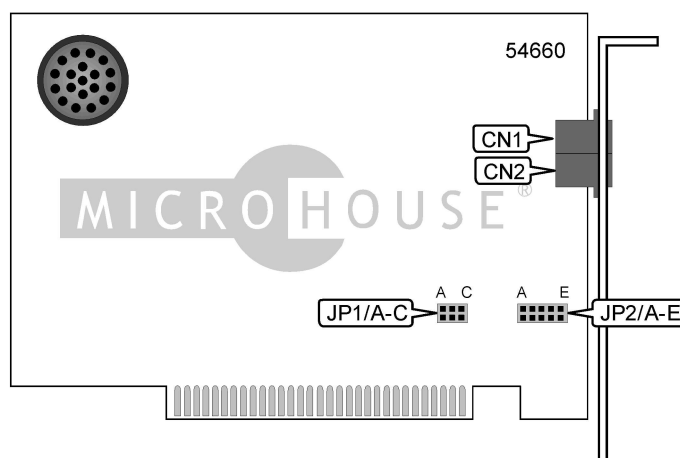


CARDINAL TECHNOLOGIES, INC.

CONNECTA 56K INTERNAL FAX MODEM (3440)

Card Type	Modem/Fax card
Chip Set	Unidentified
I/O Options	Line in, line out
Maximum Modem Rate	56Kbps
Maximum Fax Rate	14.4Kbps
Data Modulation Protocol	Bell 103A/212A
Fax Modulation Protocol	ITU-T V34, V.32bis, V.32, V.22bis, V.23, V.22, V.21
Error Correction/Compression	ITU-T V.17, V.27ter, V.29, V.21
Fax Class	MNP5, V.42, V.42bis
Data Bus	Class I & II
	8-bit ISA



CONNECTIONS			
Function	Label	Function	Label
RJ-11 connector	CN1	RJ-11 connector	CN2

SERIAL PORT ADDRESS			
Setting	JP1/A	JP1/B	JP1/C
COM1 (3F8h)	Closed	Closed	Closed
COM2 (2F8h)	Open	Closed	Closed
COM3 (3E8h)	Closed	Open	Closed
COM4 (2E8h)	Open	Open	Closed
Plug & Play enabled	Open	Open	Open

INTERRUPT					
Setting	JP2/A	JP2/B	JP2/C	JP2/D	JP2/E
IRQ2	Closed	Open	Open	Open	Open
IRQ3	Open	Closed	Open	Open	Open
IRQ4	Open	Open	Closed	Open	Open
IRQ5	Open	Open	Open	Closed	Open
IRQ7	Open	Open	Open	Open	Closed
Plug & Play enabled	Open	Open	Open	Open	Open

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SUPPORTED COMMAND SET	
Basic AT Commands	
AT, +++, A/, A>	
A, B, E, F, H, M, O, P, T, U, V	
&G, &T, &W, &Z	
S Registers	
S0, S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S18, S25, S38	
Note: See MHI Help File for full command documentation.	

PROPRIETARY AT COMMAND SET

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
DR	Answer mode enabled; originate mode disabled following handshake initiation.
DS=n	Dial stored telephone number <i>n</i>
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"WXY"	Optional method of denoting telephone numbers. Letters enclosed in quotes are interpreted as numbers according to the system found on a telephone keypad.
D!	Flash function initiated. Modem commanded to go off-hook for specified time before returning on-hook.
D@	Wait for Quite 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/	Delays 125 ms. Before proceeding with dial string
D;	Modem returned to idle state after dialing. The semicolon can only be placed at the end of the dial command.

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REPORT INFORMATION	
Type:	Immediate
Format:	AT [cmds] ln [cmds]
Description:	Displays information requested
Command	Function
I0	Reports four digit product code
I1	Reports firmware checksum
I2	Reports RAM checksum
I3	Reports ID string
I4	Reports current modem settings
I5	Reports NVRAM settings
I6	Reports data connection information
I7	Reports manufacturer and model information

SPEAKER VOLUME	
Type:	Configuration
Format:	AT [cmds] Ln [cmds]
Description:	Controls speaker volume
Command	Function
L0	Low volume setting
L1	Low volume setting
L2	Medium volume setting
L3	Highest volume setting

RESULT CODES	
Type:	Configuration
Format:	AT [cmds] Qn [cmds]
Description:	Enables modem to send result codes to the DTE
Command	Function
iQ0	Result code sending enabled
Q1	Result code sending disabled
Q2	Result code sending only in originate mode

SELECT CALL PROGRESS RESULT CODES	
Type:	Configuration
Format:	AT [cmds] Xn [cmds]
Description:	Enables selection of tone detection and associated result code format options
Command	Function
X0	Busy and dial tone detection disabled; result codes 0 - 4, 155 - 236 enabled.
X1	Busy and dial tone detection disabled; result codes 0 - 5, 10, 13 - 236 enabled.
X2	Busy tone detection disabled, dial tone detection enabled; result codes 0 - 6, 10 13 - 236 enabled.
X3	Busy tone detection enabled, dial tone detection disabled; result codes 0 - 5, 7, 8, 10-236 enabled.
X4	Busy and dial tone detection enabled; result codes 0 - 8, 10, 13-236 enabled.

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LONG SPACE DISCONNECT	
Type:	Configuration
Format:	AT [cmds] Yn [cmds]
Description:	Commands disconnection configuration
Command	Function
í Y0	Profile 0 in NVRAM
Y1	Profile 1 in NVRAM

SOFT RESET	
Type:	Immediate
Format:	AT [cmds] Zn [cmds]
Description:	Restores modem profiles previously saved in non-volatile RAM using the &W command.
Command	Function
Z0	Restore setting to profile selected by Y
Z1	Restore setting NVRAM profile 0
Z2	Restore setting NVRAM profile 1
Z3	Restores setting to factory default profile 0
Z4	Restores setting to factory default profile 1
Z5	Restores setting to factory default profile 2

AUTO-ANSWER - ORIGINATE/ANSWER	
Type:	Configuration
Format:	AT [cmds] &An [cmds]
Description:	Enables or disables additional result code subsets
Command	Function
&A0	ARQ result codes disabled
í &A1	ARQ result codes enabled
&A2	V.32 modulation indicator added in calls 4800bps or higher
&A3	Protocol indicators added

SERIAL PORT RATE	
Type:	Configuration
Format:	AT [cmds] &Bn [cmds]
Description:	Manages the serial port rate
Command	Function
í &B0	Variable, follows connection rate
&B1	Fixed serial port rate
&B2	Fixed in ARQ mode, variable in non-ARQ mode

DATA CARRIER DETECT (DCD)	
Type:	Configuration
Format:	AT [cmds] &Cn [cmds]
Description:	Selects whether the DCD option is enabled or disabled
Command	Function
&C0	DCD override enabled
&C1	DCD enabled after carrier signal detected

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DATA TERMINAL READY (DTR)	
Type:	Configuration
Format:	AT [cmds] &Dn [cmds]
Description:	Selects modem response to DTR
Command	Function
&D0	DTR override
&D1	DTR toggle causes online command mode
i &D2	Normal DTR operations
&D3	Resets on receipt of DTR

FACTORY DEFAULT PROFILE	
Type:	Configuration
Format:	AT [cmds] &F [cmds]
Description:	Sets values in active profile to values found in the default profile
Command	Function
&F0	Generic template
&F1	Factory configuration1; hardware flow control template
&F2	Factory configuration 2; software flow control template

TRANSMIT DATA FLOW CONTROL	
Type:	Configuration
Format:	AT [cmds] &Hn [cmds]
Description:	Enables TD flow control options
Command	Function
i &H0	Flow control disabled
&H1	CTS flow control enabled
&H2	Software flow control enabled
&H3	Hardware and software flow control enabled

RECEIVE DATA FLOW CONTROL	
Type:	Configuration
Format:	AT [cmds] &In [cmds]
Description:	Enables RD flow control options
Command	Function
i&I0	Flow control disabled
&I1	XON/XOFF signals to modem and remote system. Responds to S22, S23.
&I2	XON/XOFF signals only to modem. Responds to S22, S23.

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FLOW CONTROL	
Type:	Configuration

Format:	AT [cmds] &K <i>n</i> [cmds]
Description:	Enables/disables flow control
Command	Line Type
&K0	Flow control disabled
&K1	Hardware, RTS/CTS flow control enabled
&K2	Software, XON/XOFF flow control enabled
i &K3	Transparent software, XON/XOFF flow control enabled

ERROR CONTROL	
Type:	Configuration
Format:	AT [cmds] &M <i>n</i> [cmds]
Description:	Sets error control for connections at 1200bps and higher
Command	Mode
&M0	Error control disabled
i &M4	Normal/ARQ mode.
&M5	ARQ mode

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CONNECTION SPEED UPPER LIMIT	
Type:	Configuration
Format:	AT [cmds] &N <i>n</i> [cmds]
Description:	Sets required connection speed if &U is set to 0; otherwise, sets fastest allowed connection speed.
Command	Function
&N0	No maximum connect speed.
&N1	Set maximum connect speed to 300bps.
&N2	Set maximum connect speed to 1200bps.
&N3	Set maximum connect speed to 2400bps.
&N4	Set maximum connect speed to 4800bps.
&N5	Set maximum connect speed to 7200bps.
&N6	Set maximum connect speed to 9600bps.
&N7	Set maximum connect speed to 12Kbps.
&N8	Set maximum connect speed to 14.4Kbps.
&N9	Set maximum connect speed to 16.8Kbps.
&N10	Set maximum connect speed to 19.2Kbps.
&N11	Set maximum connect speed to 21.6Kbps.
&N12	Set maximum connect speed to 24Kbps.
&N13	Set maximum connect speed to 26.4Kbps.
&N14	Set maximum connect speed to 28.8Kbps.
&N15	Set maximum connect speed to 31.2Kbps.
&N16	Set maximum connect speed to 33.6Kbps.
&N17	Set maximum connect speed to 33.3Kbps.
&N18	Set maximum connect speed to 37.3Kbps.
&N19	Set maximum connect speed to 41.3Kbps.
&N20	Set maximum connect speed to 42.6Kbps.
&N21	Set maximum connect speed to 44.0Kbps.
&N22	Set maximum connect speed to 45.3Kbps.
&N23	Set maximum connect speed to 46.6Kbps.
&N24	Set maximum connect speed to 48.0Kbps.
&N25	Set maximum connect speed to 49.3Kbps.
&N26	Set maximum connect speed to 50.6Kbps.
&N27	Set maximum connect speed to 52.0Kbps.
&N28	Set maximum connect speed to 53.3Kbps.
&N29	Set maximum connect speed to 54.6Kbps.
&N30	Set maximum connect speed to 56.0Kbps.
&N31	Set maximum connect speed to 57.3Kbps.

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PULSE DIALING RATIO	
Type:	Configuration
Format:	AT [cmds] &P <i>n</i> [cmds]
Description:	Selects pulse dial make/break ratio
Command	Function
&P0	39/61ms at 10pps (North America)
&P1	33/67ms at 10pps (Europe)

RTS	
Type:	Configuration
Format:	AT [cmds] &R <i>n</i> [cmds]
Description:	Selects RTS/CTS options
Command	Function
í &R1	RTS ignored
&R2	Received data to computer only on RTS

DATA SET READY (DSR)	
Type:	Configuration
Format:	AT [cmds] &S <i>n</i> [cmds]
Description:	Selects DSR options
Command	Function
í &S0	DSR forced high
&S1	DSR high only while modem is handshaking or connected

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CONNECTION SPEED LOWER LIMIT	
Type:	Configuration
Format:	AT [cmds] &Un [cmds]
Description:	Sets slowest allowed connection speed if &N is set to 1 or higher.
Command	Function
&U0	No minimum connect speed.
&U1	Set minimum connect speed to 300bps.
&U2	Set minimum connect speed to 1200bps.
&U3	Set minimum connect speed to 2400bps.
&U4	Set minimum connect speed to 4800bps.
&U5	Set minimum connect speed to 7200bps.
&U6	Set minimum connect speed to 9600bps.
&U7	Set minimum connect speed to 12Kbps.
&U8	Set minimum connect speed to 14.4Kbps.
&U9	Set minimum connect speed to 16.8Kbps.
&U10	Set minimum connect speed to 19.2Kbps.
&U11	Set minimum connect speed to 21.6Kbps.
&U12	Set minimum connect speed to 24Kbps.
&U13	Set minimum connect speed to 26.4Kbps.
&U14	Set minimum connect speed to 28.8Kbps.
&U15	Set minimum connect speed to 31.2Kbps.
&U16	Set minimum connect speed to 33.6Kbps.
&U17	Set minimum connect speed to 33.3Kbps.
&U18	Set minimum connect speed to 37.3Kbps.
&U19	Set minimum connect speed to 41.3Kbps.
&U20	Set minimum connect speed to 42.6Kbps.
&U21	Set minimum connect speed to 44.0Kbps.
&U22	Set minimum connect speed to 45.3Kbps.
&U23	Set minimum connect speed to 46.6Kbps.
&U24	Set minimum connect speed to 48.0Kbps.
&U25	Set minimum connect speed to 49.3Kbps.
&U26	Set minimum connect speed to 50.6Kbps.
&U27	Set minimum connect speed to 52.0Kbps.
&U28	Set minimum connect speed to 53.3Kbps.
&U29	Set minimum connect speed to 54.6Kbps.
&U30	Set minimum connect speed to 56.0Kbps.
&U31	Set minimum connect speed to 57.3Kbps.

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BREAK HANDLING	
Type:	Configuration
Format:	AT [cmds] &Yn [cmds]
Description:	Sets destructive/nondestructive break handling
Command	Function
&Y0	Destructive, but doesn't send break
&Y1	Destructive, expedited
&Y2	Nondestructive, expedited

S(STATUS) -REGISTERS

BIT-MAPPED REGISTER S13		
Format:	AT [cmds] S13=n [cmds]	
Range:	0-174	
Unit:	Bit-mapped	
Description:	Controls reset, dial mode	
Bit	Value	Function
0	0	Unidentified
	1	Resets when DTR drops
1	0	Unidentified
	1	Resets non-MNP transmit buffer from 1.5K to 128bytes
2	0	Unidentified
	1	Sets backspace key to delete
3	0	Unidentified
	1	On DTR signal, auto dials number stored at NVRAM position 0
4	0	Unidentified
	1	At power on/reset, auto dials number stored at NVRAM position 0
5	0	Enables V.32bis ASL mode
	1	Disables V.31bis ASL mode
6	0	Enables quick retrains
	1	Disables quick retrains
7	0	Unidentified
	1	Disconnect on escape code

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BIT-MAPPED REGISTER S15		
Format:	AT [cmds] S15= <i>n</i> [cmds]	
Unit:	Bit-mapped	
Description:	Disable/Enable MNP	
Bit	Value	Function
0	0	Enable ARQ/MNP for V.22
	1	Disable ARQ/MNP for V.22
1	0	Enable ARQ/MNP for V.22bis
	1	Disable ARQ/MNP for V.22bis
2	0	Enable ARQ/MNP for V.32/V.32bis/V.32terbo
	1	Enable ARQ/MNP for V.32/V.32bis/V.32terbo
3	0	Enable MNP handshake
	1	Disable MNP handshake
4	0	Enable MNP level 4
	1	Disable MNP level 4
5	0	Enable MNP level 3
	1	Disable MNP level 3
6	0	MNP compatibility
	1	MNP incompatibility
7	0	Enable V.42 operation
	1	Disable V.42 operation

TEST MODES		
Type:	Register	
Format:	AT [cmds] S16= <i>n</i> [cmds]	
Unit:	Bit-mapped	
Description:	Controls touch tone dialing test.	
Bit	Value	Function
0	0	Reserved
1	0	Touch tone dialing test not in progress
	1	Touch tone dialing test in progress
2	0	Test pattern generation not in progress
	1	Test pattern generation in progress
3-7	0	Reserved

INACTIVITY TIMER	
Type:	Register
Format	AT [cmds] S19= <i>n</i> [cmds]
Unit:	10 seconds
Description:	Maximum duration of DTE and DCE inactivity allowed prior to initiating hang-up process.
Note:	S19=0 disables the timer and allows indefinite inactivity.

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BREAK LENGTH	
Type:	Register
Format:	AT [cmds] S21= <i>n</i> [cmds]
Unit:	10ms
Description:	Sets duration of breaks sent from the modem to the computer
Note:	Applies to MNP or V.42 mode only.

FLOW CONTROL CHARACTER - XON	
Type:	Register
Format:	AT [cmds] S22= <i>n</i> [cmds]
Range:	0-255
Unit:	ASCII
Description:	Sets the character used to represent XON

FLOW CONTROL CHARACTER - XOFF	
Type:	Register
Format:	AT [cmds] S23= <i>n</i> [cmds]
Range:	0-255
Unit:	ASCII
Description:	Sets the character used to represent XOFF

BIT-MAPPED REGISTER S27		
Format:	AT [cmds] S27= <i>n</i> [cmds]	
Range:	0-255	
Unit:	Bit-mapped	
Description:	Enables/disables modulation protocols	
Bit	Value	Function
0	0	Disable ITU-T modulation at 300bps for overseas calls: in V.21 mode, the modem answers both overseas and domestic calls, but only originates V.21 calls
	1	Enable ITU-T modulation at 300bps for overseas calls: in V.21 mode, the modem answers both overseas and domestic calls, but only originates V.21 calls
1	0	Disable unencoded modulation in V.32 mode
	1	Enable unencoded modulation in V.32 mode
2	0	Enable V.32 modulation
	1	Disable V.32 modulation
3	0	Enable 2100Hz answer tone
	1	Disable 2100Hz answer tone
4	0	Disable V.23 fallback mode
	1	Enable V.23 fallback mode
5	0	Enable V.32bis mode
	1	Disable V.32bis mode
6	0	Reserved
7	0	Enable codes
	1	Disable codes and enters software compatibility mode

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CONNECTION TIME	
Type:	Register
Format	AT [cmds] S28= <i>n</i> [cmds]
Unit:	.1 second
Description:	Sets V.32 duration
Command	Function
S28=0	Eliminates the V.32 answer tone for a faster connection
S28=8	Times are in .1 second
S28=255	Disable connections except V.32 at 9600bps

FALLBACK TIMER	
Type:	Register
Format	AT [cmds] S29= <i>n</i> [cmds]
Range:	0-255
Unit:	.01 second
Description:	Sets the duration of the V.21 answer mode fallback timer

BIT-MAPPED REGISTER S32		
Format:	AT [cmds] S32= <i>n</i> [cmds]	
Range:	0-255	
Description:	Select setup for 28.8 and higher speed modems	
Bit	Value	Function
0	0	Disable V.8 call indicate
	1	Enable V.8 call indicate
1	0	Disable V.8 mode
	1	Enable V.8 mode
2	0	Enable V.FC modulation
	1	Disable V.FC modulation
3	0	Enable V.34 modulation
	1	Disable V.34 modulation
4	0	Enable V.34+ modulation
	1	Disable V.34+ modulation
5-7	0	Reserved

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BIT-MAPPED REGISTER S33		
Format:	AT [cmds] S33= <i>n</i> [cmds]	
Range:	0-255	
Description:	Disable/enable data rates	
Bit	Value	Function
0	0	Enable 2400 symbol rate
	1	Disable 2400 symbol rate
1	0	Enable 2743 symbol rate
	1	Disable 2743 symbol rate
2	0	Enable 2800 symbol rate
	1	Disable 2800 symbol rate
3	0	Enable 3000 symbol rate
	1	Disable 3000 symbol rate
4	0	Enable 3200 symbol rate
	1	Disable 3200 symbol rate
5	0	Enable 3429 symbol rate
	1	Disable 3429 symbol rate
6	0	Reserved
7	0	Enable shaping
	1	Disable shaping

BIT-MAPPED REGISTER S34		
Format:	AT [cmds] S34= <i>n</i> [cmds]	
Range:	0-255	
Description:	Disable/enable trellis encoding	
Bit	Value	Function
0	0	Enable 8S-2D trellis encoding
	1	Disable 8S-2D trellis encoding
1	0	Enable 16S-4D trellis encoding
	1	Disable 16S-4D trellis encoding
2	0	Enable 32S-2D trellis encoding
	1	Disable 32S-2D trellis encoding
3	0	Enable 64S-4D trellis encoding
	1	Disable 64S-4D trellis encoding
4	0	Reserved
5	0	Enable TX level deviation
	1	Disable TX level deviation
6	0	Enable pre-emphasis
	1	Disable pre-emphasis
7	0	Enable pre-coding
	1	Disable pre-coding

BIT-MAPPED REGISTER S41		
Format:	AT [cmds] S41= <i>n</i> [cmds]	
Range:	0-255	
Description:	Enable/disable distinctive ring	
Bit	Value	Function
0	0	Disable distinctive ring
	1	Enable distinctive ring
1-7	0	Reserved