EXHIBIT C

User Manual

Data/Fax/Voice Modem

Operation Manual

GM-56pCI-RW

712-0003-021(RW-C)

CONTENTS

Chapter 1 Command Summary

Basic AT Commands

Command	Function
A/	Re-execute command.
A	Go off-hook and attempt to answer a call
B0	Select V.22 connection at 1200 bps.
B1	Select Bell 212A connection at 1200 bps
C1	Return OK message.
Dn	Dial modifier.
E0	Turn off command echo
E1	Turn on command echo
H0	Initiate a hang-up sequence
H1	If on-hook, go off-hook and enter command mode.
I0	Report product code
I1	Report computed checksum
I2	Report OK
I3	Report firmware revision, model, date
I4	Report response programmed by an OEM.
I5	Report the country code parameter.
I6	Report modem data pump model
L0	Set low speaker volume
L1	Set low speaker volume
L2	Set medium speaker volume
L3	Set high speaker volume
M0	Turn speaker off
M1	Turn speaker on during handshaking and turn speaker off while receiving carrier
M2	Turn speaker on during handshaking and while receiving carrier
M3	Turn speaker off during dialing and receiving carrier and turn speaker on during answering.
N0	Turn off Auto mode detection
N1	Turn on Auto mode detection
O0	Go on-line
O1	Go on-line and initiate a retrain sequence.
P	Force pulse dialing
Q0	Allow result codes to DTE
Q1	Inhibit result codes to DTE
Sn	Select S-Register as default

Sn?	Return the value of S-Register n.
Sn = v	Set default S-Register to value v.
S = ?	Return the value of default S-Register
T	Force DTMF dialing
V0	Report short from (terse) result codes.
V1	Report long from (verbose) result codes.
W0	Report DTE speed in Error Correction mode.
W1	Report line speed, Error Correction protocol and DTE speed.
W2	Report DCE speed in Error Correction mode.
X0	Report basic call progress result codes, i.e., OK, CONNECT, RING, NO CARRIER (also , for busy, if enabled, and dial tone not detected), NO ANSWER and ERROR
X1	Report basic call progress result codes and connections speeds (OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT, XXXX, and ERROR.
X2	Report basic call progress result codes and connections speeds, i.e,, OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT, XXXX, and ERROR
X3	Report basic call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT, XXXX, BUSY, and ERROR.
X4	Report all call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, NO DIAL TONE and ERROR.
Y0	Disable long space disconnect before on-hook.
Y1	Enable long space disconnect before on-hook.
Z0	Restore stored profile 0 after warm reset.
Z1	Restore stored profile 1 after warm reset.
&C0	Force RLSD(DCD) active regardless of the carrier state.
&C1	Allow RLSD(DCD) to follow the carrier state.
&D0	Interpret DTR ON – to – OFF transition per &Qn.
&D1	Interpret DTR ON – to – OFF transition per &Qn.
&D2	Interpret DTR ON - to – OFF transition per &Qn
&D3	Interpret DTR ON - to – OFF transition per &Qn
&F0	Restore factory configuration 0
&F1	Restore factory configuration 1.
&G0	Disable guard tone.
&G1	Disable guard tone.
&G2	Enable 1800 Hz guard tone.
&K0	Disable DTE/DCE flow control
&K3	Enable RTS/CTS DTE/DCE flow control
&K4	Enable XON/XOFF DTE/DCE flow control
&K5	Enable transparent XON/XOFF flow control.

&K6	Enable both RTS/CTS and XON/XOFF flow control
&M0	Select direct asynchronous mode.
&M1	Select sync connect with async off-line command mode. *
&M2	Select sync connect with async off-line command mode and Enable DTR dialing of directory zero.*
&M3	Select sync connect with async off-line command mode and Enable DTR to act as Talk/Data switch *
&P0	Set 10 pps pulse dial with 39% 61% make/break. (country dependent)
&P1	Set 10 pps pulse dial with 33%67% make/break.
&P2	Set 20 pps pulse dial with 39% 61% make/break.
&P3	Set 20 pps pulse dial with 33% 67% make/break.
&Q0	Select direct asynchronous mode.
&Q1	Select sync connect with async off-line command mode. *
&Q2	Select sync connect with async off-line command mode and Enable DTR dialing of directory zero. *
&Q3	Select sync connect with async off-line command mode and Enable DTR to act as Talk/Data switch.
&Q4	Select Hayes AutoSync mode.
&Q5	Modem negotiates an error corrected link
&Q6	Select asynchronous operation in normal mode.
&R0	CTS tracks RTS (async) or acts per V.25 (sync)
&R1	CTS is always active.
&S0	DSR is always active.
&T0	Terminate any test in progress
&T1	Initiate local analog loopback.
&T2	Returns ERROR result code
&T3	Initiate local digital loopback.
&T4	Allow remote digital loopback.
&T5	Disallow remote digital loopback request
&T6	Request an RDL without self-test
&T7	Request an RDL with self-test
&T8	Initiate local analog loop with self-test.
&V0	Display current configurations.
&V1	Display the last connection statistics
&W0	Store the active profile in NVRAM profile 0
&W1	Store the active profile in NVRAM profile 1.
&X0	Select internal timing for the transmit clock *
&X1	Select external timing for the transmit clock *
&X2	Select slave receive timing for the transmit clock *
&Y0	Recall stored profile 0 upon power up.
&Y1	Recall stored profile 1 upon power up
&Zn = x	Store dial string x = (1 to 45) to location n= (0 to 3)

%E0	Disable line quality monitor and auto retrain.
%E1	Enable line quality monitor and auto retrain
%E2	Enable line quality monitor and fallback/fall forward.
%E3	Enable line quality monitor and auto-retrain with fast hang-up
%L	Return received line signal level.
%Q	Report the line signal quality
\Kn	Controls break handing three states.
\N0	Select normal speed buffered mode
\N1	Select direct mode.
\N2	Select reliable link mode.
\N3	Select auto reliable mode.
\N4	Force LAMP mode
\N5	Force MNP mode
+MS	Select modulation , (select data speed)

• : OPTIONAL

Error Correction Commands

%C0	Disable data compression
%C1	Enable MNP 5 data compression
%C2	Enable V.42 bis data compression
%C3	Enable both V.42 bis data compression
\A0	Set maximum block size in MNP to 64
\A1	Set maximum block size in MNP to 128.
\A2	Set maximum block size in MNP to 192
\A3	Set maximum block size in MNP to 256
\Bn	Send break of x 100 ms
\L0	Use stream mode for MNP
\L1	Use block mode for MNP
\N1	Select direct mode
\N2	Select reliable link mode.
\N3	Select auto reliable mode.
\N4	Force LAMP mode
\N5	Force MNP mode
\V0	Single line connect messages are controlled by X, W & S95 commands.
\V1	Connect messages are displayed in single line format.

MNP 10 Commands

-K0	Disable MNP 10 extended services
-K1	Enable MNP 10 extended services
-K2	Enable MNP 10 extended services detection only.
-SEC = 0	Disable MNP 10 EC
-SEC = 1, [(x level)]	Enable MNP 10 EC and set transmit level <tx level > 0 to 30 (0dBm to –30dBm)

Voice Commands

#BDR	Select baud rate (turn off autobaud)
#CLS	Select data, fax, or voice.
#MDL?	Indentify model.
#MFR?	Identify manufacturer
#REV?	Identify revision level
#TL	Audio output transmit level.
#VBQ?	Query buffer size
#VBS	Bits per sample
#VBT	Beep tone timer
#VCI?	Identify compression method
#VGT	Set playback volume in the command state.
#VLS	Voice line select.
#VRA	Ring back goes away timer (originate)
#VRN	Ring back never came timer originate)
#VRX	Voice receive mode.
#VSD	Enable silence deletion (no function; command response only)
#VSK	Buffer skid setting
#VSP	Silence detection period (voice receive)
#VSR	Sampling rate selection.
#VSS	Silence detection tuner (voice receive)
#VTD	DTMF/tone reporting
#VTM	Enable timing mark placement
#VTS	Generate tone signals.
#VTX	Voice transmit mode

Audio Span & DSVD Commands (option)

-SMS = X, Y, Z, T SELECT Commands

X = 0, DATA MODE = 1, DSVD MODE
  = 2, AUDIOSPAN MODE = 3, AUTO MODE (default)

Y: Minimum data speed with audio for audio span
Z: Maximum data speed with audio for audio span
T: Symbol rate (ML 288 modulation mode only)
T = 0 : Auto selection (default)
T = 1 : Reserve

Example:
AT-SMS = 2, 4800, 9600 selects Audio span mode, specifies minimum 4800bps and maximum 9600pbs.

#VLS =
0 : telephone handset
5 : headset (default)
6 : speaker phone

The AT#VLS setting must be issue prior to establishing a DSVD or Audio span connection if a voice line other than the default handset desired

FAX Class 1 Commands

+FCLASS = n Service class
+FAE = n Data/fax auto answer
+FRH = n Receive data with HDLC framing
+FRM = n Receive data
+FRS = n Receive silence
+FTH = n Transmit data with HDLC framing
+FIM = n Transmit data
+FTS = n Stop transmission and wait

+MS – Select Modulation

This extended format command selects the modulation and, optionally, enables or disables auto mode, specifies the lowest and highest connection rates, selects μ-law or A-law codec type, and enables or disables robbed bit signaling generation (server modem) or detection (client modem) using one to five sub parameters. The command format is:

+MS = <mode> [,<auto mode>] [,<min_rate>] [,<x_law>] [,<rb_signaling>]]]]]] <CR>

NOTES:

1. For 14400bps and lower speeds, the Nn command and S37 register can alternatively be used, in which case the +MS sub parameters will modified to reflect the Nn and S37 = x settings. Use of the Nn and S37 = x commands is not recommended but is provided for compatibility with existing communication software. (S37 is not updated by the +MS command)

2. Sub parameters not entered (enter a comma only or <CR> to skip the last sub parameters) remain at their current values.

Reporting Selected Options
The modem can send a string of information to the DTE consisting of selected options using the following command:

+MS?
The response is:
+MS <mod>, <auto mode>,<min_rate>,<max_rate>,<x_law>, <rb_signaling>

For example:
+MS : 56, 1, 300, 56000, 0, 0 [56K modem default values]
+MS : 11, 1, 300, 33600, 0, 0 [33.6K modem default values]

Reporting Supported Options
The modem can send a string of information to the DTE consisting of supported options using the following command:

+MS = ?

The response is:
+MS : (list of supported <mode> values), (list of supported <auto mode> values), (list of supported <min_rate> values), (list of supported <max_rate> values), (list of supported <x_law > values), (list of supported <rb_signaling> caules)

For example:
+MS : (0,1,2,3,9,10,11,56,64,69), (0,1), (300-33600), (399-56000),(0,1), (0.1) [56K]
+MS : (0,1,2,3,9,10,11,64,69),(0,1), (300-33600), (300-33600), (0,1), (0,1) [33 6K]

Suparameter Definitions

1 <mode> = A decimal number which specifies the preferred modulation (auto mode enabled) or the modulation (auto mode disabled) to use in originating or answering a connection. The options are:

<mode>	Modulation	Possible Rates(bps)[1]	Notes
0	V.21	300	
1	V.22	1200	
2	V.22 bis	2400 or 1200	
3	V.23	1200	
9	V.32	9600 or 4800	
10	V.32 bis	14400, 12000, 96000, 7200, or 4800	
11	V.34	33600, 31200,.28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000m 9600, 7200, 4800, or 2400	Default 33.6K
56	K56flex	56000,54000,52000,50000,48000,46000,44000,42000, 40000,38000,36000,34000,32000	[56K only]
64	Bell 103	300	
69	Bell 212	1200	

Notes:
1. See optional <auto mode>, <min_rate>, and <max_rate> sub parameters.
2. For V.23, originating modes transmit at 75bps and receive at 1200bps; answering modes transmit at 1200bps and receive at 75bps. The rate is always specified as 1200 bps.

The mode may also automatically switch to another modulation (auto mode), subject to the following constraints:

a. The modem may not be able to automatically switch from the current modulation (specified by <mode>) to some other modulation . For example, there is no standard way to auto mode from Bell 103 to V.23.

b. The DTE may disable auto mode operation (see <auto mode> below)

c. The DTE may constrain the range of modulations available by specifying the lowest and highest rates (see <min_rate> and <max_rate> below).

2.<automode> is an optional numeric value which enables or disables automatic modulation negotiation using V.8 bis /V.8 or V.32bis Annex a. The options are:

<auto mode>	Option Selected	Notes
0	Auto mode disabled	
1	Auto mode enabled using V.8 bis/V.8 or V.32 Annex A	Default

The default values is 1, which enables auto mode, Note, however, there are modulations for which there is no automatic negotiation, e.g., Bell 212)< mode > = 69)
For <auto mode> = 0 (auto mode disabled, i.e., fixed modulation):

a. If <max_rate> is within the rates supported by the selected rate is that specified by <max_rate>
For example:
+MS = 10, 0, 0, 1200, 4800 selects V.32 bis 4800bps fixed rate.

b. If <max_rate> is greater than the highest speed supported by the modulation specified by <mode>, the starting rate is the highest rate supported by the selected modulation. For example: +MS= 10, 0, 2400, 14400 select V.32 bis 14400, 12000, 9600, 7200, or 4800bps.

c. To emulate issuance of the N0S37 = x command sequence to select fixed mode operation, Specify the <max_rate> and <mim_rate> both to be the (same requested speed, and <mod> to be the modulation for that speed. For example.
+MS = 11, 0, 16800, selects V.34 16800bps fixed mode (no comparable S37 Command).
+MS = 10, 0, 12000 selects V.32 bis 12000bps fixed mode (same as N0S37 = 10)

For <auto mode> = 1 (auto mode enabled, i.e., automatically selected speed and modulation): The modem connects at the highest possible rate in accordance ith V.8 bis/V.8, or V.32 bis Annex A If V.8 bis/V.8 is not supported by the remote modem .

a. If <max_rate> is greater than the highest rate supported by the modulation specified by <mode>, the modem auto modes down from the highest rate of the selected modulation.
For example:
+MS = 10, 1, 1200, 24000 selects auto mode down from V.32bis 14400bps

b. To emulate issuance of the N1S37 = x sequence command, specify the modulation and z
+MS = 11, 1, 1200, 24000 select auto mode starting at V.34 168000 bps (no comparable S37 command).

3. <min_rate> is an optional number which specifies the lowest rate at which the modem may establish a connection. The value is decimal coded, in units of bps,e.g., 2400bps. The default is 300 for 300bps.

4. <max_rate> is an optional number which specifies the highest rate at which the modem may establish a connection. The value is decimal coded, in units of bps, e.g., 14400bps. The default is 28800 for 28800bps.

5. <x-law> is an optional number which specifies the codec type. The options are:
0 = μ-Law
1 = A-Law
Note that ATZ will not reset the <x_law> selection .

6. <rb_signaling> is an optional number which enables or disables robbed bit signaling generation in a sever modem or enables or disables robbed bit signaling detection in a client modem. The options are:
0 = Robbed bit signaling generation (server modem) or detection (client modem) disabled(default)
1 = Robbed bit signaling generation (server modem) or detection (client modem) enabled.

Note that ATZ will reset the <rb_signaling> selection to 0 (disabled)

Result Codes:

OK	Valid sub parameter string
ERROR	Otherwise

Chapter 2 S-Register Summary

Register	Function	Range	Units	Saved	Default
S0	Rings to Auto-Answer	0-255	rings	•	0
S1	Rings Counter	0-255	rings		0
S2	Escape Character	0-255	ASCII	•	43
S3	Carriage Return Character	0-127	ASCII		13
S4	Line Feed Character	0-127	ASCII		10
S5	Backspace Character	0-255	ASCII		8
S6	Wait time for Dial Tone	2-255	s	•	2
S7	Wait Time for Carrier	1-255	s	•	50
S8	Pause Time Dial Delay Modifier	0-255	s	•	2
S9	Carrier Detect Response Time	1-255	0.1 s	•	6
S10	Carrier Loss Disconnect Time	1-255	0.1 s	•	14
S11	DTMF Tone Duration	50-255	0.001s	•	95
S12	Escape Prompt Delay	0-255	0.02s	•	50
S13	Reserved	-	-		-
S14	General Bit Mapped Options Status	-	-	•	138(8Ah)
S15	Reserved	-	-		-
S16	Test Mode Bit Mapped Options Status (&T)	-	-		0
S17	Reserved	0-255	s	•	-
S18	Test Timer	0-255	s	•	0
S19	Auto Sync Options	-	s	•	0
S20	Auto Sync HDLC Address or BSC Sync Character	0-255	-	•	0
S21	V.24/General Bit Mapped Options Status	-	-	•	4(04h)
S22	Speaker/Result Bit Mapped Options Status	-	-	•	117(75h)
S23	General Bit Mapped		-	•	
S24	Sleep Inactivity Timer	0-255	s	•	0
S25	Delay to DTR Off	0-255	S or	0.01 s	5
S26	RTS-to-CTS Delay	0-255	0.01s		1
S27	General bit Mapped	-	-	•	
S28	General Bit-Mapped Options Status	-	-	•	0
S29	Flash Dial Modifier Timer	0-255	10 ms		0
S30	Disconnect Inactivity	0-255	10 s		0
S31	General Bit-Mapped Options Status	-	-	•	2
S32	XON Character	0-255	ASCII		17(11h)
S33	XOFF Character	0-255	ASCII		19(13h)
S34	Reserved	-		-	
S36	LAPM Failure Control	-	-	•	7
S37	Line Connection Speed	-	-	•	0
S38	Delay Before Forced Hang up	0-255	s		20
S39	Flow Control Bit Mapped Options Status	-	•	3	
S40	General Bit-Mapped	-	-	•	

S41	General Bit-Mapped Options Status	-	-	*	3
S42-	Reserved	-	-	-	
S45					
S46	Data Compression Control	-	-	*	138
S48	V.42 Negotiation Control	-	-	*	7
S80	Reserved				
S82	Reserved				
S86	Call Failure Reason Code	0-255	-		-
S91	PSTN Transmit Attenuation	0-15	dBm		11#
S92	Fax Transmit Attenuation Level	0-15	dBm		11#
S95	Result Code Message Control	-	-	*	0

*** Register value may be stored in one of two user profile with the &W command.**

\# country independent

Chapter 3 Result Codes Summary

Shot From	Long Form	n Value in ATXn					Notes
0	OK	0	1	2	3	4	
1	CONNECT	X	X	X	X	X	
2	RING	X	X	X	X	X	
3	NO CARRIER	X	X	X	X	X	
4	ERROR	X	X	X	X	X	
5	CONNECT 1200	1	X	X	X	X	
6	NO DIAL TONE	3	3	X	X	X	
7	BUSY	3	3	3	X	X	
8	NO ANSWER	X	X	X	X	X	
9	CONNECT 0600	1	X	X	X	X	
10	CONNECT 2400	1	X	X	X	X	
11	CONNECT 4800	1	X	X	X	X	
12	CONNECT 9600	1	X	X	X	X	
13	CONNECT 7200	1	X	X	X	X	
14	CONNECT 12000	1	X	X	X	X	
15	CONNECT 14400	1	X	X	X	X	
16	CONNECT 19200	1	X	X	X	X	
17	CONNECT 38400	1	X	X	X	X	
18	CONNECT 57600	1	X	X	X	X	
19	CONNECT 115200	1	X	X	X	X	
20	CONNECT 230400	X	X	X	X	X	Note 4
22	CONNECT 75TX/1200RX	1	X	X	X	X	
23	CONNECT 1200TX/75RX	1	X	X	X	X	
24	DELAYED	4	4	4	4	X	
32	BLACK LISTED	4	4	4	4	X	
33	FAX	X	X	X	X	X	
35	DATA	X	X	X	X	X	
40	CARRIER 300	X	X	X	X	X	
44	CARRIER 1200/75	X	X	X	X	X	
45	CARRIER 75/1200	X	X	X	X	X	
46	CARRIER 1200	X	X	X	X	X	
47	CARRIER 2400	X	X	X	X	X	
48	CARRIER 4800	X	X	X	X	X	
49	CARRIER 7200	X	X	X	X	X	
50	CARRIER 9600	X	X	X	X	X	

51	CARRIER 12000	X	X	X	X	X	
52	CARRIER 14400	X	X	X	X	X	
53	CARRIER 16800	X	X	X	X	X	Note 2
54	CARRIER 19200	X	X	X	X	X	Note 2
55	CARRIER 21600	X	X	X	X	X	Note 2
56	CARRIER 24000	X	X	X	X	X	Note 2
57	CARRIER 26400	X	X	X	X	X	Note 2
58	CARRIER 280800	X	X	X	X	X	Note 2
59	CONNECT 16800	1	X	X	X	X	Note 2
61	CONNECT 21600	1	X	X	X	X	Note 2
62	CONNECT 24000	1	X	X	X	X	Note 2
63	CONNECT 26400	1	X	X	X	X	Note 2
64	CONNECT 28800	1	X	X	X	X	Note 2
66	COMPRESSION: CLASS 5	X	X	X	X	X	
67	COMPRESSION: V.42bis	X	X	X	X	X	
69	COMPRESSION:NONE	X	X	X	X	X	
70	PROTOCOL:NONE	X	X	X	X	X	
77	PROTOCOL:LAMP	X	X	X	X	X	
78	CARRIER 31200	X	X	X	X	X	Note 3
79	CARRIER 33600	X	X	X	X	X	Note 3
80	PROTOCOL:ALT	X	X	X	X	X	
81	PROTOCOL: ALT- CELLULAR	X	X	X	X	X	
84	CONNECT 33600	1	X	X	X	X	Note 3
91	CONNECT 31200	1	X	X	X	X	Note 3
150	CARRIER 32000	X	X	X	X	X	Note 4
151	CARRIER 34000	X	X	X	X	X	Note 4
152	CARRIER 36000	X	X	X	X	X	Note 4
153	CARRIER 38000	X	X	X	X	X	Note 4
154	CARRIER 40000	X	X	X	X	X	Note 4
155	CARRIER 42000	X	X	X	X	X	Note 4
156	CARRIER 44000	X	X	X	X	X	Note 4
157	CARRIER 46000	X	X	X	X	X	Note 4
158	CARRIER 48000	X	X	X	X	X	Note 4
159	CARRIER 50000	X	X	X	X	X	Note 4
160	CARRIER 52000	X	X	X	X	X	Note 4
161	CARRIER 54000	X	X	X	X	X	Note 4
162	CARRIER 56000	X	X	X	X	X	Note 4
165	CARRIER 32000	X	X	X	X	X	Note 4
167	CARRIER 36000	X	X	X	X	X	Note 4
168	CARRIER 38000	X	X	X	X	X	Note 4
169	CARRIER 40000	X	X	X	X	X	Note 4
170	CARRIER 4200	X	X	X	X	X	Note 4

171	CARRIER 44000	X	X	X	X	X	Note 4
172	CARRIER 46000	X	X	X	X	X	Note 4
173	CARRIER 48000	X	X	X	X	X	Note 4
174	CARRIER 50000	X	X	X	X	X	Note 4
175	CARRIER 52000	X	X	X	X	X	Note 4
176	CARRIER 54000	X	X	X	X	X	Note 4
177	CARRIER 56000	X	X	X	X	X	Note 4
+F4	+FCERRPRX	X	X	X	X	X	

Note:

1. An " X" in a column indicates that the message (either the long form if verbose, or the value or the value only for short form) will be generated when that particular value of " n" (shown at the top of the column) has been selected by for that x option. A numeral indicates which less explicit message (verbose or short form) will be output for that X option.

2. 28.8K and higher rate modems.

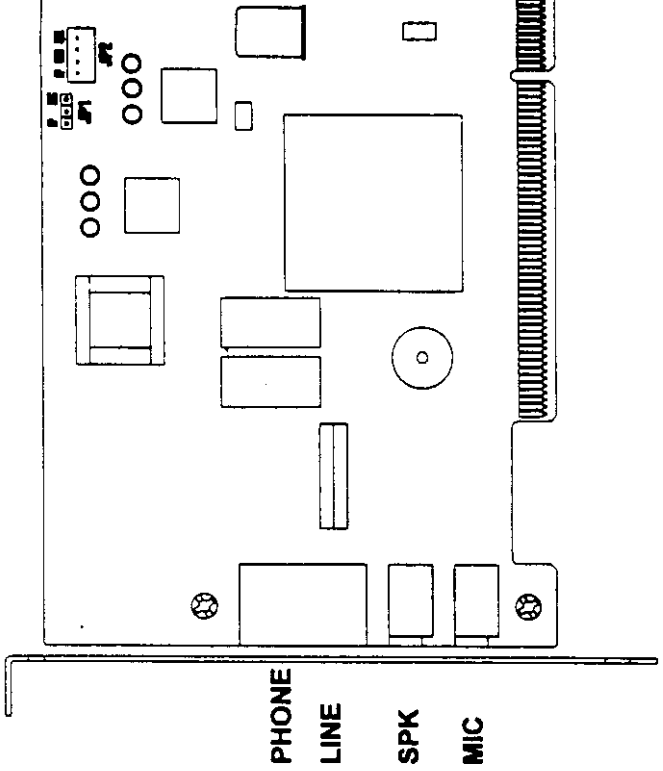
3. 33.6K and higher rate modems

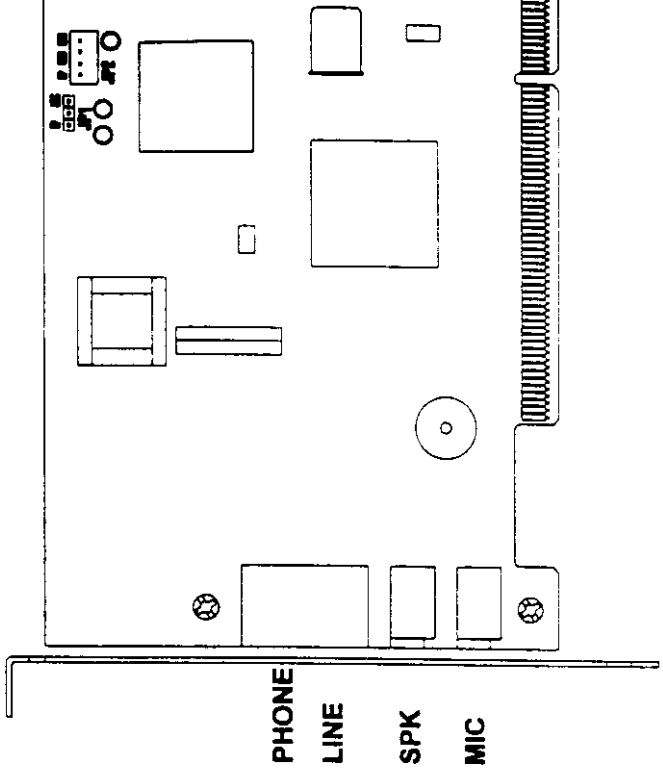
4. 56K modems.

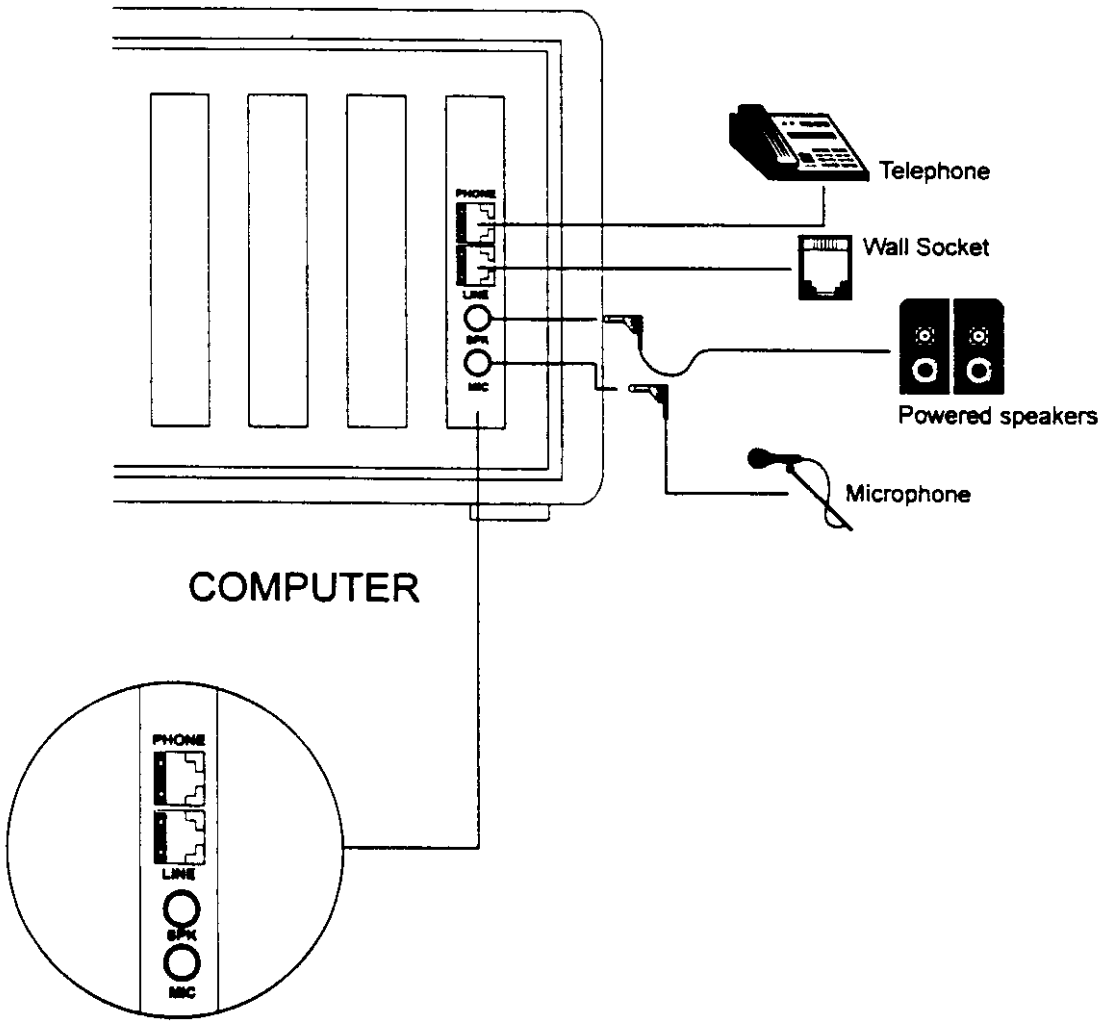
Specifications of Internal Modem

Line Data Rate	: 56K/54K/52K/50K/48K/46K/44K/42K/40K/38K/36K/34K/* 33.6K/31.2K/28.8K/26.4K/24K/21.6K/19.2K/14.4K/12K/9.6K/7.2 K /14.8K/2.4K/1.2K/300/75bps
Modem Protocol	: K56Flex* ITU-T V.34bis/V.34/V.FC/V.32bis/V.32/V.23/V.22bis /V.22/V.21
Voice	: Enhance ADPCM 2.3.4 bits Full-duplex speaker phone (optional) Audio span/voice view (optional) ASVD/DSVD (optional)
Fax Compatibility	: 14400 bps send/receive, G3 compatible
Software Compatibility	: AT Command set compatible
Fax Command	: EIA Class 1 command compatible
Error Correction	: MNP 2-4 and V.42
Data Compression	: MNP 5 and V.42bis
Data Format	: Serial, Binary, Asynchronous 7 or 8 data bits, odd, even or no parity one or two binary serial synchronous stop bit, totally 10 bits length
DTE to Modem Data Rate	: MAX. 115200bps
Operation	: Dial-Up
Data Interface	: ISA Bus compatible
Dialing	: Touch Tone
Audio Monitoring	: Mini speaker with programmable volume control
Line Interface	: RJ-11 modular jack

** for 56K modem*

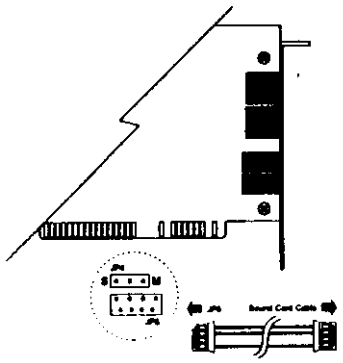

PHONE
LINE
SPK
MIC


PHONE
LINE
SPK
MIC


Telephone
Wall Socket
Powered speakers
Microphone
COMPUTER
PHONE
LINE
SPK
MIC

JP5: pin assignment of additional speaker/microphone connector to sound card

PIN	Signal Defination
SPK	Speaker Right Channel
G	Ground
G	Ground
SPK/MIC	Speaker Left Channel/Microphone Input



JP4: For selection speaker output or microphone input.
Because sound card have to different type

1)

SPK R	G	G	SPK L

2)

SPK N	G	G	MIC

Pin	Signal Defination
MIC	Microphone Input
Comm	Comman
SPK	Speaker Output

Selection microphone input

Selection Speaker output

If the jumper setting all correct, than modem can shell microphone and speaker with sound card.

Hardware Installation

External modem

(1) With the computer switched off, plug the modem into an available COM port (usually COM 2) using the supplied data cable. Insert the supplied phone cord into the line jack on the rear of the modem, and the phone plug into the wall socket.
Insert the power adapter into the power socket on the rear of the modem.

(2) Ensure that the modem powers up correctly when switched on by observing that the power light (marked PWR) on the modem lights.

(3) Proceed to install your modem driver.

Internal modem

(1) See Jumper setting for internal comport selection.

(2) Remove the computer case and insert the modem card into a spare 16-bit ISA expansion slot.

(3) Close the case.

(4) Insert the supplied phone cord into the line jack on the rear of the modem, and the phone plug into the wall socket.

(5) Proceed to install your modem driver.

Installing Your Modem Drivers for Windows 95

Plug and Play Internal and External Modem:

Switch on your computer, and allow the system to boot to Windows 95. The modem should be auto detected by Windows 95 Plug and Play.

(1) Insert the driver disk supplied with the modem into the drive (CD-ROM or Floppy) and choose ***Driver from disk provided by hardware manufacturer***, then click ***OK***. (If in Windows 95 ***OSR/2*** version, click *Next*.)

(3) Type in the drive letter (ex. A:\ or D:\ ) of the driver disk in the box, then click ***OK***.
(If in Windows 95 ***OSR/2*** version, Windows will find the updated driver, then click ***Finish***.)

(4) Select "***Rockwell Voice Modem***" and click ***OK*** again from the next screen.
(If in Windows 95 ***OSR/2*** version, Windows 95 should boot as normal)

Note: If Windows can not read any manufacturers information from the CD-ROM, please click ***Other Locations*** and select the CD-ROM drive and it's directory (ex: ***D:\ Rockwell*** or ***E:\ Rockwell***) to install modem driver. Then repeat step (4).

(5) Windows 95 should boot as normal. Test the installation by clicking on the ***Start*** button and select *Settings* and then choose ***Control Panel***.

(6) Double click on the ***Modems*** icon. The modem should appear in the list of modems.

(7) Click on the ***Diagnostics*** tab.

(8) Click on COM port (ex: ***COM 2*** or ***COM 3***) that the modem is connected to, then click on the ***More Information*** button.

(9) If , after communicating with the modem, the AT-Command screen appears, the modem is working properly.

Non Plug and Play Internal Modem:

We recommend setting the modem in COM2 / IRQ3. (Please see the page 23 to set the modem jumpers)

(1) Special procedure must be followed to install Non Plug and Play internal modem.

(2) Disable the BIOS of the RS232 COM port2. (if you want to set modem in COM2)

Note: If you don't know how to disable the BIOS of the RS232 COM port, please see the page 23 to set the modem COM port in COM3 / IRQ5 or COM4 / IRQ7.

(3) Click on the ***Start*** button and select ***Settings*** and then choose ***Control Panel***.

(4) Double click on the ***Add New Hardware*** icon and select *Next*.

(5) At the next screen, Select *No* and click *Next*.

(6) Click *Next*. Windows will find the new hardware. It's will take several minutes.

(7) At the next screen, Select ***Finish***.(The Windows will find the modem COM port)

(8) Restart your computer.

(9) Click on the ***Start*** button and select ***Settings*** and then choose ***Control Panel***.

(10) Double click on the ***Modems*** icon and click on the ***Add*** button.

(11) If in Windows 95 ***OSR/2*** version, select ***Don't run the Hardware Installation Wizard***, then click *Next*.

(12) At the next screen, select ***Don't detect my modem; I will select it from a list***, then click *Next*.

(13) Insert the driver disk supplied with the modem into the drive and click ***Have Disk***.

(14) Type in the drive letter (ex: A:\ or D:\ ) of the driver disk in the box, then click ***OK***.

(15) Select Manufacturers: ***Rockwell*** (Models: ***Rockwell Voice Modem***) from the next screen, then click *Next*.

Note: If Windows can not read any manufacturers information from the CD-ROM, please click ***Other Locations*** and select the CD-ROM drive and it's directory (ex: ***D:\ Rockwell*** or ***E:\ Rockwell***) to install modem driver. Then repeat step (15).

(16) Select ***Communication Port*** (ex: ***COM2 or COM3***)that the modem is connected to, then click *Next*.

(17) At the next screen, windows will show your modem has been set up successfully, then click ***Finish***. The modem should appear in the modem list.

(18) Test the modem by clicking on the ***Diagnostics*** tab.

(19) Click on COM port (ex: ***COM2 or COM3***) that the modem is connected to, then click on the ***More Information*** button.

(20) If, after communicating with the modem, the AT-Command screen appears, the modem is working properly.

Installing Your Modem Drivers for Windows NT4.0

If your modem is internal, we suggest setting the modem jumpers on ***Non Plug and Play*** mode, because it is simpler to install than ***Plug and Play*** mode in Windows NT4.0. We recommend setting the modem in COM2 / IRQ3 (Please see the page 23 to set the modem jumpers)

(1) Disable the BIOS of the RS232 COM port2 (if you want to set modem in COM2)

Note: If you don't know how to disable the BIOS of the RS232 COM port, please see the page 23 to set the modem COM port in COM3 / IRQ5 or COM4 / IRQ7. (Please select the free Com port , free I/O address and free IRQ)

(2) Click on the ***Start*** button and select ***Settings*** and then choose ***Control Panel***.

(3) Double click on the ***Ports*** icon and click on the ***Add*** button.

(4) At the next screen, select the modem COM poet, I/O port address and IRQ. Then click ***OK***

(5) Select ***Don't Restart Now***. The click ***Close***.

(6) Double click on the ***Modems*** icon and click the ***Add*** button.

(7) At the next screen, select ***Don't detect my modem; I will select it from a list***, then click ***Next***

(8) Insert the driver disk supplied with the modem into the drive and click ***Have Disk***.

(9) Type in the drive letter (ex: ***D:*** or ***E:***) of the driver disk in the box, then click ***OK***.

(10) Select Manufacturers: ***Rockwell*** (Models: ***Rockwell Voice Modem***) from the next screen, then click ***Next***.

Note: If Windows can not read any manufacturers information from the CD-ROM, please click ***Other Locations*** and select the CD-ROM drive and it's directory (ex ***D:\ Rockwell*** or ***E:\ Rockwell***) to install modem driver. Then repeat step (10).

(11) Select ***Selected Ports*** (ex: ***COM2*** or ***COM3***)that the modem is connected to, then click ***Next***.

(12) At the next screen, click ***Finish***. Your modem driver will be installed and follow on screen instructions to setup your ***Dial-up Networking***.

(13) Restart your computer to enable the modem.

Chapter 5 Trouble Shooting

If you are fails to install your modem

Internal modem :

- Make sure the COM port and IRQ Setting are correctly, and it doesn't conflict with another board installed in your computer.
- If your modem is using COM3 or COM4, Windows might not recognize it, and you will get a message such as " Modem does not exist". The reason is that most PC don't allow COM ports to share the same IRQ line, thus if your mouse is using COM 1, but your modem is using COM 3, the conflict might arise, unless your reconfigured modem to another IRQ line (For example IRQ 5), also you need to tell windows reassigned IRQ-line to take effect.

Standard COM Port	IRQ	Address
COM1	4	3F8
COM2	3	2F8
COM3	4	3E8
COM4	3	2E8

External modem:

- Be sure your RS-232 Cable and Power adapter are connected properly between modem and your PC.
- Make sure AC outlet and modem power-switch is set to on-position.

If above are correctly and the modem LED are not lit, Please contact the dealer on listributor.

Modem won't execute AT commands

- The COM port of your software or DTE perhaps set up incorrectly, for example, your software may be configured on COM 1, but your modem may be configured as another COM port (such as COM 2).
- Check RS-232 cable is connected properly, verify modem LED " DTR" is ON, otherwise check above procedure again.
- Be sure you are sending commands at an acceptable baud rate, 300, 1200, 2 400, 4800, 9600, 19200, 38400, 57600 or 115200bps.
- Make sure you are using an acceptable character format, for example : 8 data bits, no parity, one stop bit.
- Type AT&F [ENTER], reset original factory default and try execute AT commands again.
- Make sure properly operation mode of modem (for example, leased-line and dumb mode will caused modem won't effect by AT commands).

Modem will not dial-out

- Check your phone cable connected properly into "LINE" jack.
- If you use the Tone-dialing on a line, but required the Pulse-dialing method, please change the command " T to P" in your dial command line.
- sending dial tone incorrectly.

Modem will not answer an incoming call

- Check your phone cable connected properly into "LINE" jack.
- By connect a Telephone to the " PHONE" jack. The attached telephone will ring if you try calling from another telephone line
- Configured the modem to Auto-answer modem.
  Type AT S0=n where n is the number of incoming rings and check light "AA" is on.
- The DTR signal may be disable, check the procedure of "Modem won't execute AT commends" otherwise, Type AT&D0 command ignore DTR signal.

No connection after modem dial out

- Remote modem may be not setting to answer mode, if you aren't hearing a high-pitch tone when remote modem answering.
- Perhaps poor-quality or noise telephone lines try another call.

Data error when modem connection

- Make sure your software data format is match to remote side (for example : 8,N, 1).
- Make sure the modem flow control method is matched to communication software.
- Try another call may be poor quality or noise telephone lines.

Fax and voice problems

- Be sure the Data Communication is installed and worked properly, otherwise check the mentioned procedure carefully and consult the Fax/Voice manual step by step.

Chapter 6 FCC Requirements

This equipment complies with Part 68 or the FCC Rules. On the bottom of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. IF REQUESTED. THIS INFORMATION MUST BE GIVEN TO THE TELEPHONE COMPANY.

The REN IS useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called In most. But not all areas the sum of the REN's of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line. as determined by the REN You should contact your local telephone company to determine the maximum REN for your calling area. If your telephone equipment causes harm to the telephone network. The telephone company may discontinue your service temporally . If possible, they will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may changes in it's facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact the following address and phone number for information on obtaining service or repairs. The telephone company may ask that your disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. This equipment may not be used on coin service provide by the telephone company. Connection to party lines is subject to statetariffs.

Federal Communications Commission
Radio Frequency Interference Statement.

Note: This equipment has been tested and found to comply with the limits for a lass B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determine by tuning the equipment off and on, the user is encouraged to try to correct the interference by one more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver in connected. Consult the dealer or an experienced radio TV technician for help.

Notices:

(1) The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

(2) Shielded interface cables and AC power cord if any must be used in order to comply with the emission limits.

INFORMATION TO THE USER

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device. Pursant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception. Which can be determined by turning the equipment off and on the user is encouraged to try to correct the interference by one or more of the following measures:

--Reorient or relocate the receiving antenna.

--Increase the separation between the equipment and receiver.

--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

__Consult the dealer or an experienced radio/TV technician for help.

This booklet is available from the US government Printing Office *washington, DC 20402, Stock NO. 004-000-00345-4.

CAUTION: Any changes of modifications not expressly approved by the grantee of this device could void the users authority to operate the equipment.