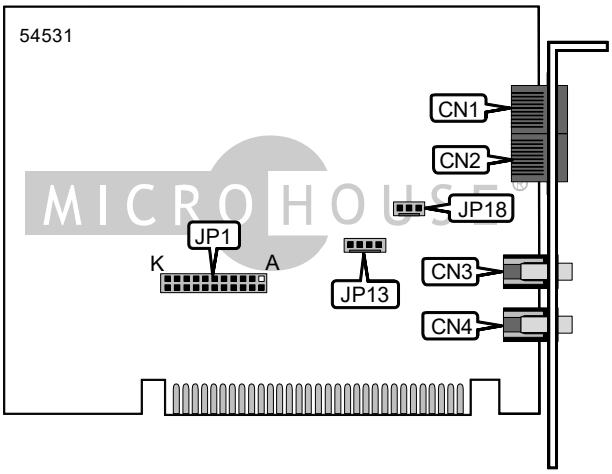
ACER, INC.
FM56-RS

Card Type	Modem/Fax (asynchronous)
Chip Set	Unidentified
I/O Options	Sound card interface, motherboard interface, line out, line in, microphone in, speaker out
Maximum Modem Rate	56Kbps
Maximum Fax Rate	14.4Kbps
Data Modulation Protocol	Bell 103A/212A, ITU-T V.21, V.22, V.23, V.22bis, V.32, V.32bis, V.34, K56flex
Fax Modulation Protocol	ITU-T V.17, V.21CH2, V.27ter, V.29
Error Correction/Compression	ITU-T V.42, V.42bis, MNP5
Fax Class	Class I
Data Bus	8-bit ISA



CONNECTIONS			
Function	**Label**	**Function**	**Label**
Line out	CN1	Speaker out	CN4
Line in	CN2	Sound card connector	JP13
Microphone in	CN3	Motherboard connector	JP18

SERIAL PORT ADDRESS		
Setting	**JP1/A**	**JP1/B**
COM1 (3F8h)	On	On
COM2 (2F8h)	On	Off
COM3 (3E8h)	Off	On
í COM4 (2E8h)	Off	Off

Continued on next page . . .

. . . continued from previous page

INTERRUPT SELECTION					
IRQ	**JP1/C**	**JP1/D**	**JP1/E**	**JP1/F**	**JP1/G**
í 3	Closed	Open	Open	Open	Open
4	Open	Closed	Open	Open	Open
5	Open	Open	Closed	Open	Open
7	Open	Open	Open	Closed	Open
9	Open	Open	Open	Open	Closed
10	Open	Open	Open	Open	Open
11	Open	Open	Open	Open	Open
12	Open	Open	Open	Open	Open
15	Open	Open	Open	Open	Open

INTERRUPT SELECTION CONTINUED				
IRQ	**JP1/H**	**JP1/I**	**JP1/J**	**JP1/K**
í 3	Open	Open	Open	Open
4	Open	Open	Open	Open
5	Open	Open	Open	Open
7	Open	Open	Open	Open
9	Open	Open	Open	Open
10	Closed	Open	Open	Open
11	Open	Closed	Open	Open
12	Open	Open	Closed	Open
15	Open	Open	Open	Closed

SUPPORTED COMMAND SET
Basic AT Commands
AT, '+++', A/
A, B, E, H, M, O, P, Q, S, T, V, X, Y, Z
&C, &M, &P, &Q, &R, &W, &Y, &Z
Extended AT Commands
\A, \G, \K, \N, \V,
%C, %E, %L, %Q, %7, %8
S Registers
S0, S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S16, S18, S21, S24, S25, S29, S30, S31,
S32, S33, S38, S91, S92, S95
Special Commands
+MS?, +H, "V, -K, _SEC, #CLS, #MFR, #MDL, #REV, #VBQ, #VCI , #VSD, #VRX, #VSK
Note: See MHI Help File for full command documentation.

Continued on next page . . .

. . . continued from previous page

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	Auto-mode detection disabled
N1	Auto-mode detection enabled

CONFIGURATION PROFILES	
Type:	Immediate
Format:	AT [cmds] &V [cmds]
Description:	Displays active and stored configuration profiles
Command	**Function**
&V1	Display last connection status

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		
Note: The action each variant of &D causes depends on the setting of &Q			
&Q Setting	&D0	&D1	&D2
&Q0, &Q5, &Q6	NONE	Command 3	Command 3
&Q1, &Q4	Command 1	Command 3	Command 3
&Q2, &Q3	Command 2	Command 2	Command 2
Command	**Function**		
Command 0	Modem does not respond to DTR		
Command 1	Modem goes to command mode after DTR goes is off		
Command 2	Modem goes to command mode and disconnects (hangs up) after DTR goes off; Auto-Answer is disabled.		
Command 3	Modem is initialized after DTR goes off		

Continued on next page . . .

. . . continued from previous page

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
DP	Pulse dialing enabled
DS=n	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*	Dials the star digit on tone dialing mode
D#	Dials the gate digit on tone dialing mode
D!	Flash function initiated. Modem commanded to go off-hook for specified time before returning on-hook.
D;	Modem returned to idle state after dialing. The semicolon can only be placed at the end of the dial command.

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	Restore factory configuration 0
&F1	Restore factory configuration 1

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
&K5	Transparent XON/XOFF flow control enabled
&K6	RTS/CTS & XON/XOFF flow control enabled

GUARD TONE	
Type:	Configuration
Format:	AT [cmds] &G*n* [cmds]
Description:	Commands the modem to transmit a guard tone in V.22/V.22bis
Note: Used primarily for international data transmission	
Command	**Function**
&G0	Guard tone disabled
&G1	Guard tone disabled
&G2	1800Hz guard tone enabled

Continued on next page . . .

. . . continued from previous page

MODULATION	
Type:	Configuration

Format:	AT [cmds] “V*n* [cmds]
Description:	Controls modulation for V.32 or V.34

Command	Function
“V.21”	V.21 modulation
“V.22”	V.22 or V.22bis modulation
“V.23”	V.23 modulation
“V.32”	V.32 or V.32bis modulation
“V.34”	V.34 modulation

MNP10 - FALLBACK	
Type:	Configuration
Format:	AT [cmds] -Q*n* [cmds]
Note:	This command is included only for compatibility and performs no function.

MNP10 - LINK NEGOTIATION	
Type:	Configuration
Format:	AT [cmds] *H*n* [cmds]
Note:	Included only for compatibility and performs no function

MNP10 - POWER LEVEL ADJUST	
Type:	Configuration
Format:	AT [cmds])M*n* [cmds]
Note:	This command is included only for compatibility and performs no function.

PLUG AND PLAY SERIAL NUMBER	
Type:	Configuration
Format:	AT [cmds] %7 [cmds]
Description:	Sets and stores plug and play serial number.

PLUG AND PLAY VENDOR ID AND PRODUCT NUMBER	
Type:	Configuration
Format:	AT [cmds] %8 [cmds]
Description:	Sets and stores plug and play vendor ID and product number.

Continued on next page . . .

. . . continued from previous page

REPORT INFORMATION	
Type:	Immediate
Format:	AT [cmds] I*n* [cmds]
Description:	Displays information requested
Command	**Function**
I0	Reports product code
I1	Reports ROM checksum (normally “255”)
I2	Reports “OK”
I3	Reports firmware revision (VX.XXX)
I4	Reports OEM defined identifier string
I5	Reports country code parameter
I6	Reports modem data pump model and internal code revision
I7	Reports “255”

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

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
&T2	Returns ERROR
&T3	Begin local digital loopback
&T4	Grant remote digital loopback request
&T5	Deny remote digital loopback request
&T6	Request remote digital loopback
&T7	Request remote digital loopback and self-test
&T8	Begin local analog loopback and self-test

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.
Command	**Function**
#VBT0	Disables the tone generation capability
#VBT1	Sets tone duration time to .1 second

Continued on next page . . .

. . . continued from previous page

TRANSMISSION LEVEL - CELLULAR	
Type:	Configuration
Format:	AT [cmds] @M*n* [cmds]
Range:	11-31
Unit:	-1dBm
Note:	This command is included only for compatibility and performs no function.

V.32 - COMPROMISE EQUALIZER	
Type:	Configuration
Format:	AT [cmds] :E*n* [cmds]
Note:	This command is included only for compatibility and performs no function.

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

VOICE - LOCAL SERIAL PORT SPEED	
Type:	Configuration
Format:	AT [cmds] #BDR=*n* [cmds]
Description:	Sets the speed of the local serial port when in voice mode.

Command	**Function**
#BDR=0	Autobaud selected
#BDR=1	Set speed to 2400bps
#BDR=2	Set speed to 4800bps
#BDR=4	Set speed to 9600bps
#BDR=6	Set speed to 14.4Kbps
#BDR=8	Set speed to 19.2Kbps
#BDR=12	Set speed to 28.8Kbps
#BDR=16	Set speed to 38.4Kbps
#BDR=24	Set speed to 57.6Kbps

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.

Continued on next page . . .

. . . continued from previous page

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.

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

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.
Command	**Function**
#VRA=0	Ringback goes away timer disabled

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.
Command	**Function**
#VRN=0	Disables voice ring detect time

Continued on next page . . .

. . . continued from previous page

VOICE SAMPLE QUALITY	
Type:	Configuration
Format:	AT [cmds] #VBS=*n* [cmds]
Description:	Selects the number of bits per sample that the modem records.
Note:	This modem may not support all options listed below. The #VBS? Command will display the available options.

Command	Function
#VBS=2	Modem records 2 bits per sample in ADPCM encoding.
#VBS=3	Modem records 3 bits per sample in ADPCM encoding.
î #VBS=4	Modem records 4 bits per sample in ADPCM encoding.

S(status) -REGISTERS

BIT-MAPPED REGISTER S14	
Format:	AT [cmds] S14=*n* [cmds]
Range:	0-174
Unit:	Bit-mapped
Description:	Controls echo, result codes and display, dial mode, and answer/originate mode.

Bit	Value	Function
0	0	Not used
1	0 1	Command echo disabled Command echo enabled
2	0 1	Result codes enabled Result codes disabled
3	0 1	Display result codes in numeric format Display result codes in verbose format
5	0 1	Tone dial enabled Pulse dial enabled
6	0	Not used
7	0 1	Answer mode enabled Originate mode enabled

BIT-MAPPED REGISTER S19	
Format	AT [cmds] S19=*n* [cmds]
Default:	0, 0, 0, 0
Range:	0-253
Unit:	Bit-mapped
Description:	Selects communications protocol, address detection, NRZ mode, and idle indicator.

Bit	Value	Function
1	0 1	Selects BSC format Selects HDLC format
2	0 1	Address detection disabled Address detection enabled
3	0 1	NRZI coding enabled NRZ coding enabled
4	0 1	Mark idle Flag or sync idle

Continued on next page . . .

. . . continued from previous page

AUTOSYNC	
Type:	Register
Format	AT [cmds] S20=*n* [cmds]
Default:	0
Range:	0-255
Unit:	ASCII
Description:	Selects the AutoSync HDLC address or BSC sync character

BIT-MAPPED REGISTER S23		
Format	AT [cmds] S23=*n* [cmds]	
Range:	0-189	
Unit:	Bit-mapped	
Description:	Grants/denies remote digital loopback, controls DTE rate and parity, and sets guard tone.	
Bit	**Value**	**Function**
0	0	Remote digital loopback denied
	1	Remote digital loopback allowed
3 - 1	000	Sets serial port speed to 0-300bps
	001	Sets serial port speed to 1200bps
	010	Sets serial port speed to 2400bps
	011	Sets serial port speed to 4800bps
	100	Sets serial port speed to 9600bps
	101	Sets serial port speed to 19200bps
	110	Sets serial port speed to 38400bps
5, 4	00	Parity even
	01	Space Parity
	10	Parity odd
	11	Mark or No Parity
7, 6	00	Guard tone disabled
	01	Guard tone disabled
	10	Guard tone 1800Hz enabled

BIT-MAPPED REGISTER S27		
Format	AT [cmds] S27=*n* [cmds]	
Range:	0-111	
Unit:	Bit-mapped	
Description:	Selects ITU-T/Bell modes.	
Bit	**Value**	**Function**
1	0	Not used
2	0	Not used
3	0	Not used
4	0	Not used
5	0	Not used
6	0	ITU/T mode
	1	Bell mode

Continued on next page . . .

. . . continued from previous page

BIT-MAPPED REGISTER S28		
Format	AT [cmds] S28=*n* [cmds]	
Range:	0-31	
Unit:	Bit-mapped	
Description:	Controls pulse dialing and MNP link speed.	
Bit	**Value**	**Function**
0	0	Not used
1	0	Not used
2	0	Not used
4, 3	00 01 10 11	39ms make/61ms break at 10pps 33ms make/67ms break at 10pps 39ms make/61ms break at 20pps 33ms make/67ms break at 20pps
5	0	Not used
7, 6	00 01 10	Highest speed 1200bps 4800bps

ERROR CORRECTION NEGOTIATION	
Type:	Register
Format	AT [cmds] S36=*n* [cmds]
Description:	Selects the action of the modem if it fails to connect with the error-correction protocol set in &Q.
Command	**Function**
S36=0	Hang up
S36=1	Attempt a direct connection
S36=3	Attempt a buffered connection
S36=4	Attempt a connection at MNP2-4; if that fails, hang up.
S36=5	Attempt a connection at MNP2-4; if that fails, attempt a direct connection.
S36=7	Attempt a connection at MNP2-4; if that fails, attempt a buffered connection.

Continued on next page . . .

. . . continued from previous page

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	Auto-detect mode
S37=1-3	300bps
S37=5	V.22 1200bps
S37=6	V.22bis 2400bps
S37=7	V.23
S37=8	V.32bis or V.32 4800bps
S37=9	V.32bis or V.32 9600bps
S37=10	V.32bis 12000bps
S37=11	V.32bis 14400bps
S37=12	V.32bis 7200bps
S37=15	V.FC 14400
S37=16	V.FC 16800
S37=17	V.FC 19200
S37=18	V.FC 21600
S37=19	V.FC 24000
S37=20	V.FC 24600
S37=21	V.FC 28800

FLOW CONTROL	
Type:	Register
Format	AT [cmds] S39? [cmds]
Description:	Displays the current flow control

Value	Meaning
0	Flow control disabled
3	RTS/CTS flow control enabled (&K3, Default)
4	XON/XOFF flow control enabled (&K4)
5	Transparent XON/XOFF flow control enabled (&K5)
6	Both methods (&K6)

Continued on next page . . .

. . . continued from previous page

BIT-MAPPED REGISTER S40		
Format	AT [cmds] S40=*n* [cmds]	
Range:	0-255	
Unit:	Bit-mapped	
Description:	Controls power level and break handling; selects MNP extended services, link negotiation, and block size.	
Bit	**Value**	**Function**
0, 1	00 01 10	MNP Extended Services disabled MNP Extended Services enabled MNP Extended Services enabled
2	0 1	Power level adjustment enabled Power level adjustment disabled
4	0	Not used
5, 3	000 001 010 011 100 101	AT\K0 AT\K1 AT\K2 AT\K3 AT\K4 AT\K5
7, 6	00 01 10 11	MNP block size is 64 characters MNP block size is 128 characters MNP block size is 192 characters MNP block size is 256 characters

BIT-MAPPED REGISTER S41		
Format	AT [cmds] S41=*n* [cmds]	
Range:	0-31	
Unit:	Bit-mapped	
Description:	Selects compression, auto-retrain, flow control, MNP mode, and fallback mode.	
Bit	**Value**	**Function**
1, 0	00 01 10 11	Data compression disabled MNP5 enabled V.42bis enabled MNP5 and V.42bis enabled
6, 2	00 01 10	Auto-retrain disabled Auto-retrain enabled Fallback/Fall forward enabled
3	0 1	Flow control disabled Flow control enabled
4	0 1	Stream mode for MNP Block mode for MNP
5	0	Not used
6	0	Not used
7	0 1	Fallback disabled Fallback enabled

Continued on next page . . .

. . . continued from previous page

ERROR CORRECTION/COMPRESSION	
Type:	Register
Format:	AT [cmds] S46=*n* [cmds]
Description:	Selects active error correction and compression protocols
Command	**Function**
S46=136	LAP-M only, no compression
S46=138	LAP-M with V.42bis data compression

FEATURE NEGOTIATION OPTIONS	
Type:	Register
Format:	AT [cmds] S48=*n* [cmds]
Description:	Selects active error correction and compression protocols
Command	**Function**
S48=0	Detection negotiation disabled, XID negotiation disabled
S48=7	Detection negotiation and XID negotiation enabled
S48=128	Fall-back to options set in S36

BREAK OPTIONS	
Type:	Register
Format	AT [cmds] S82=*n* [cmds]
Note:	This register for compatibility purposes only and performs no function.

CONNECTION FAILURE CODES	
Type:	Register
Format	AT [cmds] S86? [cmds]
Description:	Reports codes which correspond to the possible causes of a connection failure
Value	**Meaning**
0	Normal hang up
4	Carrier signal lost
5	No error-control detected for remote modem during feature negotiation
9	No common protocol found
12	No failure - remote modem disconnected normally
13	Remote modem failed to respond after 10 re-transmissions same message
14	Violation of negotiated protocol caused failure

CELLULAR TRANSMIT LEVEL		
Type:		Register
Format		AT [cmds] S201=*n* [cmds]
Range:		0-255
Unit:		Bit-mapped
Description:		Works in combination with the @Mn and :En commands to support cellular connection.
Bit	**Value**	**Function**
0 - 4	@Mn	Initial power level setting
5	:En	Compromise equalizer enable command