

EXHIBIT C

User Manual

Data/Fax/Voice Modem

Operation Manual

GM-56PCI-RW

712-0003-021(RW-C)

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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 medium speaker volume
L2	Set high speaker volume
L3	Turn speaker off
M0	Turn speaker on during handshaking and turn speaker off while receiving carrier
M1	Turn speaker on during handshaking and while receiving carrier
M2	Turn speaker off during dialing and receiving carrier and turn speaker on during
M3	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

S²? Return the value of S-Register n.
 S_a = 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 time 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 RLS(DXDCD) to follow the carrier state.
 &C1 Allow RLS(DXDCD) 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% 66.7% 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 V25 (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/fail 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.
 %n Controls break handling three states:
 UN0 Select normal speed buffered mode.
 UN1 Select direct mode.
 UN2 Select reliable link mode.
 UN3 Select auto reliable mode.
 UN4 Force LAMP mode.
 UN5 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? Identify model.
 #MFR? Identify manufacturer
 #REV? Identify revision level
 #TL Audio output transmit level.
 #VBO? Query buffer size
 #VBS Bits per sample
 #VBT Bleep 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

```
-SMS = X, Y, Z, T SELECT commands
```

= 2, AUDIOSPAN

3, AUTO MODE (default)

Y: Minimum data speed with audio for audio span

2: Maximum data speed with audio for audio spans

T = 0 : Auto selection (default)

T = 1 : Reserve

Example

9600pb05.

STAS

0 : telephone handset

3 : headset (default)

6 : speaker phone

voice line other than the default handset desired

FAY CLASS I COMMITTEES

```
+FCLASS = n Service class
```

+FAE = Data/fax auto answer

+FRN = n Receive data with HDLC training

```
+FRM      = 0 Receive data
```

+FRS = Π Receive silence

== n 1 ransmit data with HDLC training

++IM = D IRLS mit davor

+f15 = a stop transmission and wait

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modern) using one to five sub parameters. The command format is:

```
+MS = <mode> [, <auto mode>] [, <min_rate>] [, <x_law>] [, <rb_signaling>] ||| ||| <CK>
```

NOTES:

command)

remain at their current values.

Reporting Selected Options

following command:

+MS7

The response is:

+MS <mod>, <auto mode>, <min_rate>, <max_rate>, <x_low>, <rb_signaling>

For example:

+MS: 56, 1, 300, 56000, 0, 0 [56K modem default values]

+MS: 11, 1, 300, 33600, 0, 0 | 33.6K modern default values;

Reporting Supported Options

the following command:

+MS = ?

The response is:

> 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) {336K}

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)	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	K.56flex	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 <min_rate> both to be the (same requested speed, and <mode> 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 with 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 server 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 0.01s	*	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	-	-	*	-

Chapter 3 Result Codes Summary

S41	General Bit-Mapped Options Status				
S42	Reserved	-	-	-	3
S43		-	-	-	-
S44		-	-	-	-
S45		-	-	-	-
S46	Data Compression Control	-	-	-	138
S47	V.42 Negotiation Control	-	-	-	7
S48		-	-	-	-
S49	Reserved	-	-	-	-
S50		-	-	-	-
S51		-	-	-	-
S52	Call Failure Reason Code	0-255	-	-	-
S53	PSTN Transmit Attenuation	0-15	dBm	-	11#
S54	Fax Transmit Attenuation Level	0-15	dBm	-	11#
S55	Result Code Message Control	-	-	-	0

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

country independent

Shot From	Long Form	Value in ATXn				Notes
		0	1	2	3	4
0	OK	X	X	X	X	X
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	1	X	X	X	X
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

Note 4

51	CARRIER 12000	X	X	X	X	X	X	X	
52	CARRIER 14400	X	X	X	X	X	X	X	
53	CARRIER 16800	X	X	X	X	X	X	X	Note 2
54	CARRIER 19200	X	X	X	X	X	X	X	Note 2
55	CARRIER 21600	X	X	X	X	X	X	X	Note 2
56	CARRIER 24000	X	X	X	X	X	X	X	Note 2
57	CARRIER 26400	X	X	X	X	X	X	X	Note 2
58	CARRIER 28800	X	X	X	X	X	X	X	Note 2
59	CONNECT 16800	1	1	1	1	1	1	1	Note 2
61	CONNECT 21600	1	1	1	1	1	1	1	Note 2
62	CONNECT 24000	1	1	1	1	1	1	1	Note 2
63	CONNECT 26400	1	1	1	1	1	1	1	Note 2
64	CONNECT 28800	1	1	1	1	1	1	1	Note 2
66	COMPRESSION CLASS 5	X	X	X	X	X	X	X	
67	COMPRESSION V.42bis	X	X	X	X	X	X	X	
69	COMPRESSION NONE	X	X	X	X	X	X	X	
70	PROTOCOL NONE	X	X	X	X	X	X	X	
77	PROTOCOL LAMP	X	X	X	X	X	X	X	
78	CARRIER 31200	X	X	X	X	X	X	X	Note 3
79	CARRIER 33600	X	X	X	X	X	X	X	Note 3
80	PROTOCOL ALT	X	X	X	X	X	X	X	
81	PROTOCOL ALT-CELLULAR	X	X	X	X	X	X	X	
84	CONNECT 33600	1	1	1	1	1	1	1	Note 3
91	CONNECT 31200	1	1	1	1	1	1	1	Note 3
150	CARRIER 32000	X	X	X	X	X	X	X	Note 4
151	CARRIER 34000	X	X	X	X	X	X	X	Note 4
152	CARRIER 36000	X	X	X	X	X	X	X	Note 4
153	CARRIER 38000	X	X	X	X	X	X	X	Note 4
154	CARRIER 40000	X	X	X	X	X	X	X	Note 4
155	CARRIER 42000	X	X	X	X	X	X	X	Note 4
156	CARRIER 44000	X	X	X	X	X	X	X	Note 4
157	CARRIER 46000	X	X	X	X	X	X	X	Note 4
158	CARRIER 48000	X	X	X	X	X	X	X	Note 4
159	CARRIER 50000	X	X	X	X	X	X	X	Note 4
160	CARRIER 52000	X	X	X	X	X	X	X	Note 4
161	CARRIER 54000	X	X	X	X	X	X	X	Note 4
162	CARRIER 56000	X	X	X	X	X	X	X	Note 4
163	CARRIER 58000	X	X	X	X	X	X	X	Note 4
164	CARRIER 60000	X	X	X	X	X	X	X	Note 4
165	CARRIER 62000	X	X	X	X	X	X	X	Note 4
166	CARRIER 64000	X	X	X	X	X	X	X	Note 4
167	CARRIER 66000	X	X	X	X	X	X	X	Note 4
168	CARRIER 68000	X	X	X	X	X	X	X	Note 4
169	CARRIER 70000	X	X	X	X	X	X	X	Note 4
170	CARRIER 72000	X	X	X	X	X	X	X	Note 4

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

Note:

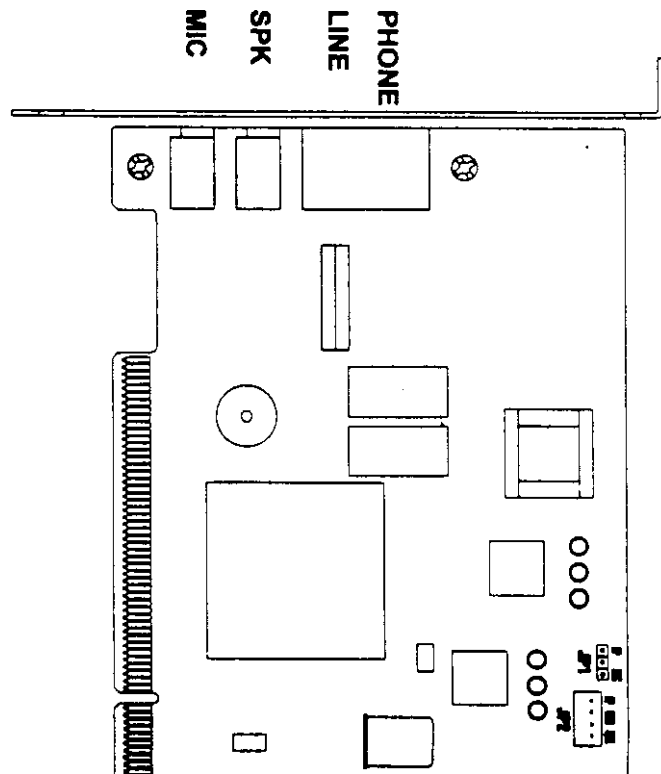
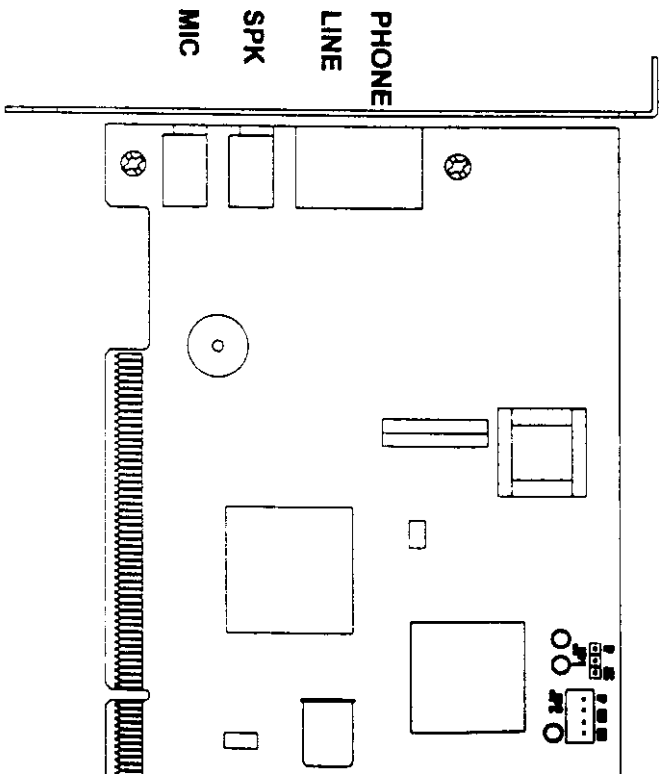
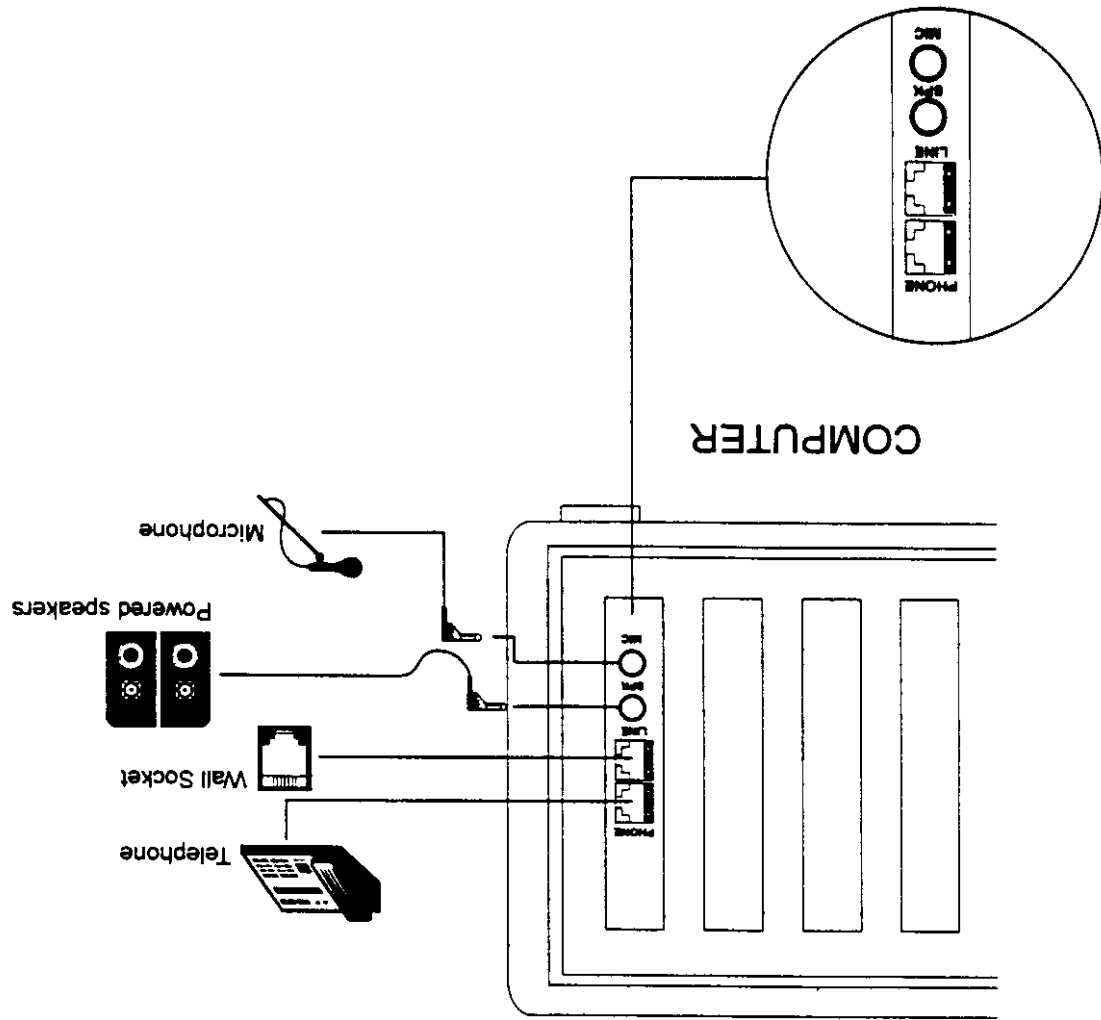
1. An "X" in a column indicates that the message (either the long form if verbose, or the value or the value only for short form) will be generated when that particular value of "n" (shown at the top of the column) has been selected by for that X option. A numeral indicates which less explicit message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

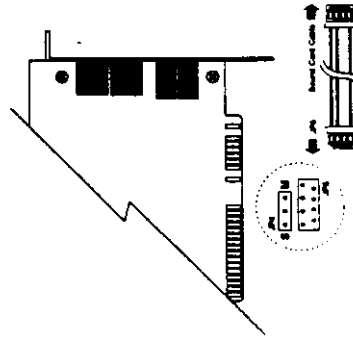
Line Data Rate	: 56K/54K/52K/50K/48K/46K/44K/42K/40K/38K/36K/34K* 33.6K/31.2K/28.8K/26.4K/24K/21.6K/19.2K/14.4K/12K/9.6K/7.2K/14.8K/2.4K/1.2K/300/75bps
Modem Protocol	: K56Flex* ITU-T V.34bisV.34V.FCN.32bisV.32V.23V.22bisV.22V.21
Voice	: Enhance ADPCM 2.3.4 bits Full-duplex speaker phone (optional) Audio 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



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

PIN	Signal Definition
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 Definition
MIC	Microphone Input
Comm	Common
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 COM2) 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 OSR2 version, click *Next*.)
- (3) Type in the drive letter (ex: A:1 or D:1) of the driver disk in the box, then click *OK*.
(If in Windows 95 OSR2 version, Windows will find the updated driver, then click *Finish*.)
- (4) Select "Rockwell Veler Modem" and click *OK* again from the next screen.
(If in Windows 95 OSR2 version, Windows 95 should boot as normal.)

Note: If Windows can not read any manufacturer's information from the CD-ROM, please click *Other Location* 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: COM2 or COM3) 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 jumper.)
(1) Special procedure must be followed to install Non Plug and Play internal modem.

- (2) Disable the BIOS of the RS232 COM port. (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/IRQ3 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 OSR2 version, select *Don't run the Hardware Installation Wizard*, then click *Next*.
 - (12) At the next screen, select *Don't detect any modems; I will select it from a list*, then click *Next*.
 - (13) Insert the driver disk supplied with the modem into the drive and click *From Disk*.
 - (14) Type in the drive letter (ex: A:1 or D:1) of the driver disk in the box, then click *OK*.
 - (15) Select Manufacturer: *Rockwell* (Model: *Rockwell Veler Modem*) from the next screen, then click *Next*.
- Note:** If Windows can not read any manufacturer's information from the CD-ROM, please click *Other Location* 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 *Communications Port* (ex: COM2 or COM3) when 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.

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 distributor.

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, 2400, 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)

Installing Your Modem Drivers for Windows NT4.0

If your modem is internal, we suggest setting the modem jumpers on *New 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 / IRQ3 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 port, 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 *Next 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 Location* 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.

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 SO=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 commands" otherwise, Type AT&LD0 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 temporarily. 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 you 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 state tariffs.

Federal Communications Commission Radio Frequency Interference Statement.

Note: This equipment has been tested and found to comply with the limits for a class 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 determined by turning 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 is 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. Pursuant 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.

