

PCM56R
Fax/Data Modem

User's Manual

Version 1.0

FCC ID: E5XPCM56R

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FCC Compliance Statement

This device complies with Part 15 and 68 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.

FCC Warning Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 and 68 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 emit radio frequency energy and, if not installed or used in accordance with the instructions, may cause interference to radio communications. However, television reception interference can be determined by turning the equipment off and on, the user is encouraged 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 the receiver
- Connect the equipment into an outlet different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment



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1 INTRODUCTION

Congratulations on your purchase of this PCMCIA fax/data modem. With this modem and a standard analog phone line, you can turn your notebook computer into a communication center.

This modem combines the features of a 56000bps data modem and a 14400bps fax modem. It gives your personal computer the ability to send and receive FAX message over the telephone link like a standard FAX machine. Your Fax/data Modem allows your PC to communicate with other personal computers, terminals, BBS, or Internet through the data modem function.

1-1 Features

The PCMCIA fax/modem automatically determines the highest data rate, most efficient data compression and most effective error control for each connection, ensuring 100% error-free operation. It takes full advantage of PC-Card technology, allowing you to "hot swap" different peripherals in the PCMCIA slot. Key features also includes:

- ◆ easy installation
- ◆ no confusing switches
- ◆ MNP 5 and V.42bis compression and error correction
- ◆ low power consumption

1-2 Package contents

- ◆ Fax/modem card

- ◆ User's Manual
- ◆ Fax/modem communication software diskette
- ◆ Driver diskette
- ◆ 4-pin Cable
- ◆ Connector 6P4C 1 to 1

1-3 System Requirements

Minimum and recommended system requirements for the PCMCIA fax/modem card are shown below. Generally, the fax modem card is designed for installation on laptop computers with PCMCIA Type II card slots.

- ◆ Computer with a PCMCIA 2.1 compliant Type II card slot
- ◆ Windows 95 or Windows NT
- ◆ A minimum of 4 MB of memory
- ◆ 2MB of free hard disk space
- ◆ Standard residential (analog) RJ-11 phone line

2 INSTALLATION

2-1 Installing the Fax Modem Card

You will be installing the modem in the Type II or III PCMCIA slot in your computer. If you are having trouble with locating this slot, refer to your computer user's manual or consult the manufacturer of your computer.

Gently slide the PC card into the PCMCIA slot. Make sure the card is firmly seated in the socket and you are ready to setup and install your communication software, as detailed in the following section.

2-2 To install in Windows 95

Windows 95 comes with most of the drivers necessary to access your fax modem. Just follow these steps:

1. Start the computer.
2. Insert the fax modem card into a PC Card slot in your computer.
3. Windows will display the **New Hardware Found** dialog box. Select the **"Driver from disk provided by hardware manufacturer"** and click **OK**. If you do not see the above selection, simply click **Next** to continue. (For Windows 95 Release 2.0 user. Insert the driver diskette into drive A: and click **Finish** to complete the installation process.)
4. Make sure the directory is A:\ in the drive window. Click **OK** to continue. The modem is now ready for use.



2-3 To install in Windows NT4.0

Windows NT comes with most of the drivers necessary to access your fax modem. Just follow these steps:

1. Insert the fax modem card into a PC Card slot in your computer.
2. Start the computer.
3. Double click on the "**Control Panel/Modems**", select the "**Don't detect my modem; I will select it from a list**" option and press the "**Next**" button.
4. Click the "**Have Disk**" button from "**Install New Modem**" window and press the "**Next**" button.
5. Windows then asks you to specify where the driver for the modem is located. Insert the fax modem driver diskette into your floppy drive, select Drive "**A:**" and click **OK**.
6. Select the product name of fax modem from "**Models**" list box and press the "**Next**" button.
7. Select the available COM port from the list box and press the "**Next**" button.
8. You will see "**Your modem has been set up successfully**" window appear. That means the modem is now ready for use.

2-4 Installing the Fax/Modem Software

The communication software which is included in this product comes with its own documentation. This software will enable you to use your modem in both data and fax modes.

☞ *Many data communication programs require that you select a modem during installation. If you do not see a list for this modem, you should select "Generic Fax Modem" or Standard Fax Modem" as your modem type.*



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3 AT COMMANDS REFERENCE

3-1 Basic AT Commands

Command	Function
A/	Repeat Last Command
A	Answer
B0	Select ITU-T V.22 at 1200 bps
B1	Select Bell 212A at 1200 bps
C1	Return OK message
Dn	Dial modifier
E0	Disable command echo
E1	Enable command echo
H0	Hang up the telephone line
H1	Pick up the telephone line
I0	Report product code
I1	Report pre-computed checksum
I2	Report OK
I3	Report firmware revision, model, and interface type
I4	Report response programmed by and OEM
I5	Report the country code parameter
I6	Report modem data pump and model and code revision
I7	Report the DDA code (W-class models only)
L0	low speaker volume
L1	low speaker volume
L2	medium speaker volume
L3	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 on during answering
N0	Turn off automode detection
N1	Turn on automode detection
O0	Go on-line
O1	Go on-line and initiate a retrain sequence
P	Select Pulse dialing
Q0	Allow result codes to DTE
Q1	Inhibit result codes to DTE
Sn	Select an S-register
Sn=x	Write to an S-register
Sn?	Read from an S-register
T	Select DTMF dialing
V0	Report short form (terse) result codes
V1	Report long form(verbose) result codes
W0	Report DTE speed in EC mode
W1	Report line speed, EC protocol and DTE speed
W2	Report DCE speed in EC 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 i.e, OK, CONNECT, RING, NO CARRIER (also for busy, if enabled, and dial tone not detected), NO ANSWER, CONNCET 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, CONNCET XXXX, and ERROR.
X3	Report basic call progress result codes and connections speeds i.e, OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNCET XXXX, and ERROR.



X4	Report basic call progress result codes and connections speeds i.e, OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNCET 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	Ignore remote modem status: DCD always on
&C1	DCD set according to remote modem status
&D0	Interpret DTR ON-to-OFF transition per &Qn: &Q0, &Q5, &Q6 The modem ignores DTR &Q1, &Q4 The modem hangs up &Q2, &Q3 The modem hangs up
&D1	Interpret DTR ON-to-OFF transition per &Qn: &Q0, &Q1, &Q4, &Q5, &Q6 Asynchronous escape &Q2, &Q3 The modem hangs up
&D2	Interpret DTR ON-to-OFF transition per &Qn: &Q0 through &Q6 The modem hangs up
&D3	Interpret DTR ON-to-OFF transition per &Qn: &Q0, &Q1, &Q4, &Q5, &Q6 The modem performs soft reset &Q2, &Q3 The modem hangs up
&F0	Restore factory configuration 0
&F1	Restore factory configuration 1
&K0	Disable DTE/DCE flow control
&K3	Enable RTS/CTS DTE/DCE flow control
&K4	Enable XON/XOFF DTE/DCE software flow control
&K5	Enable transparent XON/XOFF flow control
&K6	Enable both RTS/CTS and XON/XOFF flow control
&L0	Select dial up line operation



&M0	Select direct asynchronous mode
&P0	Set 10-pps pulse dial with 39% / 61% make-break
&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
&Q4	Select hayes AutoSync mode
&Q5	Modem negotiates an error corrected link
&Q6	Select async 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
&S1	DSR acts per V.25
&T0	Terminate test in progress
&T1	Initiate local analog loopback
&T2	Return ERROR result code
&T3	Initiate local digital loopback
&T4	Grant RDL request from remote modem
&T5	Denies RDL request from remote modem
&T6	Initiate remote digital loopback
&T7	Start remote digital loopback with self-test
&T8	Start local analog loopback with self-test
&V	Display current configurations
&V1	Display connection statistics
&W0	Store the active profile in NVRAM profile 0
&W1	Store the active profile in NVRAM profile 1
&Y0	Recall stored profile 0 on power up
&Y1	Recall stored profile 1 on power up
&Zn=x	Store telephone number (up to 30 digits) to location 'n' (0-3)
%E0	Disable line quality monitor and auto-retrain



%E1	enable line quality monitor and auto-retrain
%L	Return received line signal level
%Q	Report the line signal quality
\Kn	Control break handling during three states:
When modem receives a break from the DTE:	
\K0,2,4	Enter on-line command mode, no break sent to the remote modem
\K1	Clear buffers and send break to remote modem
\K3	Send break to remote modem immediately
\K5	Send break to remote modem in sequence with transmitted data
When modem receives \B in on-line command state:	
\K0,1	Clear buffers and send break to remote modem
\K2,3	Send break to remote modem immediately
\K4,5	Send break to remote modem in sequence with transmitted data
When modem receives break from the remote modem:	
\K0,1	Clear data buffer and send break to DTE
\K2,3	Send a break immediately to DTE
\K4,5	Send a break with received data to the DTE
\N0	Select normal speed buffered mode
\N1	Select direct mode
\N2	Select reliable link mode
\N3	Select auto reliable mode
\N4	Force LAPM mode
\N5	Force MNP mode
\V0	Connect messages are controlled by the command settings X, W, and S95
\V1	Connect messages are displayed in the single line format
+MS	Select modulation
+H0	Disable RPI/Video Ready Mode



+H1	Enable RPI and set DTE speed to 19200 bps
+H2	Enable RPI and set DTE speed to 38400 bps
+H3	Enable RPI and set DTE speed to 57600 bps

3-2 ECC Commands

Command	Function
%C0	Disable data compression.
%C1	Enable MNP 5 data compression
%C2	Enable V.42 bis data compression.
%C3	Enable both V.42 bis and MNP 5 data compression.
\A0	Set maximum block size MNP to 64.
\A1	Set maximum block size MNP to 128.
\A2	Set maximum block size MNP to 192.
\A3	Set maximum block size MNP to 256.
\Bn	Send break of nx 100 ms

3-3 FAX CLASS 1 Commands

Command	Function
+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.
+FTM=n	Transmit data.
+FTS=n	Stop transmission and wait.



3-4 S-REGISTERS

Register	Function	Range	Default	Units
S0	Auto Answer Ring Number	0-255	0	Rings
S1	Ring counter	0-255	0	Rings
S2	Escape Character	0-255	43	ASCII
S3	Carriage Return Character	0-127	13	ASCII
S4	Line Feed Character	0-127	10	ASCII
S5	Backspace Character	0-255	8	ASCII
S6	Wait Time for Dial Tone	2-255	2	s
S7	Wait Time for Carrier	1-255	50	s
S8	Pause Time for Dial Delay Modifier	0-255	2	s
S9	Carrier Detect Response Time	1-255	6	0.1s
S10	Carrier Lose Disconnect Time	1-255	14	0.1s
S11	DTMF Tone Duration	50-255	95	0.001s
S12	Guard Time	0-255	50	0.02s
S14	General Bit Mapped Options Status		138 (8Ah)	
S16	Modem test options		0	
S18	Modem Test Timer	0-255	0	s
S19	AutoSync Options	-	0	-
S20	AutoSync HDLC Address or BSC Sync Character	0-255	0	-
S21	V.24/General Bit Mapped Options Status	-	52(34h)	-
S22	Speaker/Results Bit Mapped options Status	-	117(75h)	-
S23	General Bit Mapped Options		62(3Dh)	-
S24	Sleep Inactivity Timer	0-255	0	s
S25	Delay to DTR Off	0-255	5	s or 0.01s
S26	RTS to CTS Delay	0-255	1	0.01s

S27	Bit Mapped Options	-	73(49h)	-
S28	Bit Mapped Options	-	0	-
S29	Flash Dial Modifier Time	0-255	70	10 ms
S30	Disconnect Inactivity Timer	0-255	0	10 s
S31	Bit Mapped Options	-	194 (C2h)	-
S32	XON Character	0-255	17(11h)	ASCII
S33	XOFF Character	0-255	19(13h)	ASCII
S36	LAPM Failure Control	-	7	-
S37	Line Connection Speed	-	0	-
S38	Delay Before Forced Hangup	0-255	20	s
S39	Flow Control Bit Mapped Options	-	3	-
S40	General Bit Mapped Options	-	104 (68h)	-
S41	General Bit Mapped Options	-	195 (C3h)	-
S46	Data Compression Control	-	138	-
S48	V.42 Negotiation Control	-	7	-
S82	LAPM Break Control	-	128(40h)	-
S86	Call Failure Reason Code	0-255	-	-
S91	PSTN Transmit Attenuation Level	0-15	10 (Country depended)	dBm
S92	Fax Transmit Attenuation Level	0-15	10 (Country depended)	dBm
S95	Result Code Messages Control	-	0	-



ADDENDUM

To install in DOS/Windows 3.x

Before you can use your new modem your computer must have the proper modem software drivers installed to access the modem. Your computer should have the Card and Socket Service drivers preinstalled. The Card and Socket Services driver software allows your computer to access the PCMCIA sockets. If these are not already in your system, or if you do not know if they are installed, check your system manual or consult the manufacturer of your computer. The most popular and common Socket and Card Service are Systemsoft® CardWizard™, Phoenix's® PCM™ and AMI Card Manager Pro 3.0.

If Card and Socket Services drivers are already installed in your computer, you should be able to simply plug in your fax modem card and begin installing and using the software.

Please be sure the COM port of modem card which is assigned by the Card and Socket Services is the same as the setting of your communication software in your computer.

Before using the communication software, you should know which comport and IRQ the PCMCIA Fax/Modem is assigned. (Please refer to the Socket and Card Service Software you have.) And then you should configure the communication software to the right comport & IRQ with the PCMCIA Fax/Modem.

