use Bell 103J at 300bps.

COMMUNICATIONS MODE

Type: Configuration

Format: AT [cmds] &M*n* [cmds]

Description: Selects communications mode

Command	Mode
&M0	Asynchronous mode

COMMUNICATIONS MODE

Type: Configuration

Format: AT [cmds] &Q*n* [cmds]

Description: Selects communications mode options

Command	Mode
&Q0	Asynchronous mode, serial port speed follows connect speed.
■ &Q5	Error correction mode
&Q6	Buffered asynchronous mode

DATA SET READY (DSR)

Type: Configuration

Format: AT [cmds] &S*n* [cmds]

Description: Selects DSR options

Command	Function

&S0	DSR forced high
&S1	DSR high only while modem is connected

DATA TERMINAL READY (DTR)

Type: Configuration

Format: AT [cmds] &D*n* [cmds]

Description: Selects modem response to DTR

Command	Function
&D0	Modem does not respond to DTR
&D1	Modem goes to command mode after DTR goes is off
■ &D2	Modem goes to command mode and disconnects (hangs up) after DTR goes off; Auto-Answer is disabled.
&D3	Modem is initialized after DTR goes off

DIAL

Type: Immediate

Format: AT [cmds] D<#> [cmds]

Description: Dials telephone number according to any modifiers included in the string

Note: Any combination of modifiers can be used to produce the desired dial functions in sequence.

Command	Function
DL	Re-dial last number
DP	Pulse dialing enabled
DSn	Dial stored telephone number *n*
DT	Tone dialing enabled/Pulse dialing disabled
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;	Modem returned to idle state after dialing. The semicolon can only be placed at the end of the dial command.
D$	Calling card "Bong" detection enabled
DV	Switch to speakerphone
D^	Data calling tone transmission disabled

FLOW CONTROL

Type: Configuration

Format: AT [cmds] &K*n* [cmds]

Description: Enables flow control options

Command	Function
&K0	Flow control disabled
■ &K3	RTS to CTS flow control enabled
&K4	XON/XOFF flow control enabled

LONG SPACE DISCONNECT

Type: Configuration

Format: AT [cmds] Y*n* [cmds]

Description: Commands the modem to disconnect after a 1.6 second break is detected

Command	Function
Y0	Long space disconnect function disabled

ON-LINE

Type: Immediate

Format: AT [cmds] O*n*

Description: Instructs the modem to return to on-line state.

Command	Function
O0	Return to on-line state.
O1	Return to on-line state and initiate retrain sequence.

O3	Return to on-line state and initiate renegotiation sequence.

REPORT INFORMATION

Type: Immediate

Format: AT [cmds] I*n* [cmds]

Description: Displays information requested

Command	Function
I0	Reports default speed and controller firmware code
I1	Reports ROM checksum
I2	Tests and reports ROM checksum
I3	Reports default speed and controller firmware code
I4	Reports data pump model and revision code
I9	Reports country code
I11	Reports diagnostic information for the last modem connection

RESTORE PROFILE ON POWER-UP

Type: Configuration

Format: AT [cmds] &Y*n* [cmds]

Description: Restores a selected profile into the active profile on power-up (hard reset)

Command	Function
&Y0	Restore profile 0 on power-up

SELECT CALL PROGRESS RESULT CODES

Type: Configuration

Format: AT [cmds] X*n* [cmds]

Description: Enables selection of tone detection and associated result code format options

Command	Function
X0	Busy and dial tone detection disabled; basic result codes enabled.

X1	Busy and dial tone detection disabled; extended result codes enabled.
X2	Busy tone detection disabled, dial tone detection enabled; extended result codes enabled.
X3	Busy tone detection enabled, dial tone detection disabled; extended result codes enabled.
■ X4	Busy and dial tone detection disabled; extended result codes enabled.
X5	Busy and dial tone detection disabled; extended result codes enabled.
X6	Busy and dial tone detection disabled; extended result codes enabled.
X7	Busy and dial tone detection disabled; basic result codes enabled.

SOFT RESET

Type: Immediate

Format: AT [cmds] Z*n* [cmds]

Description: Restores modem profiles previously saved in non-volatile RAM using the &W command.

Command	Function
Z0	Restore modem to profile saved by last &W command
Z1	Restore modem to profile saved by last &W command

SPEAKER VOLUME

Type: Configuration

Format: AT [cmds] L*n* [cmds]

Description: Controls speaker volume

Command	Function
L0	Low volume setting
L1	Low volume setting
■ L2	Medium volume setting
L3	Highest volume setting

STORE ACTIVE PROFILE

Type: Configuration

Format: AT [cmds] &W*n* [cmds]

Description: Writes the values for the active profile into the non-volatile RAM

Command	Function
&W0	Write the active profile to NVRAM

TEST MODES

Type: Immediate

Format: AT [cmds] &T*n*

Description: Selects test options

Command	Function
&T0	End current test
&T1	Begin local analog loopback test
&T3	Begin local digital loopback
&T6	Request remote digital loopback

V.32 - AUTO-RETRAIN

Type: Configuration

Format: AT [cmds] &B*n* [cmds]

Description: Controls auto-retrain function if poor line quality is detected

Command	Function
&B1	Auto-retrain enabled if line quality is poor

Extended AT Commands

BREAK TYPE

Type: Configuration

Format: AT [cmds] \K*n* [cmds]

Description: Configures action of break signal

Command	Function

\K5	Sends break received from DTE to the remote modem

COMPRESSION

Type: Configuration

Format: AT [cmds] %C*n* [cmds]

Description: Selects data compression

Command	Function
%C0	Data compression disabled
%C1	V.42bis/MNP5 enabled

CONNECT MODE

Type: Configuration

Format: AT [cmds] \N*n* [cmds]

Description: Controls the type of connection the modem will operate in

Command	Function
\N0	Normal mode enabled
\N1	Direct mode enabled
\N2	MNP reliable mode enabled
■ \N3	V.42/MNP auto-reliable mode enabled
\N4	V.42 reliable mode enabled
\N5	V.42/MNP auto-reliable mode enabled
\N7	V.42/MNP auto-reliable mode enabled

DISPLAY BLACKLIST NUMBERS

Type: Immediate

Format: AT [cmds] %B [cmds]

Description: Displays the list of all the numbers on the blacklist. Returns ERROR if blacklisting is disabled.

FLOW CONTROL

Type: Configuration

Format: AT [cmds] \G*n* [cmds]

Description: Command nonfunctional; for compatibility purposes only

Command	Function
\G0	Returns OK for backward compatibility

FLOW CONTROL TYPE

Type: Configuration

Format: AT [cmds] \Q*n* [cmds]

Description: Sets type of flow control used by modem

Command	Function
\Q0	Flow control disabled
\Q1	Bi-directional XON/XOFF flow control enabled
■ \Q3	Bi-directional RTS/CTS flow control enabled

INACTIVITY TIMER

Type: Configuration

Format: AT [cmds] \T*n* [cmds]

Description: Disables the inactivity timer

Command	Function
\T0	Inactivity timer disabled

LOCK SERIAL PORT

Type: Configuration

Format: AT [cmds] \J*n* [cmds]

Description: Sets operation of serial port speed

Command	Function
\J0	Serial speed locked

XON/XOFF PASS-THROUGH

Type: Configuration

Format: AT [cmds] \X*n* [cmds]

Description: Selects whether XON/XOFF signals are sent to remote modem

Command	Function
\X0	XON/XOFF signals trapped by local modem

Special Commands

ASYNCHRONOUS WORD LENGTH

Type: Configuration

Format: AT [cmds] +ES=*n* [cmds]

Description: Allows an H.324 video application direct access to the synchronous data channel. +ES=? Shows allowable value (6) +ES? Queries setting

Command	Function
+ES=6	Allows an H.324 video application direct access to the synchronous data channel

SPEAKER CODEC LOOPBACK

Type: Configuration

Format: AT [cmds] &&S [cmds]

Description: Provides a loopback from the microphone to the speaker.

Note: For testing and debugginh purposes only

TEST DSP56K CODE VERSION & CHECKSUM - EXTERNAL RAM

Type: Immediate

Format: AT [cmds] %T125 <cr>

Description: Tests DSP56K code version & checksum running in external RAM.

TEST DSP56K CODE VERSION & CHECKSUM - INTERNAL ROM

Type: Immediate

Format: AT [cmds] %T124 <cr>

Description: Tests DSP56K code version & checksum running in internal ROM.

TEST EXTERNAL RAM

Type: Immediate

Format: AT [cmds] %T94 <cr>

Description: Tests external RAM. Returns PASS or FAIL

S(STATUS) -REGISTERS

56K DCE LINE SPEED

Type: Register

Format AT [cmds] S38=*n* [cmds]

Description: Sets the maximum allowable 56K downstream rate attempted during handshake process.

Command	Function
S38=0	56K disabled
S38=1	56K automatic speed select
S38=2	32.0Kbps
S38=3	34.0Kbps
S38=4	36.0Kbps
S38=5	38.0Kbps
S38=6	40.0Kbps
S38=7	42.0Kbps
S38=8	44.0Kbps
S38=9	46.0Kbps
S38=10	48.0Kbps
S38=11	50.0Kbps
S38=12	52.0Kbps
S38=13	54.0Kbps

S38=14	56.0Kbps

56K DIGITAL LOSS

Type: Register

Format: AT [cmds] S108=*n* [cmds]

Description: Selects the 56Kbps digital loss if using the modem thru a PBX line

Command	Function
S108=0	-0dB digital loss; robbed bit signaling disabled
S108=1	-3dB PBX digital loss
S108=2	-2dB digital loss
S108=3	-3dB digital loss
■ S108=6	-6dB digital loss
S108=7	-0dB digital loss; robbed bit signaling enabled

DCE LINE SPEED

Type: Register

Format AT [cmds] S37=*n* [cmds]

Description: Sets the maximum allowable data exchange rate attempted during handshake process.

Command	Function
S37=0	Maximum speed
S37=1	Reserved
S37=2	1200/75bps
S37=3	300bps
S37=4	Reserved
S37=5	1200bps
S37=6	2400bps
S37=7	4800bps

S37=8	7200bps
S37=9	9600bps
S37=10	12.0Kbps
S37=11	14.4Kbps
S37=12	16.8Kbps
S37=13	19.2Kbps
S37=14	21.6Kbps
S37=15	24.0Kbps
S37=16	26.4Kbps
S37=17	28.8Kbps
S37=18	31.2Kbps
S37=19	33.6Kbps

DIALING DELAY

Type: Register

Format AT [cmds] S6=*n* [cmds]

Range: 2-65

Unit: 1 second

Description: Duration of delay after modem goes off-hook and before dialing

ERROR CORRECTION NEGOTIATION

Type: Register

Format AT [cmds] S36=*n* [cmds]

Description: Selects the action of the modem if it fails to connect when error control is selected.

Command	S48=7	S48=128
S36=0	LAPM or hang-up	Not used
S36=1	LAPM or Asynchronous	Asynchronous
S36=2	LAPM or hang-up	Not used

S36=3	LAPM or Asynchronous	Asynchronous
S36=4	LAPM, MNP, or hang-up	MNP or hang-up
S36=5	LAPM, MNP, or Asynchronous	MNP or Asynchronous
S36=6	LAPM, MNP, or hang-up	MNP or hang-up
S36=7	LAPM, MNP, or Asynchronous	MNP or Asynchronous

FEATURE NEGOTIATION

Type: Register

Format: AT [cmds] S48=*n* [cmds]

Range: 7, 128

Description: Selects active error correction and compression protocols. See S36, error correction negotiation table

INACTIVITY TIMER

Type: Register

Format: AT [cmds] S89=*n* [cmds]

Range: 0, 5-255

Default: 10

Unit: 1 second

Description: Sets the length of time that the modem does not receive information before it disconnects; S89=0 will disable.

NO CARRIER TIME-OUT

Type: Register

Format AT [cmds] S7=*n* [cmds]

Range: 1-255

Unit: 1 second

Description: Maximum wait time the modem uses after dialing to detect a carrier signal from the remote modem for both originating and answering calls.

PAUSE DURATION

Type: Register

Format AT [cmds] S8=*n* [cmds]

Range: 0-65

Unit: 1 second

Description: Duration of pause per comma (,) command used in a command or dial string

TONE PULSE DURATION

Type: Register

Format AT [cmds] S11=*n* [cmds]

Range: 50-150

Unit: 1 ms

Description: DTMF tone pulse duration and time between tone pulses for tone dialing operations.

V.25 CALLING TONE

Type: Register

Format AT [cmds] S35=*n* [cmds]

Range: 0-1

Unit: Decimal

Description: Enables V.25 data calling tone, which allows remote data/fax/voice discrimination

Note: S35=0 disables V.25 data calling tone.

V.34 MODULATION

Type: Register

Format AT [cmds] S28=*n* [cmds]

Range: 0-255

Unit: Decimal

Description: Enables V.34 modulation

Note: S28=0 disables V.34 modulation.

V32bis STARTUP MODE

Type: Register

Format AT [cmds] S43=*n* [cmds]

Range: 0-1

Unit: Decimal

Description: Enables V.32bis start-up auto mode operation

Note: S43=0 disables V.32bis start-up auto mode. For testing purposes only.

V32bis, V.22bis AUTO RATE

Type: Register

Format AT [cmds] S42=*n* [cmds]

Range: 0-1

Unit: Decimal

Description: Enables V.32bis and V.22bis auto rate

Note: S42=0 disables V.32bis and V.22bis auto rate. For testing purposes only.