

PC Enterprises'

Compatibility Cartridge

Installation and Operation Manual



PC Enterprises, PO Box 292, Belmar, NJ 07719 (908)280-0025

This carton should contain the following:

- **Compatibility Cartridge**
- **Memory Management Software Diskette**
- **Installation and Operation Manual**

Please inspect this package to determine whether any item appears missing or damaged. If any item is missing or damaged, report the missing or damaged item to PC Enterprises' Customer Service Department (908) 280-0025 as soon as possible.

DEDICATION

Significant limitations once crippled the PCjr, but today a fully expanded PCjr is the only IBM computer that has both IBM and Tandy capabilities, permitting the PCjr to run more software than all other IBM personal computers — thanks to creative products developed by a small group of individuals who refuse to accept limitations as a way of life.

This manual is dedicated to June Scott. June's fine work and high quality standards have enabled thousands of PCjr owners to get the most from their PCjr. If it were not for your help and devoted service my PCjr would be packed away in a box somewhere in my attic.

I would also like to thank Kelley Caroccia, Sylvia Dayton, Amy Feiner, Roseanna Fucci, Gerard Gonsalves, Jennifer Gormley, Donna Greene, James Hayes, Jackie Jeffrey, Adrienne Nafziger, Raquel Pagliaro, JoAnne Pariso, Judianne Scheiber, and Kurt J. Stampone. Special thanks are also in order for Andrew Blank, Dennis Gormley, Mark Robinson, and most of all to Doug and Lisa.

..... *P. Joseph Calabria*

INTRODUCTION

Congratulations on your purchase of a PC Enterprises' product. This product has been manufactured to our highest quality standards and can be expected to serve you reliably for many years to come. We're sure you will be very pleased with your purchase and pledge to always do our best to keep you satisfied with our support, service, and new PCjr products.

Important: After you complete the installation of this product, be sure to insert these option instructions into your PCjr Expansion Options Binder, or into Section 5 of the PCjr Guide to Operations manual.

Copyright Notice

The Compatibility Cartridge, accompanying diskette, and this manual contain copyrighted information. All rights reserved. Unauthorized duplication or distribution is strictly prohibited. This material may not be copied, reproduced, translated, or reduced to any electronic medium or form, in whole or part, without prior express written permission of PC Enterprises.

IBM and IBM PCjr are registered trademarks of the International Business Machines Corporation. Compatibility Cartridge is a trademark of PC Enterprises. PC Enterprises is not, in any way, affiliated with IBM. Copyright (C) 1992 by PC Enterprises. All rights are reserved. Printed in the USA.

TABLE OF CONTENTS

Features	5
Installation Requirements	5
Compatibility	6
What You Should Know	7
BIOS Incompatibilities	7
DOS Incompatibilities	9
Hardware Differences	9
What the Compatibility Cartridge Does	11
Installing the Software	19
Using the Cartridge	20
Automatic Features	22
Manual Features	22
Appendix A: Installing jrConfig Memory Management Software	30
Appendix B: Reporting a Problem	35
Appendix C: Application Software Compatibility List	38
Damaged Equipment	40
Defective Equipment	40
We'd Like to Know	41
Limited Warranty	42

FEATURES

The Compatibility Cartridge allows the PCjr to run more software by providing greater compatibility in several ways. The Compatibility Cartridge will:

- Allow the PCjr to run IBM and Microsoft DOS versions 2.10 through 5.00
- Allow the PCjr to run Digital Research's DR DOS version 6.00
- Allow the PCjr to run Microsoft Windows 3.0
- Correct bugs and enhance the PCjr's ROM BIOS
- Provide automatic recovery from hardware problems when possible
- Provide manual methods of recovering from hardware problems

INSTALLATION REQUIREMENTS

System Requirements

- An IBM PCjr with a minimum of 256KB of RAM

Tools Required

- None

Software Requirements

- DOS 2.10 or later
- JRCONFIG.SYS

Note: *If you are using DOS 2.10 it is strongly recommended that you upgrade to a later version of DOS for maximum software compatibility.*

COMPATIBILITY

The Compatibility Cartridge is designed to allow the PCjr to run as much software as possible. This includes IBM DOS versions 2.10 through 5.00, Digital Research DOS 6.00, and Microsoft Windows 3.0.

PCjr users who encounter an application which does not work correctly with the Compatibility Cartridge installed are encouraged to report the incompatibility to PC Enterprises. The problem report found in Appendix B of this manual will help us continue improving this product.

The Compatibility Cartridge is preset at our facility to use cartridge select (CS) line 2. The PC Enterprises Keyboard Buffer Cartridge also uses CS2 and can not be used with the Compatibility Cartridge unless a factory modification is made.

The PCjr comes with two cartridge slots, although two cartridges will produce an Error G if the same cartridge select line is used. Below is a table showing each of the cartridge select lines used for cartridges sold by PC Enterprises:

CARTRIDGE	CS LINE
Keyboard Buffer	CS2
jrVideo	CS3
Combo (all versions)	CS3
QuickSilver	None
Compatibility	CS2
Configuration	None
Configuration Plus	None
Cartridge BASIC	CS5
PCE HardBIOSjr	CS4
Display-Master	CS4
Racore PC Identifier	None

Several PCE cartridges can be modified to use alternate cartridge select lines. Contact PC Enterprises' Customer Service Department for details.

WHAT YOU SHOULD KNOW

The term "compatibility" and specifically "software compatibility" refers to one computer's ability to run software written specifically for another computer. Ideally, all software would run on all computers. To a PCjr user, compatibility is the ability to run software which does not list the PCjr on its package.

Compatibility problems exist for three main reasons: ROM BIOS incompatibilities, DOS incompatibilities, and hardware differences. Unfortunately, not all compatibility problem can be corrected with a cartridge. Nevertheless, the Compatibility Cartridge will eliminate most problems you are likely to encounter.

BIOS INCOMPATIBILITIES

Since the hardware of each personal computer model is actually different, compatibility must be achieved through other means. Built in software, known as BIOS (Basic Input/Output Services) provides these means.

The BIOS of a computer is a set of service routines specifically designed for the computer's hardware. BIOS is stored in ROM and can be found on the computer's system board.

Application programs that interface with the computer's BIOS do not need to be concerned with hardware differences. In other words, software that

uses the BIOS interface should run on all IBM and compatible computers. This is one reason why the PCjr runs most software written for the IBM PC.

Unfortunately, although IBM intended for the PCjr to have the same BIOS level support as the IBM PC, IBM has yet to achieve this goal. Programming errors, known as bugs, occasionally cause the PCjr's BIOS to work incorrectly. The Compatibility Cartridge is the first product designed specifically to correct known bugs in the PCjr's BIOS.

It is not uncommon for bugs to go undetected in any computer's BIOS and the PCjr's BIOS does not have more bugs than other computers. What makes the PCjr's situation unusual is that most PCjr owners are still using the original release of their computer's BIOS!

In addition to bugs, there are situations where the PCjr's BIOS simply lacks support to handle certain situations correctly. In these cases, BIOS enhancements have been made.

Third, there are situations where the PCjr's BIOS does exactly what it was intended to do, although application software does not perform correctly due to differences in the PCjr's architecture. PC Enterprises' experience with the PCjr since 1984 has enabled us to identify numerous situations where these differences cause incompatibilities. BIOS changes now resolve these problems completely.

DOS INCOMPATIBILITIES

The PCjr was designed to use IBM DOS 2.10 as its operating system. IBM DOS is the same operating system used throughout IBM's PC and PS/2 product lines. DOS provides the user interface (the A > prompt) and is ultimately responsible for connecting the user with the computer.

After IBM DOS 2.10 was introduced, improved DOS versions such as 3.00, 3.10, 3.20, 3.30, 4.01, 5.00 have become popular. With each new release of DOS, known bugs are eliminated and DOS receives new features. Those concerned with software compatibility should consider upgrading to DOS 3.20 or later as much of today's software requires features which did not exist with earlier versions of DOS.

Certain releases of DOS do not always work correctly on a PCjr. The Compatibility Cartridge solves all known problems related to bugs in DOS which show up when run on a PCjr.

HARDWARE DIFFERENCES

The PCjr's hardware design can also prevent a program from running correctly. Although IBM has stated that all hardware features should be accessed through BIOS, some software publishers design their software to interface directly with a computer's hardware. As a result, incompatibilities occur when the PCjr's hardware is not identical to other computers. When this situation occurs, the "ill-behaved" program often will not run correctly because it upsets PCjr registers.

Unfortunately, the Compatibility Cartridge can not prevent software from directly accessing the hardware. This means the Compatibility Cartridge can not prevent incompatibilities caused by an ill-behaved program. Nevertheless, to provide the highest degree of compatibility possible, the Compatibility Cartridge includes features which will correct most hardware problems!

The Compatibility Cartridge resolves problems caused by four hardware differences known to cause software incompatibilities. In many cases the Compatibility Cartridge will correct problems automatically. In cases where the Compatibility Cartridge can not automatically correct the problem, user intervention is required. Several new keyboard key combinations, described later in this manual, provide these means of intervention.

Fortunately, due to the wide variety of hardware and application software currently available, most software developers now adhere to IBM's recommendation and only interface with a computer through the usual BIOS interface. This is the only way software publishers can ensure their products will work correctly with most computers. Hardware manufacturers such as Compaq, Tandy, and Zenith all build DOS computers that, like the PCjr, have different hardware than the IBM PC.

WHAT THE COMPATIBILITY CARTRIDGE DOES

The Compatibility Cartridge solves most incompatibilities by improving the PCjr at two levels: the ROM BIOS level and the DOS level.

The Level 1 patches are mainly responsible for enhancing the PCjr's ROM BIOS. The Level 2 patches are those which must be installed after the DOS (kernel) has loaded. Level 2 patches are installed at the time jrConfig is executed, during the DOS boot process.

Note: *JRCONFIG.SYS is a PCjr device driver provided on the PCE Memory Management Software diskette. In order to install the level 2 patches you will need to use JRCONFIG.SYS. Detailed instructions appear in Appendix A.*

IMPORTANT! PCJR 62-KEY KEYBOARD USERS

The Level 1 patches change the way certain characters are generated when the PCjr's 62-key keyboard is used. With the Compatibility Cartridge installed use the Fn key instead of the Alt key to generate the special keyboard characters which appear in blue on the PCjr keyboard.

As designed by IBM, the PCjr's 62-key keyboard uses the alternate key to generate all the keyboard characters which appear in blue on the PCjr keyboard. These special Alt key combinations have plagued PCjr owners since the PCjr's introduction. The most notable problem concerns the Alt / combination. Every time you press Alt / the PCjr changes the "/" to a "\". This prevents programs which use the Alt / combination

from working correctly. "Sidekick" and "Superkey" (Borland) are two examples.

The Compatibility Cartridge solves this problem by using the PCjr's Fn key to generate the blue characters instead of the Alt key. With the Compatibility Cartridge installed, all previous Alt key combinations (shown in blue) are ignored.

Remember: If you are using the PCjr 62-key keyboard to generate the "\" (backslash) character use Fn key, not the Alt key. Example: Use Fn / to generate the backslash (/) character.

Refer to "USING THE CARTRIDGE" found in this manual for specific details.

Revised PCjr 62-Key Keyboard Translation Table

The PCjr's uses a translation table built into its BIOS to generate characters which do not exist on the computers 62-key keyboard. The Compatibility Cartridge corrects errors in this translation table and also adds several keys that were omitted. The most notable omission concerns the numeric keypad "5" key, which can not be generated at all with the PCjr 62-key keyboard. This key is often required by game and other software designed to work with a numeric keypad.

In addition, the PCjr's BIOS does not generate function key release codes. The function key problem can be demonstrated using the fire button with "Centipede" and the search feature of "WordPerfect".

Once again, all keys shown with a blue legend on the PCjr keyboard have been remapped to use the Fn key instead of the Alt key. This change also allows the im-

portant "\" character to be used with Microsoft Windows 3.0.

101 Enhanced Keyboard Support Added

All PC, PCjr, and PC-XT class computers, came standard with a keyboard that included ten function keys. The 101-key enhanced keyboard was later introduced with the PC-AT computer. This keyboard has twelve function keys. Unfortunately PC-XT class computers do not have BIOS support for function keys eleven and twelve. As a result, programs that use function keys eleven and twelve will not work correctly on these computers.

The Compatibility Cartridge adds the missing BIOS support. This allows PCjr users with 101-key keyboards to use their function keys eleven and twelve with programs such as "WordPerfect" which take advantage of these keys (you must have a keyboard with twelve function keys to take advantage of this feature).

Critical Interrupt Vector Protection

The Compatibility Cartridge provides interrupt vector protection. The PCjr requires certain interrupt services always be available for the PCjr to work correctly. Some programs use brute force to take over these interrupts for their own purposes, without sharing.

The Compatibility Cartridge allows the PCjr to recover when a program takes over a required interrupt. The cartridge politely takes back the required interrupt in a way that allows the application program to continue running. A few of the programs that benefit from this solution include Microsoft's CD-ROM Reference Library, Intuit's "Quicken 5.0", and

Microprose's "Airborne Ranger", "Gunship", and "Red Storm Rising".

INT 9 Compatibility

The Compatibility Cartridge also corrects a bug in the PCjr's INT 9 routine which can cause keypresses to appear twice, or not at all. Some of the programs that previously could not be run because of the INT 9 bug include: Microsoft's Quick language series, Microsoft's "Works" package, several titles from The Learning Company, Software Toolworks' "Chessmaster", IBM and Microsoft DOS 5.00's Edit and QBASIC programs, and several others.

Blinking Problem

The PCjr defaults to having blinking colors enabled. Some programs choose to disable the blinking because it is difficult to view. To do this these programs write directly to I/O address 3D8h, although the PCjr does not have any hardware at this address. As a result the program is unable to disable blinking and the screen becomes difficult to read.

The Compatibility Cartridge changes the default to high intensity colors. This fix allows many programs including Central Point's PC Tools and the IBM and Microsoft DOS 5.00 Shell (DOSSHELL) to run without the widely-known blinking problem. Experienced users who prefer to continue using the PCjr's original default can disable this feature by using the /O3 option. Refer to the section of this manual titled, "USING THE CARTRIDGE" for more information.

Unused Interrupt Detection

All IBM and compatible computers use pointers to define where in memory each BIOS routine is located. The PC initializes unused vectors to zero while the

PCjr uses a dummy return routine. A few programs which need to take over an interrupt depend upon unused vectors being set to zero. When run on a PCjr, these programs are unable to find an unused interrupt and therefore can not install properly and simply refuse to run.

The Compatibility Cartridge causes interrupts designated for use by application software to be initialized to zero in a manner identical to the IBM PC. Disney Software's "Mickey Mouse Jigsaw Puzzle" is one example of a program that requires this enhancement to run on a PCjr.

PB2 Problem

The PB2 problem exists because PB2 (bit 2 of port B) is used by the PCjr to select the proper video mode while the same bit can be treated as a "don't care bit" on other computers.

Some programs inadvertently affect the unused bit, although doing so never makes a difference on other computers. When that same program is run on the PCjr, the video state is changed which usually "trashes" your display.

Mindscape's "Paperboy" and Britanica's "Designasaurus" both demonstrate this problem. Each time the program attempts to produce sound, the PCjr's display is "trashed". With the Compatibility Cartridge installed, the problem is automatically detected and corrected.

DOS 2.10 NMI Bug

The Compatibility Cartridge eliminates DOS 2.10 NMI bugs which cause the PCjr to crash without warning. The DOS 2.10 NMI bugs have affected "Sym-

phony", "NFL Challenge", and "Prodigy" users in the past.

DOS 3.20 PC ID Byte Problem

The Compatibility Cartridge solves an incompatibility caused by products that change the PCjr's family ID byte to the ID byte of a true IBM PC. This problem causes the PCjr to reject every keypress with two beeps.

DOS 5.00 Booting Problem

The Compatibility Cartridge will allow IBM and Microsoft DOS 5.00 to load and run on the PCjr without having to perform special modifications to the software. Normally, DOS 5.00 would display a black screen and halt when booted.

DOS 5.00 Built-in Command Bug

The Compatibility Cartridge resolves a DOS 5.00 bug that causes non-sense to be printed to the screen when a built-in command is entered. Built-in commands are found in devices that use ROM such as cartridges, the jrExcellerator, and sidecars.

Digital Research DR-DOS 6.00 Booting Problem

The Compatibility Cartridge allows Digital Research's DR-DOS 6.00 operating system to load and run on the PCjr. DR-DOS will not load without the Compatibility Cartridge installed as it causes the system to hang during the loading process.

Windows 3.0 Compatibility

Microsoft's Windows 3.0's CGA video driver writes directly to video hardware I/O registers that do not exist on the PCjr. As a result, it is not possible to run multiple DOS applications. The problem often appears as lines running vertically across the screen after using the Ctrl-Esc or Alt-Tab keys to switch between DOS

programs. With the Compatibility Cartridge installed, the proper video mode is selected.

Floppy Drive Controller Address Difference

Programs that test for a math coprocessor sometimes corrupt PCjr disk drive information. This problem can cause a variety of PCjr disk drive related problems including "Abort, Retry, Ignore" messages.

"High Rollers" and "Alf" (Box Office Software) and "Star Trek The 25th Anniversary" (Interplay) are examples of programs which experience this problem. A characteristic symptom of this problem is that the computer displays a message which indicates a drive error has occurred, even though no drive activity has taken place.

With the Compatibility Cartridge installed, the drive will automatically reset and retry before it allows DOS to display an error message.

Experienced users may find that these "silent retries" may cause DOS to take slightly longer to display normal disk drive error messages. For this reason, this feature can be disabled by using jrConfig's /O1 option.

NMI Service Routine Bug

The NMI routine is a very important routine because the PCjr uses it to process keyboard information. Any time you press a key while running an application program, the program momentarily pauses and allows the NMI routine to process the keyboard information.

Once the keyboard information has been processed, the PCjr passes control back to the application program and permits the program to continue.

Unfortunately, certain programs are unable to restart. When this happens, the PCjr "hangs", requiring that you reboot your computer.

The Compatibility Cartridge's new NMI routine corrects a very serious bug which concerns reliability. Without the cartridge installed, the PCjr enables all interrupts any time a key is pressed! This problem will cause a program to crash if you are running a program which has disabled interrupts for a reason. As soon as you press a key, interrupts are turned back on, and the system suddenly hangs!

In addition, the new NMI routine requires significantly less overhead and minimal stack requirements. As a result, PCjr users who install the cartridge will rarely, if ever, experience keyboard problems which cause their system to hang! Drastically improved reliability can be demonstrated by running "Astro-Grover" (CTW), "dBase III +" with multiple databases open (Borland), and "Prodigy" (IBM and Sears).

Keyboard Beeping Problem Solved

A bug in the PCjr's BIOS causes certain highly sensitive PCjrs to randomly beep and reject keypresses. This problem can occur in any PCjr, although it is most common in PCjrs which have been expanded to include an accelerator board.

The Compatibility Cartridge replaces the BIOS routine which includes the annoying bug, thereby completely eliminating the beeping problem.

When this problem was first identified, PC Enterprises replaced and distributed the FIXBEEP program which also eliminates this problem. In addition, a revision of our jrExcellerator added FIXBEEP as a

built in command. The Compatibility Cartridge has FIXBEEP built into its Level 1 patch routines, making other versions of FIXBEEP unnecessary.

Important Note for jrExcellerator Users:

DO NOT ATTEMPT TO USE THE FIXBEEP PROGRAM WITH THE COMPATIBILITY CARTRIDGE INSTALLED.

The Compatibility Cartridge automatically prevents diskette versions of FIXBEEP from running, although the cartridge can not prevent you from running FIXBEEP when it is available as a jrExcellerator built in command. With the Compatibility Cartridge installed, the FIXBEEP corrections are applied automatically as part of the Level 1 patches. Be sure you do not have FIXBEEP in your AUTOEXEC.BAT file. If so, remove it before installing the Compatibility Cartridge.

INSTALLING THE SOFTWARE

To install the Level 2 patches, you must first be using jrConfig version 3.02 (or later) memory management software. If you are not using jrConfig v3.02 (or later), install it by adding the line
DEVICE = JRCONFIG.SYS as the first line in your CONFIG.SYS file. Detailed installation instructions can be found in the JRCONFIG.DOC file (Refer to Appendix A for brief installation instructions).

The latest version of jrConfig is the most compatible and useful PCjr memory management software available. There are no known disadvantages to using jrConfig in place of any other memory management software.

USING THE CARTRIDGE

To install the cartridge, power off your PCjr and insert the cartridge into any available cartridge slot. When you power on your computer you should see the PC Enterprises Compatibility Cartridge copyright message and the Level 1 patches will be installed automatically.

After the Level 1 patches install the PCjr will load DOS in a usual manner.

The Level 2 patches will be installed automatically if you are using jrConfig version 3.02 or later.

The Fn key is used in place of the Alt key to generate special characters with the PCjr 62-key keyboard. The new keyboard mapping affects the characters printed on the PCjr 62-key keyboard in blue. The table below shows precisely the new keypress and their resulting characters.

Old Keypress	New Keypress	Character
Alt [Fn [
Alt]	Fn]	~
Alt '	Fn '	'
Alt /	Fn /	\

Special New Key Combinations

Two new keypresses have been added which more closely simulate special keys on a PC's full-sized keyboard. Pressing Fn- Caps Lock will give the equiva-

lent of pressing the "5" key found on the PC's numeric keypad. The Fn-. combination will produce the equivalent of pressing the "*" key on the PC's numeric keypad. Please note that on the PC, pressing Shift-* will invoke the PrtSc (print screen) feature. Pressing Shift-Fn-. is the Compatibility Cartridge's equivalent of this key combination.

On-Screen Help

In order to get immediate help while using the cartridge, simply enter the command:

COMPHELP

at the DOS prompt. The COMPHELP screen displays a two page summary of the new keyboard functions and jrConfig /O options.

AUTOMATIC FEATURES

Nearly all of the cartridge's features are automatic and require no intervention from the user allowing the cartridge to be completely effective for advanced users as well as novice and casual PCjr users.

If you encounter an "ERROR G" please refer to the "COMPATIBILITY" section of this manual.

MANUAL FEATURES

Although most compatibility features install automatically, manual intervention is required to correct certain problems that show up when an application directly accesses the computer's hardware.

Manual compatibility features are activated by pressing special key combinations. These new key combinations permit you to manually select the audio and video mode of your choice, reset the PCjr floppy disk drive controller, and apply a DOS patch to let the PCjr work better with products that change its ID byte.

Ctrl-Alt-R [RESET]

Resets the video, audio, and diskette drive hardware.

To activate this feature press and hold the Ctrl and Alt keys, then press the R key. Ctrl-Alt-R will allow the PCjr to recover when problems occur which concern the floppy diskette drive, or the video or audio mode.

A disk drive problem that might require a reset, will appear as an "I/O error" or "Abort, retry, ignore?" error.

A video mode problem typically appears as non-sense covering the screen while the program continues to run without error.

An audio mode problem might appear as steady noise coming from the PCjr's external speaker, or no sound at all.

Ctrl-Alt-A [AUDIO]

Selects the sound source played through the PCjr's external speaker.

To activate this feature press and hold the Ctrl and Alt keys, then press the A key. Each time you press Ctrl-Alt-A the next sound source is selected. Pressing this combination five times causes the PCjr to return to the original source.

The PCjr has four sound sources, although only one can be selected at a time. The four sources are: PC-compatible internal beeper, cassette input, external input, and PCjr Complex Sound Generator.

The PCjr's PC-compatible internal beeper (1-voice sound) is a sound source that comes standard on all IBM PCs and compatibles.

The cassette input is used if you currently have a cassette recorder to store and retrieve data. This input is also used for Tandy 4-voice sound if your PCjr has received the PCE Tandy Sound Modification.

The external input is used if you have a PCE Game-Master sidecar or IBM Speech Attachment installed. If you have a Game-Master sidecar installed, use Ctrl-Alt-A to play Game-Master 11-voice arcade quality sounds through your PCjr's external speaker. You

should **never** need Ctrl-Alt-A to play sounds from the IBM Speech Attachment since programs designed for the IBM Speech Attachment will know to automatically select the external input.

When the Complex Sound Generator input is selected any sound coming from the Complex Sound Generator will be heard. The PCjr's Complex Sound Generator is capable of producing PCjr 3-voice sounds. Often programs that are designed to use the PCjr's Complex Sound Generator will automatically select it, although Tandy software will almost always require using this combination to hear Tandy sound.

To hear Tandy sound, some software requires a Tandy sound option be specified. In these cases, be sure to select Tandy sound for any program that offers the option.

With the program running, cycle through each audio mode by pressing Ctrl-Alt-A to find the audio mode that plays the best music.

Ctrl-Alt-V [VIDEO]

Selects the video mode to be displayed.

Press and hold the Ctrl and Alt keys, then press the V key. Each time you press Ctrl-Alt-V, the next available video mode is selected.

When a program can not be used on a PCjr because the screen is blank or filled with non-sense, the problem is often that an improper video mode has been selected. Pressing Ctrl-Alt-V changes the current video mode and allows you to continue running the program.

Each time you press the Ctrl-Alt-V combination, the computer will select the next available video mode. The number of different video modes that can be selected will vary according to which modes are available.

Once you have cycled completely through all the available video modes, the cartridge returns the PCjr to the video mode you started with.

NOTE: *If you already have the Tandy 16-color modification, use the /V32 option of jrConfig and specify to your program that you are using a Tandy video adapter.*

Text Modes

- 0 for 40 x 25 B/W
- 1 for 40 x 25 Color
- 2 for 80 x 25 B/W
- 3 for 80 x 25 Color

Graphics Modes

- 4 for 320 x 200 4 Color
- 5 for 320 x 200 B/W 4 Shades
- 6 for 640 x 200 B/W 2 Shades
- 7 is not a valid mode

PCjr Enhanced Graphics Modes

- 8 for 160 X 200 16 Color
- 9 for 320 X 200 16 Color *
- A for 640 X 200 4 Color *

* These video modes are only available when at least 32KB is used for the video buffer.

This feature is very important because one hardware difference which causes incompatibilities concerns

3D8h and 3D9h which control the video state. These addresses (3D8h and 3D9h) do not exist on the PCjr. Programs which use these registers normally set the video mode then continue on. When these programs are run on a PCjr, the video mode never gets set properly. Often the screen may be blank, or it may display non-sense. Compatibility Cartridge users can now run these by pressing the Ctrl-Alt-V combination to search through each video mode until the program appears clearly on the screen. Any time you encounter an incompatibility which causes the screen to go blank or become filled with non-sense, use the Ctrl-Alt-V combination. This will cause all other available video modes to cycle. Keep pressing Ctrl-Alt-V until the proper screen appears.

This feature will prove especially useful to those who also have the Tandy modification installed on their PCjr system board.

As an example, the programs "Where in the World is Carmen SanDiego" and "Where in the USA is Carmen SanDiego" both normally run in 4-color modes. When started with the /TGA! option, 16-color operation is now possible when Ctrl-Alt-V is used.

Ctrl-Alt-N [NO BLINKING]

Disables blinking.

To activate this feature press and hold the Ctrl and Alt keys, then press the N key. You will only need to use this key combination if you booted using the jrConfig /O or /O3 options. Booting your computer without the /O and /O3 option will disable the blinking problem automatically.

Ctrl-Alt-I [ID BYTE]

Allows built-in commands to work when using a product that changes the PCjr's family ID byte.

Software can always detect that it is running on a PCjr by checking the computer's family ID byte.

The Racore PC ID Cartridge, PCE Configuration Cartridge, and PCE Display-Master cartridge all change the PCjr's ID byte to that of an IBM PC.

Unfortunately, changing the PCjr's ID byte has an undesirable side-effect. If DOS finds the ID byte of a PC, DOS will not check for built-in commands because built-in commands do not exist on a true IBM PC. Built-in commands are found in ROM devices provided on cartridges, sidecars, and the jrExcellerator speed-up board. Entering a built-in command with the PCjr's ID byte changed therefore produces a "Bad command or file name" message even when the built-in command is present.

The Ctrl-Alt-I key combination will allow built-in commands to be recognized. To activate this feature press and hold the Ctrl and Alt keys, then press the I key.

With Ctrl-Alt-I, the Compatibility Cartridge will force DOS to look for built-in commands regardless of the ID byte. Keep in mind that you should always press this key combination before you enter a built-in command at the DOS prompt. It is not necessary to press the Ctrl-Alt-I keys before each command is entered, only before those which you know are built into a cartridge, jrExcellerator, or sidecar.

If the Compatibility Cartridge finds that your DOS needed to be patched and successfully patches it, you will hear a beep from the CPU. If no beep is heard, it means DOS did not need to be patched.

Alt-Fn-C [CLEAR]

Clears any existing Function and Num Lock state.

To activate the CLEAR function, press and hold the Alt key, then press and release the Fn key followed by the C key. If you are using the Function Lock and/or Num Lock functions and loose track of whether each lock mode was last toggled on or off, press Ctrl-Alt-C to turn both keyboard lock states off.

Alt-Fn-F [FUNCTION LOCK]

Toggles the Function Lock keyboard state.

To activate the FUNCTION LOCK function, press and hold the Alt key, then press and release the Fn key followed by the F key. This new Function Lock state enables the function mode for all, but the Q (Pause), E (Echo), P (PrtSc), S (ScrLk), B (Break) keys. This will allow you to use the Function Lock feature for the F1, F2, F3... keys while still being able to type words. This is particularly useful with programs like "WordPerfect" which make extensive use of the Function keys.

Alt-Fn-N [NUM LOCK]

Toggle the improved PCjr Num Lock mode on and off.

To activate the NUM LOCK mode, press and hold the Alt key, then press and release the Fn key followed by the N key. The Num Lock mode operates exactly as before with some bugs corrected. As a result, the new NUM LOCK routine provides much greater PC software compatibility. In addition, improved oper-

ation will be noticeable when using the number keys on a wide variety of keyboards.

One new option with the latest version of jrConfig is its /O option. The /O option can be used with the "DEVICE = JRCONFIG.SYS" line in your CONFIG.SYS file. It will allow you to manually disable selected features of the Compatibility Cartridge.

NOTE: *If you do not know of any reason to disable features of the Compatibility Cartridge, then do not use any of the /O options!*

The table below shows the different options needed to disable features of the cartridge:

/O will not install any Level 2 patches.

/O1 will turn off added floppy diskette drive silent retries. This is the feature that corrects diskette drive problems caused by programs that check for a math coprocessor.

/O2 turns off the new Ctrl-Alt-key combinations.

/O3 restores the original PCjr default that allows blinking in text modes.

PC Enterprises does not recommend using any of these options for normal use. By not using any /O options, your PCjr will gain the full compatibility benefits of the cartridge. The /O option is designed to allow the Compatibility Cartridge to be as flexible as possible for advanced users.

APPENDIX A: INSTALLING JRCONFIG MEMORY MANAGEMENT SOFTWARE

Once jrConfig has been installed, and any other memory management software is removed (i.e. PCJRMEM.COM or CONPCJR.EXE), simply plug in the Compatibility Cartridge.

Below is an excerpt from the jrConfig manual (JRCONFIG.DOC file) that describes an easy way to install jrConfig v3.02 if you already use an older version of jrConfig:

It is possible to upgrade from an earlier version of JRCONFIG.DSK or JRCONFIG.NRD without changing your CONFIG.SYS file. To do so use the DOS COPY command.

First insert the diskette which contains JRCONFIG.SYS in drive A, then at the A prompt type:

```
COPY A:JRCONFIG.SYS B:JRCONFIG.DSK
```

or

```
COPY A:JRCONFIG.SYS B:JRCONFIG.NRD
```

When asked to insert the diskette for drive B: insert the DOS diskette you normally use to start your system. Once you see the successful "1 File(s) copied" message, use Ctrl-Alt-Del to reboot your computer.

Below is an excerpt from the jrConfig manual (JRCONFIG.DOC file) that describes an easy way to install jrConfig for the first time. If you would like more

information about the usage of jrConfig, refer to your jrConfig documentation (JRCONFIG.DOC file).

Format a new disk using the /S parameter. The command you'll want to enter is:

FORMAT B: /S

Refer to the DOS manual if you are not sure how to use the FORMAT command.

Next, insert the diskette which contains the JRCONFIG.SYS and LOWRD.SYS programs into your drive. We're about to use the COPY command to copy these programs onto the disk you just formatted. The separate commands to copy the jrConfig and LOWRD.SYS programs are:

**COPY JRCONFIG.SYS B:/V
COPY LOWRD.SYS B:/V**

If you are not sure how to use the COPY command please refer to your DOS manual.

Finally, we need to create a CONFIG.SYS file. A CONFIG.SYS file is a text file that DOS looks for when it first loads. A CONFIG.SYS file is simply a list of device drivers and other configuration commands that you want DOS to load. To create a CONFIG.SYS file enter the command:

COPY CON B:CONFIG.SYS (then press ENTER).

The cursor will go to the next line, but nothing else will happen. Now is when you type each line of the configuration file. After each line press the ENTER

key. If you make a mistake you will need to start all over. If you need to start over, press Ctrl-C (press and hold the Ctrl key then press the C key). Enter the command:

DEVICE = JRCONFIG.SYS /R (then press ENTER).

A space must appear between JRCONFIG.SYS and the first option.

Spaces between command line options are not required. A space before the first option is always required. You should never type a space around the period (this is because a space can not be part of a file name). Delimit each parameter option with a slash (/) or a dash (-). We recommend the / character as this is the character normally used with other PCE software and with newer versions of DOS.

After the jrConfig line has been entered, you can add as many lines to your CONFIG.SYS file as you need, however when you are all done you must insert an End-Of-File marker as the last line in the file. An End-Of-File marker must be placed on its own line. To do this first make sure you are on a new (blank) line then press Function 6 (press the Fn key then press the 6 key). You'll see a ^Z appear then press ENTER.

Feel free to experiment. Instead of typing the above line exactly the way it is shown try using other options, but remember: the CONFIG.SYS file you create will only be read during the process in which DOS is loaded. In order to re-load DOS and read your new CONFIG.SYS file you can perform a warm boot (Ctrl-Alt-Del).

If you ever want to see what's in your CONFIG.SYS file use the DOS TYPE command. To do this type:

TYPE CONFIG.SYS (then press ENTER).

For example, you can use the line:

DEVICE = JRCONFIG.SYS /C /D2 /E3 /G1 /K /L /R /S360 /V32 /Y1

This one line will:

- Recognize all of your memory up to 640KB (no option needed)
- Operate in 80 column color mode (no option needed)
Turn the keyboard click feature on (/C)
- Tell DOS you want it to control two floppy disk drives (/D2)
- Permit you to have up to 128 items in a ramdisk (/E3)
Recognize your PCE jrRom-Clock (/G1)
- Set up your keyboard in Caps Lock mode (/K) Look for memory above 640KB (/L)
- Assign a drive letter to the ramdisk (/R)
- Set the size of the ramdisk to 360KB (/S360)
- Allow you to run 16-color PCjr and Tandy software (/V32)
- Install your Keyboard Buffer Cartridge (/Y1)

It is also important to note that many software packages require you use the BUFFERS and/or FILES commands in order to operate, or in order to operate more efficiently. These command must also be added to your CONFIG.SYS file.

Here's an example of a CONFIG.SYS file used to set up a 360KB ramdisk on a PCjr that has a PCE hard drive using Disk Manager Software:

BUFFERS=8

FILES=10

DEVICE=JRCONFIG.SYS /V32 /G1 /Y1 /L /S360

DEVICE=DMDRVR.BIN

DEVICE=LOWRD.SYS

The DMDRVR.BIN utility is provided with Disk Manager Hard Disk Drive Software. If you do not have a hard drive, or if you do not use Disk Manager with a hard drive, do not type this line.

APPENDIX B: REPORTING A PROBLEM

PC Enterprises is determined to totally eliminate PCjr compatibility problems. Please use this form to report any problems you experience.

Submit this form along with a DISKCOPY of the diskette you use to start your system.

Mail the completed form to:

**PC Enterprises, Software Problem Report, PO Box 292,
Belmar NJ 07719.**

SOFTWARE PROBLEM REPORT

Your Name _____
Address _____
City _____ State _____ Zip _____
Today's date: _____

Program Name: _____
Publisher: _____
Program version number (or file size and date): _____

REVISION number of Compatibility Cartridge
(found on UNDERSIDE of cartridge): _____

Please check one:

- ☐ I could not get the program to run at all
☐ The program started to run but did not run correctly
☐ I'm submitting a newer version of a program

Please provide an explanation of the problem. We need enough information to duplicate the problem on our PCs.

Which brand of DOS
(ENTER: VER to determine MS, PC, DR-DOS, etc): _____
Which version number of DOS are you using: _____

Please tell us what is in your CONFIG.SYS and AUTOEXEC.BAT files. Please include all information exactly as it appears in your files. Please do not leave any room for error by trying to remember or by excluding any files! If you prefer, you could provide a print out as an alternative.

CONFIG.SYS

AUTOEXEC.BAT

_____	_____
_____	_____
_____	_____
_____	_____

Please describe your system's hardware configuration:

Memory Amount: _____

List brand(s) of memory expansions:

Floppy Drives

Number of floppy disk drives installed: _____

Indicate capacities: 360KB 720KB 1.2MB 1.44MB 2.88MB 21MB

Hard Drives

Number of hard drives: _____

Brand of hard drive(s): _____

Are you using the PCE SCSI Host Adapter? Yes No

If yes, indicate BIOS version numbers displayed when you first turn on your computer.

PCE BIOS _____ (the first BIOS message)

Seagate BIOS Version _____

Future Domain BIOS Version _____

List any cartridges installed at the time you experienced the problem:

Do you have a jrExcellerator? Yes No

Does the problem appear in the jrExcellerators PC or PCjr memory mode?

____ PC ____ PCjr ____ Both

Please indicate the jrExcellerator BIOS version number
(displayed at BOOT time): _____

**NOTE: Compatibility problems can be caused by the FASTKEY program.
Be sure to read PC Enterprises' Application Note AP05 for solutions.**

Do you have a Display-Master VGA sidecar? Yes No

REVISION number of Display-Master Cartridge

(found on UNDERSIDE of cartridge): _____

The PCjr's system board BIOS date

(displayed by jrConfig v3.0 during boot up): _____

When you first turn your PCjr on, you will see a D: and an L: displayed in the lower right of the screen. Please indicate the letters displayed adjacent to the D: and L:

D: _____ L: _____

What type of monitor are you using? _____

Which video modes show the problem:

Normal mode _____

(Display-Master Cartridge Not Installed): _____

PCjr-CGA Display-Master Modes: _____ CGA _____ EGA _____ VGA

Please list any other hardware you have:

If this form results in our improving any of our products or user support diskettes we may wish to send you a free Compatibility Cartridge update.

APPENDIX C:

APPLICATION SOFTWARE COMPATIBILITY LIST

The Compatibility Cartridge has been tested with almost every software product we could find which previously would not work correctly on a PCjr.

While every attempt has been made to insure the accuracy of this list, software publishers continually update, revise, and release of new versions of their software. As a result, PCE can not guarantee the accuracy of this list.

The most important thing to remember is that the Compatibility Cartridge resolves problems by changing the way the PCjr works. As a result, most future software, including software which does not appear on this list, can normally be expected to work correctly with the Compatibility Cartridge installed.

- "\$100,000 Pyramid" Box Office Software
- "Airborne Ranger" Microprose
- "Alt" Box Office Software
- "Astro Grover" Childrens' Television Workshop
- "Big Bird's Special Delivery" Childrens' Television Workshop
- "Chessmaster 2100" Software Toolworks
- "Chessmaster 2200" Software Toolworks
- "Crime Wave" Access
- "Designasaurus" Britanica Software
- "DOS 2.10 through DOS 5.00" IBM Corporation
- "Double Dragon" Arcadia
- "DR-DOS 6.00" Digital Research
- "Ernie's Magic Blocks" Childrens' Television Workshop
- "Ernie's Magic Shapes" Childrens' Television Workshop
- "F-19 Stealth" Microprose
- "Gunship" Microprose
- "High Rollers" Box Office Software
- "Mickey Mouse Jigsaw Puzzle" Disney Software
- "NFL Challenge"
- "Number Munchers" The Learning Company
- "Paperboy" Mindscape
- "Patton vs. Rommel" Electronic Arts

- "PC Tools" Central Point Software
- "Pirates of the Caribbean" Microprose
- "Prodigy" IBM/Sears
- "Quick C" Microsoft
- "QuickBASIC" Microsoft
- "Quicken" Intuit
- "Red Storm Rising" Microprose
- "Sesame Street Print Kit" Childrens' Television Workshop
- "Sidekick" Borland
- "Spy Hunter"
- "Star Trek The 25th Anniversary" Interplay
- "Starflight" Electronic Arts
- "Superkey" Borland
- "Super Solvers Challenge of the Ancient Empires!" The Learning Company
- "Super Solvers Midnight Rescue!" The Learning Company
- "Super Solvers Out Numbered!" The Learning Company
- "Super Solvers Treasure Mountain!" The Learning Company
- "Symphony" Lotus Corporation
- "Think Quick" The Learning Company
- "Where In The USA Is Carmen Sandiego?" Broderbund *
- "Where In The World Is Carmen Sandiego?" Broderbund *
- "Windows 3.0" Microsoft
- "Word Munchers" The Learning Company
- "WordPerfect" WordPerfect Corporation

* These programs are improved so they may run using 16 colors with a Tandy 16-color modification. Normally these programs require a PCE Display-Master to run in 16-color graphics mode.

Central Point Software's "PC Tools" will run without the PCjr blinking problem once installed. The PC Tools install programs may fail to work on some PCjrs. In this situation, it is possible to install PC Tools on another computer and copy it to your PCjr.

DAMAGED EQUIPMENT

We carefully pack and inspect all products before leaving our facility. Insurance is paid to the carrier who accepts **FULL** responsibility for safe delivery. If your package arrives in a damaged condition, obvious or concealed, you must immediately report the damage to the carrier. Failure to do this in a timely manner will result in the carrier and or PC Enterprises refusing to honor the claim. The carrier will provide any additional information necessary for you to be reimbursed for damages. The equipment must not be returned to us without prior approval by PC Enterprises and release from the carrier.

DEFECTIVE EQUIPMENT

This policy pertains to equipment which does not work correctly, although the equipment does not appear to have been damaged during transit.

If you experience a problem with any PC Enterprises product, you should call or write to PC Enterprises. If it is determined that the merchandise should be returned to us, you will be given a Return Authorization Number (RA Number). Anything Returned Without an RA Number Will be Refused and Returned to you Without Exception!

We'd Like to Know

We are always interested in your comments concerning our products and manuals. If you have any suggestions for improvements we would like to hear them. Please forward your comments to:

**About Your Manual, PC Enterprises, PO Box 292
Belmar, NJ 07719**

LIMITED WARRANTY

PC Enterprises warrants the original purchaser of this product that it will be in good working order for the one year period from the date of purchase from PC Enterprises or authorized dealer. Should this product fail to be in good working order at any time during the warranty period, PC Enterprises will, at its option, repair or replace the product at no additional cost except that as stated below. Repair parts and replacement products will be furnished either reconditioned or new. All replaced parts and products become the property of PC Enterprises. This warranty does not include service to repair damage to the product as a result of misuse, disaster, accident, or modification of the product.

Warranty service may be obtained by shipping the product US Mail to PC Enterprises and providing proof of purchase date. You agree to insure the product or assume the risk of loss or damage in transit, to prepay shipping charges and to use the original shipping container or equivalent. Contact PC Enterprises prior to returning any products for repair to receive a Return Authorization (RA) number. Any products returned without an RA number will be indiscriminately refused.

All express and implied warranties for this product including the warranties of merchantability and fitness for a particular purpose, are limited in duration to the one year period from the date of purchase, and no warranties, whether express or implied, will apply after this period. Some states do not allow limitations on how long an implied warranty lasts, so the above may not apply to you.

If this product is not in good working order as warranted above, your sole remedy shall be repair or replacement as provided above. In no event will PC Enterprises be liable to you for any damages, whether incidental or consequential, arising out of the use of, or inability to use such product. Some states do not allow the exclusion or limitation of incidental or consequential damages for consumer products, whereas the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state. Modification or other disassembly of the PC Enterprises' product without written permission from PC Enterprises will void this warranty.

This warranty only applies to products marketed and sold by PC Enterprises as new products.

Notes:

Notes: