USER MANUAL

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Version 2.1
E-15-129

Stereo Sound & CD-ROM

**The information in this document is subject
to change without notice**

FEDERAL COMMUNICATION COMMISSION
RADIO FREQUENCY INTERFERENCE STATEMENT

<u>**Warning:**</u> This equipment has been certified to comply with the limits for Class B computing device pursuant to Subpart J of Part 15 of FCC Rules Only peripherals (computer input output devices, terminals, etc., with shielded type interface cables) certified to comply with the Class 13 limits may be attached to the computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

INSTRUCTIONS TO USER

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instinctions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device lll accordance with the specification in Subpart J of Part 15 of I CC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However there is no guarantee that will not occurring a particular installation. If this equipment does cause interference to radio and 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 the receiving antenna.
* Change the orientation of the computer.
* Move the computer away from the receiver.
* Plug the computer into a different outlet so the computer and receiver are on different branch circuits.

If these attempts are unsuccessful, install one or all of the following devises;

1. Line isolation transformers.
2. Line filters.
3. Electro- magnetic shielding.

If necessary, the user should consult the dealer or an experienced radio / television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful : " How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402
Stock No. 004-000-00345-4.

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Table of Contents

Stereo Sound & CD-ROM

1. Description

This is a 16-bit PC stereo souud combined with CD-ROM interface card that lets you add a CD-ROM drive and stereo audio to your personal computer system.

1.1 Features

- Programmable sampling rate from 4 KHz to 44.1 KHz.
- Record, Compress and Playback at 8 or 16 bit resolution.
- Audio D/A and A/D conversion:
  - 32 levels FIFO, 16-bit transfer
  - 64 levels FIFO, 8-bit transfer
- Programmable volume control for both record and playback.
- Selectable standard ADPCM or ESPCM for low bit rate compression.
- Enhanced YAMAHA OPL3 16-bit stereo synthesizer.
- 4 operators, 20 voice channels.
- 5 channel mixer
- Individually or simultaneously volume control for all mixer sources.
- Output mixing for Line-In, Music Synthesizer, CD-Audio, Wave and Microphone.
- Input mixing for Line-In, Music Synthesizer, CD-Audio and Microphone.
- Built-in power amplifier.
- Standard UART MIDI interface.
- Standard IBM PC joystick interface.
- Auto-sensing different manufacturer's CD-ROM drive. No jumper setting needed.
- Support Panasonic CR-522-B AT-BUS CD-ROM drive.
- Support daisy chain up to four Panasonic CR-562-B CD-ROM drives.
- Support SONY CDU-31A/CDU-33A CD-ROM drive.
- Support Mitsumi CRMC-LU005S/CRMC-FX001D AT-BUS CD-ROM drive.
- Transfer rate up to 2M Bytes per second.
- Multiple I/O port addresses selectable.

1.2 Card Figure
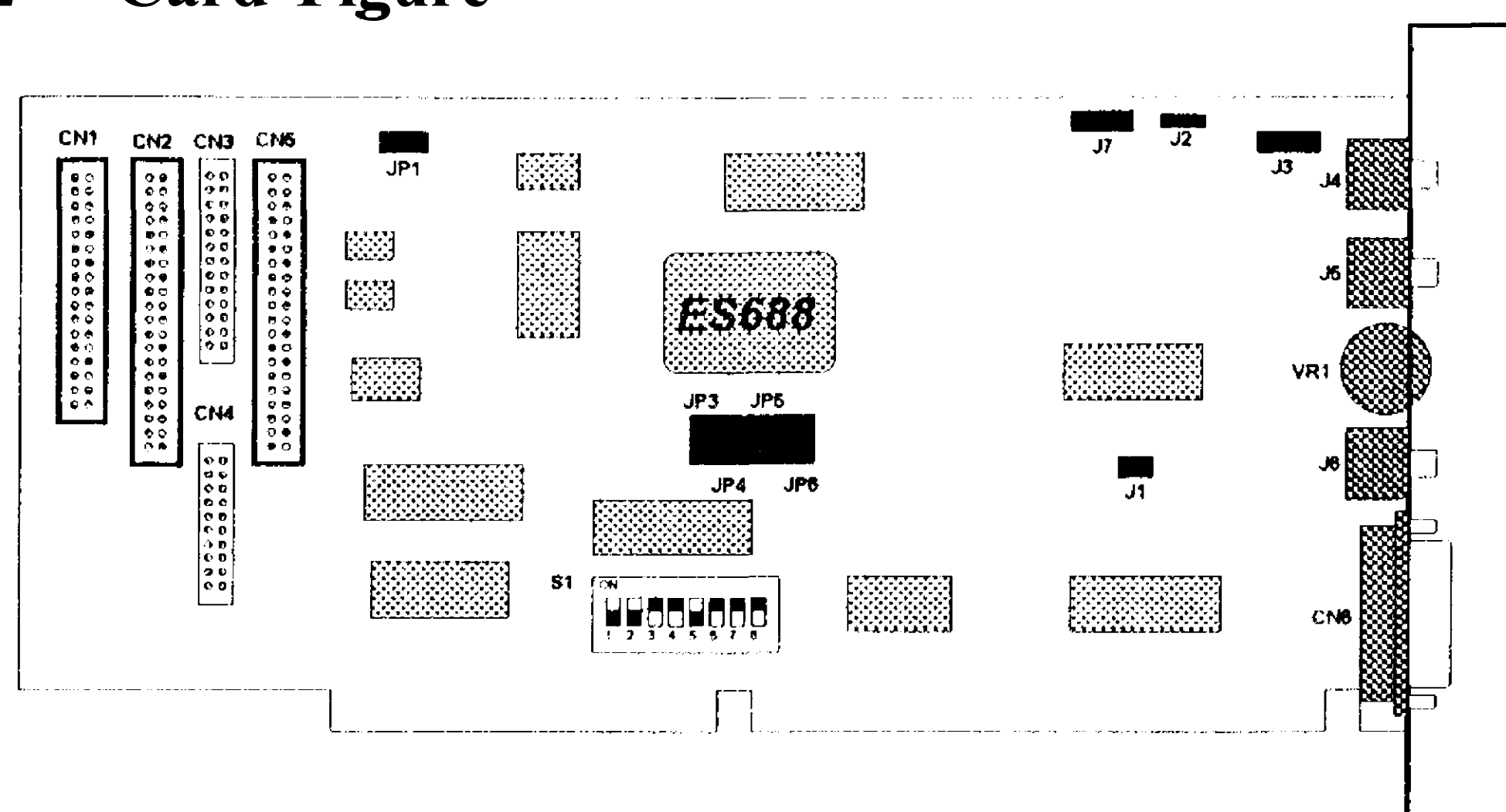
1.3 Connectors

CN1	34 pin connector for SONY internal CD-ROM.
CN2	40 pin connector for Mitsumi internal CD-ROM.
CN3	26 pin connector for Panasonic external CD-ROM.
CN4	20 pin connector for SONY external CD-ROM.
CN5	40 pin connector for Panasonic internal CD-ROM.
CN6	15 pin D-SUB connector for JOYSTICK/MIDI.
J1	Connector for PC Speaker In.
J2	Connector for Panasonic/Mitsumi CD-ROM Audio in.
J3	Connector for PC Speaker Out.
J4	3.5mm Phone Jack for MIC IN.
J5	3.5mm Phone Jack for LINE IN.
J6	3.5mm Phone Jack for SPEAKER OUT.
J7	Connector for SONY CD-ROM Audio in
VR1	Thumb Wheel for VOLUME CONTROL.

• These connectors are for proprietary external CD-ROM drives only. Please call your dealer for product availability.

1.3.1.Audio Connector:

32: **Mitsumi/Panasonic**
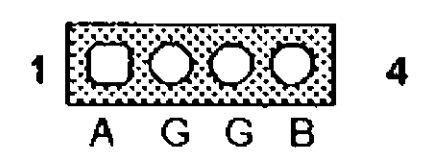
1 [figure: J2 connector] 4
A G B G

J2

A : RIGHT CHANNEL SIGNAL

G . GROUND

B : LEFT CHANNEL SIGNAL

J7: SONY

1 [figure: J7 connector] 4
A G G B

J7

A : RIGHT CHANNEL SIGNAL

G : GROUND

B : LEFT CHANNEL SIGNAL

1.4 Switch

Si   **CD-ROM I/O PORT ADDRESS**

JUJMPERonSWl PORT ADDRESS	1	2	3	4	5	6	7	8
CD-ROM DISABLE	ON	ON	ON	ON	ON	ON	ON	ON
200H	OFF	ON	ON	ON	ON	ON	ON	ON
210H	OFF	ON	ON	ON	ON	OFF	ON	ON
220H	OFF	ON	ON	ON	OFF	ON	ON	ON
230H	OFF	ON	ON	ON	OFF	OFF	ON	ON
240H	OFF	ON	ON	OFF	ON	ON	ON	ON
	OFF	OFF	ON	ON	ON	ON	ON	ON
310H	OFF	OFF	ON	ON	ON	OFF	ON	ON
320H (Factory Default)	OFF	OFF	ON	ON	OFF	ON	ON	ON
330H	OFF	OFF	ON	ON	OFF	OFF	ON	ON
340H	OFF	OFF	ON	OFF	ON	ON	ON	ON

• **Make sure the I/O port address selected is not already use by another peripheral device.**

1.5 Jumpers

JP1		**JOYSTICK port Enable/Disable.**
JP3		**Sound Enable/Disable.**
JP4		**Interrupt Request Selection for Audio.**
JP5	:	**I/O port address Selection for Audio.**
JP6	:	**Direct Memory Access (DMA) Selection for Audio.**

1.5.1 Jumpers Settings:

JP1
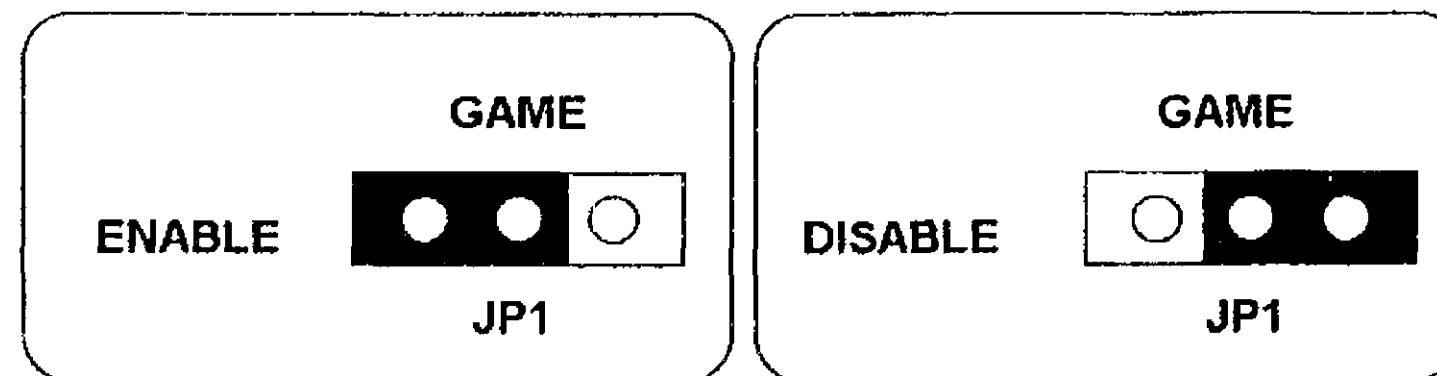
JP3 -6
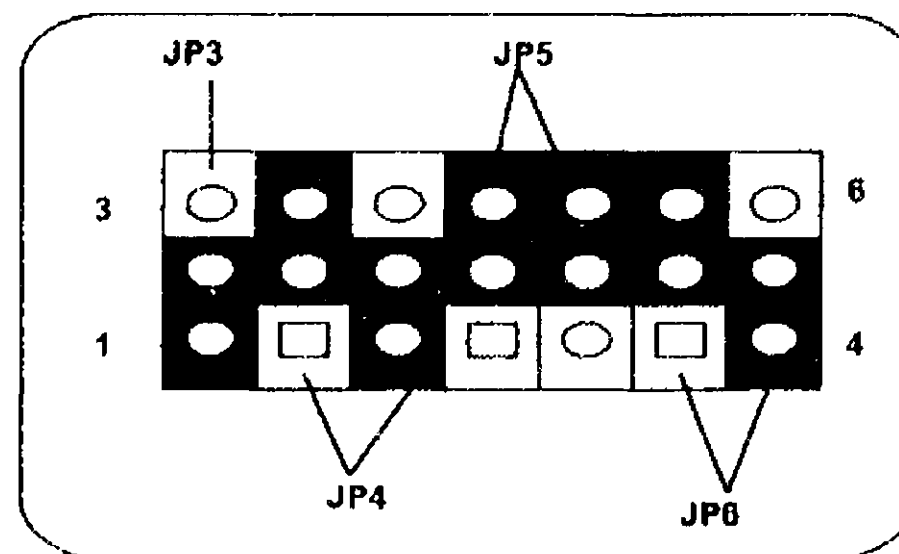
	1 - 2 CLOSE	2 - 3 CLOSE
JP3	AUDIO ENABLE	AUDIO DISABLE

JP4	IRQ9	IRQ5	IRQ7	IRQ10
JUMPER SETTING				

JP5	22X	23X	24X	25X
JUMPER SETTING				

JP6	NONE	DMA0	DMA1	DMA3
JUMPER SETTING				

2. Hardware Installation

2.1 Install the Stereo Sound and CD-ROM card

Step 1. Turn off the system and ail peripheral devices.

Step 2. Disconnect the power cord and all peripheral devices from the system.

Step 3. Remove the system cover, and identify an unused 16 bit slot.

Step 4. Setting the jumpers on the sound card if you would like to change the default settings from the factory. Note that makes sure the settings you selected arc correct otherwise we recommend it as the default settings.

Step 5. Unscrew the slot cover plate, plug in the sound card, and lighten it with the screw.

Step 6. If you have speakers or amplifiers, plug the cable into J6 jack on the back of the sound card.

If you do not need to connect a CD-ROM device to the sound card, disable CD-ROM I/O port by setting all the jumpers of \S1$^?$ to "ON" position. Put back the system cover, reconnect the system power cord and all peripheral devices. Check and make sure all connections are correct before you turn on the svstcm.

If you need to install a CD-ROM drive. Please follow the steps below:

2.1.1 Install an internal Panasonic CD-ROM drive

Step 7. Plug one end of the 40 pin flat ribbon cable into CN5 on the sound card. Pin 1 of the ribbon cable is usually denoted with a red stripe.

Step 8. Plug the other end of the 40 pin ribbon cable into the back of the CD-ROM drive, and connect the power plug from your system power into the CD-ROM drive power connector.

Step 9. Connect J2 on the sound card and the Audio output at the back of the CD-ROM drive. Make sure pin 1 of J2 is connected to the left most pin of the CD-ROM Audio output.

NOTE:

A standard Audio cable for the Panasonic drive has only 3 pins. Pin 4 of J2 thus will not used.

Step 10. Put back the system cover, reconnect the system power cord and all peripheral devices. Check and make sure all connections are correct before you turn on the system.

2.1.2 Install an internal Mitsumi CD-ROM drive

Step 7. Plug one end of the 40 pin flat ribbon cable into CN2 on the sound card. Pin 1 of the ribbon cable is usually denoted with a red stripe.

Step 8. Plug the other end of the 40 pin ribbon cable into the back of the CD-ROM drive, and connect the power plug from your system power into the CD-ROM drive power connector.

Step 9. Connect J2 on the sound card and the Audio output at the back of the CD-ROM drive. Make sure pin 1 of J2 is connected to the left most pin of the CD-ROM Audio output.

Step 10. Put back the system cover, reconnect the system power cord and all peripheral devices. Check and make sure all connections are correct before you turn on the system.

2.1.3 Install an internal SONY CD-ROM drive

Step 7. Plug one end of the 34 pin flat ribbon cable into CN1 on the sound card. Pin 1 of the ribbon cable is usually denoted with a red stripe.

Step 8. Plug the other end of the 34 pin ribbon cable into the back of the CD-ROM drive, and connect the power plug from your system power into the CD-ROM drive power connector.

Step 9. Connect J7 on the sound card and the Audio output at the back of the CD-ROM drive. Make sure pin 1 of J7 is connected to the left most of the CD-ROM Audio output.

Step 10. Put back the system cover, reconnect the system power cord and all peripheral devices. Check and make sure all connections are correct before you turn on the system.

3.   Other Options

If you would like to redirect the audio for the PC speaker to the external speakers attached to the sound card, please follow the steps below:

- •   Unplug the cable of the PC speaker from the PC speaker connector on the system Motherboard.

- •   Using the cable provided, connect J1 and the PC speaker connector on the system motherboard.

WARNING

There is no guarantee that this option works for all motherboards. If you run into difficulty, please consult your system manager or the manufacturer of your system motherboard.

In case you need to use the PC speaker as the only speaker for the sound card, please follow the steps below:

- •   Unplug the cable of the PC speaker from the PC speaker connector on the system Motherboard.

- •   Connect the cable of the PC speaker to J3 on the sound card.

NOTE

If you are currently using the PC speaker for the sound card and need to change to external speaker, make sure that the cable of the PC speaker is disconnected from J3 and reconnected to the motherboard.

4.   Software Installation

Before proceeding with audio and CD-ROM software installation, please check the software diskettes that come with the card.

CD-ROM Software - one diskette, labeled **"CD-ROM Devicc Driver & Audio Utility".** It includes device drivers and CD audio playback utilities for different types of CD-ROM drive. It also contains our easy-to-use general installation routine.

Audio Applications Software - 2 diskettes (disk #1, disk #2). All the audio device drivers and applications for Windows are included in these two diskettes.

Section 4.1 describes how to use our easy-to-use installation routine to install CD-ROM drive and audio device drivers,

Sections 4,2, 4,3, 4A, 4.5 contain information that would allow you to manually install the different type of CD-ROM device driver, or to optimize the performance of the CD-ROM drive,

4.1   Quick Installation

The diskette labeled **"CD-ROM Device Driver** & Audio Utility", contains a program named **INSTALL.EXE** under the root directory.

Please insert the diskette into the drive A or B. Assuming drive A is used, at the system prompt, type:

A:\install   [ENTER]

Follow the on screen instructions and you should be able to install the audio device driver, audio application software and CD-ROM device driver easily in a few minutes.

Upon completion of the installation routine, please remove all the floppy diskettes from your drive and restart the system. All the drivers you just selected will be loaded onto your computer.

In case of difficulty, consult Sees. 4.2 - 4.5 or Audio Applications manual for more information. Repeat the quick installation or manually install the driver.

4.2   Audio Applications Software Installation

The audio drivers and application software of the PC stereo sound are included in the diskette #1 and diskette #2. Please refer to the user manual **"Audio Applications"** that comes with this package for installing the Audio drivers and application software.

The following sections show you how to install CD-ROM device driver software and utility software (for playing music CD using your CD-ROM drive).

You need to go through the following sections to install the CD-ROM software only if you are installing a new CD-ROM drive*

If you are simply connecting an existing CD-ROM drive to our sound card with pre-installed device driver software, skip the following sections. You should be able to use your existing CD-ROM drive after it is physically connected to our card with the proper I/O address selected, (See Sec. 1-3)

4.3   Panasonic CD-ROM Software Drive Installation

The diskette labeled "CD-ROM Device Driver & Audio Utility", under the subdirectory **\CDROM\PANASONi,** contains the **Panasonic CD-ROM device driver** software and, **OPTIONALLY,** the **Microsoft MS-DOS CD-ROM Extension file,** i.e., MSCDEX.EXE Another subdirectory **MKEAUDIO** contains the **MKE audio utilities** in order for you to use the CD-ROM drive as an audio CD player. Please follow steps below to install the driver & utilities:

NOTE:
The file MSCDEX.EXE is not furnished unless the card is bundled with a CD-ROM drive supplied by us. Installing CD-ROM software using CDINSTL.EXE will fail without this file. You may obtain this file from your CD-ROM drive supplier, or, if you have DOS version 6.0 or up, obtain the file from the operating system. Once you secure the MSCDEX.EXE, you may copy this file to the subdirectory \CDROM\PANASONI, and then follow instructions manually or using install the CD-ROM software.

4.3.1   CD-ROM Device Driver Installation

Put the diskette into your floppy drive, change to drive A or B. At the system prompt, changes the subdirectory by entering:

> **A:\>cd \CDROM\PANASONI**   **[Enter]**
> **or**
> **B:\>cd \CDROMVPANASONI**   **[Enter]**

.depending 011 which drive you use. An installation routine CDINSTL.EXE has been provided to assist you installing the software. Assuming you are in A, enter:

> **A:\CDROM\P AN ASONI>CDINSTL**   **[Enter]**

This program will guide you step by step to setup CD-ROM device driver parameters. Please refer to the section below to learn more about how to change device driver parameters.

You may manually install the driver, by completing the following steps:

Step 1.   Use any text editor to add the following two lines to the file **"CONFIG.SYS"** under your boot hard disk root-directory (Drive C in general).

O   **Device=[drive:]\[path] CDMKE.SYS** *[/Didevice name]* **[/P:xxx]**
O   **LASTDRIVE =** *drive letter*

/Didevice name

> specify device driver name that is used by the Microsoft MS-DOS CD-ROM extension file MSCDEX. MSCD000 is the commonly used device driver name, when none is specified.

*/P*XXX*

> xxx is the I/O port address as set on SI of the sound card. The default is 320H.

/Last d   rive   letter

> Enter the proper drive letter name according to your system configuration. For example, if you already have 3 hard drives, use "f\ If this qualifier is not specified, the default used by DOS is "e".

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Step 2. Add the following line to the file "AUTOEXEC.BAT" under your boot hard disk root-directory (Drive C in general).

 O [drive:][path] MSCDEX *[/Didevice name]* **[/M:n] [/E] [/V] [/L** *i drive letter]*

NOTE:

The above command line in the autoexec.bat file should be placed entirely on one line.

[drive:] [path] MSCDEX.EXE
Specifies the location (drive and directory) of the MSCDEX.EXE file. The default setting is the CDROM directory of the boot drive

/Didevice name
Specifies the name of the CD-ROM drive (8 characters maximum). This must be identical to the device name specified in the device driver in the CONFIG.SYS file. For example:

O C:\CDROM\MSCDEX.EXE /D:MSCD000

[/M:n]
Specifies the number of sector buffers for temporary storage of the most recent disc data. For example to specify ten sector buffers you would use:

O C:\CDROM\MSCDEX.EXE /D:MSCD000 /M:10

The installation program will set this value to 10.
The default value is 4.

NOTE:

The greater this value , the better the CD-ROM drive will perform. However, each buffer uses about 2K of memory and specifying too many buffers may slow down computer operation or interfere with other programs which have large memory usage requirements. Using expanded memory (see the *ÍE* option in this section) or loading *MSCDEX.EXE* into high memory (refer to your MS-DOS Users Manual or Memoiy Manager Users Manual) may allow you to

specify a larger number of buffers to enhance CD-ROM performance and operate programs with large memory usage requirements simultaneously.

[/E]

Instructs the computer to use expanded memory, if available. For example:

O   C:\CDROM\MSCDEX.EXE /D:MSCD000 /E

Note that you must first load an expanded memory driver before using this option. If no expanded memory driver is load, the following error message appears:

Expanded memory not present or not usable

l/V]

Instructs the computer to display a summary of RAM allocation and expanded memory usage at booting. For Example, specifying:

O   C:\CDROM\MSCDEX.EXE /D:MSCD000 /V

will cause the computer to display memory information in the following format:

5556864	**bytes free memory**
0	**bytes expanded memory**
12752	**bytes CODE**
1712	**bytes static DATA**
12618	**bytes dynamic DATA**
27344	**bytes used**

[/L:drive letter]

Specifies the drive letter to be assigned to the first CD-ROM drive. Do not assign a letter already used by an existing drive or the computer will be unable to access the CD-ROM drive. For example, you might use:

O   C:\CDROM\MSCDEX.EXE /D:MSCD000 /L:f

Normally, the CD-ROM drive is assigned the next available drive letter on the computer after the floppy drives, hard drives, RAM drives, etc. Therefore you only need to use this option if it is necessary to assign a drive letter beyond the last letter in use.

Step 3,   Create a sub-directory **CDROM** under the root directory on your boot hard disk (drive C in general). Copy both files

CDMKE.SYS & MSCDEX.EXE from the subdirectory \CDROM\PANASONI 0l1 the floppy diskette to the subdirectory CDROM just created on your boot hard disk.

If you are installing the CD-ROM drive in a networked system, please consult your system manager or system setup for proper drive specifications in Step 1 to Step 3,

4.3.2   MKE Audio Utility Installation

To install the audio utility, you may insert the diskette to the drive that you selected. Then change to A or B drive, where the floppy diskette is in, by entering the following command at the system prompt:

O   C:\>A: [Enter]
O   A:\>cd \MKEAUDIO   [Enter]

or

O   C:\>B: [Enter]
O   B:\>cd \MKEAUDIO   [Enter]

Then, assuming A drive is used, do the following:

O   A:\MKEAUD10>1NSTALL   [Enter]

You will be prompted to select the target drive and subdirectory to which the audio utility software will be copy to.
Afterwards, you will be asked to select a software interrupt for the audio utility program. You may use the default (60H), or select any other on the list. Just make sure that the software interrupt selected does not conflict with any other interrupt used by other software programs.
Upon successful completion of the installation, you should find MKECDAPL.EXE, CDPLAY.BAT, ESSVOL.EXE under the subdirectory that you selected or created on your hard disk. To use your CD-ROM drive as a regular audio CD player, simple execute CDPLAY by entering:
O   C:\CDROM>CDPLAY   [Enter]

4.4　SONY CD-ROM Software

The diskette labeled "CD-ROM Device Driver & Audio Utility", under the subdirectory **\CDROM\SONY**, contains the **SONY CD-ROM device driver** software and, **OPTIONALLY,** the **Microsoft MS-DOS CD-ROM Extension file,** i.e., MSCDEX.EXE, Another subdirectory **SONYUTIL** contains the **SONY audio utilities** in order for you to use the CD-ROM drive as an audio CD player. Please follow steps below to install the driver & utilities:

NOTE:
The file MSCDEX.EXE is not furnished unless the card is bundled with a CD-ROM drive supplied by us. Automatic CD-ROM software installation by running SETUP.EXE will fail without this file. You may obtain this file from your CD-ROM drive supplier, or, if you have DOS version 6.0 or up, obtain the file from the operating system. Once you secure the MSCDEX.EXE, you may copy this file to the subdirectory \CDROM\SONY, and then follow instructions to automatically or manually install the CD-ROM software.

4.4.1　CD-ROM Device Driver Installation

Put the diskette into your floppy drive, change driver to drive A or B. At the system prompt, change the directory by entering;

A:\>cd \CDROM\SONY　　　　**[Enter]**
or
B:\>cd \CDROM\SONY　　　　**[Enter]**

.depending on which drive you use. An installation routine SETUP.EXE has been provided to assist you installing the software. Assuming you are in A, enter:

A:\CDROM\SONY>SETUP　　　　**[Enter]**

This program will guide you step by step to setup CD-ROM device driver parameters. Please refer to the section below to learn more about how to change device driver parameters.
You may manually install the driver, by completing the following steps:

Step 1. Use any text editor to add the following two lines to the file **"CONFIG.SYS"** under your boot hard disk root-directory (Drive C in general).

O   Device=[drive:]\DEV\ SLCD.SYS [/B:xxx] *[IVidevice name]*

O   LAS TD RIVE = *drive letter*

/B:xxx

xxx is the I/O port address as set on SI of the sound card. The default is 320H.

/Didevice name

specifies device driver name that is used by the Microsoft MS-DOS CD-ROM extension file as MSCDEX. MSCD000 is the commonly used device driver name, when none is specified.

/ Lastdri*c:—drive letter*

Enter the proper drive letter name according to your system configuration. For example, if you already have 3 hard drives, use "f\ If this qualifier is not specified, the default used by DOS is "e".

Step 2.   Add the following line to the file "AUTOEXEC.BAT" under your boot hard disk root-directory (Drive C in general).

O   **[drive:][path] MSCDEX l/D:device name] [/M:n] [/E] [/V] [/L:drive letter]**

NOTE:

The actual MSCDEX.EXE command line in the autoexec.bat file is not truncated and should be placed entirely 011 one line.

[drive:][path] MSCDEX.EXE

Specifies the location (drive and directory) of the MSCDEX.EXE file. The default setting is the BIN director}' of the boot drive

ID: device name

Specifies the name of the CD-ROM drive (8 characters maximum). This must be identical to the device name specified in the device driver in the CONFIG.SYS file. For example:

O   **C:\BIN\MSCDEX.EXE /D:MSCD000**

[/M:n]

Specifies the number of sector buffers for temporary storage of the most recent disc data. For example to specify ten sector buffers you would use:

O   **C:\BIN\MSCDEX.EXE /D:MSCD000 /M:10**

The installation program will set this value to 10.
The default value is 4.

NOTE:
The greater this value , the better the CD-ROM drive will perform. However, each buffer uses about 2K of memory and specifying too many buffers may slow down computer operation or interfere with other programs which have large memory usage requirements. Using expanded memory (sec the /E option in this section) or loading *MSCDEX.EXE* into high memory (refer to your MS-DOS Users Manual or Memory Manager Users Manual) may allow you to specify a larger number of buffers to enhance CD-ROM performance and operate programs with large memory usage requirements simultaneously.

Í/E]
Instructs the computer to use expanded memory, if available. For example:

O   C:\BIN\MSCDEX.EXE /D:MSCD000 /E

Note that vou must first load an expanded memory driver before using this option. If no expanded memory driver is load, the following error message appears;
   Expanded memory not present or not usable

Í/VJ
Instincts the computer to display a summán of RAM allocation and expanded memory usage at booting. For Example, specifying

O   C:\BIN\MSCDEX.EXE /D:MSCD000 /V

will cause the computer to display memory information in the following format:

5556864	**bytes free memory**
0	*bytes* **expanded memory**
12752	**bytes CODE**
1712	**bytes static DATA**
12618	**bytes dynamic DATA**
27344	**bvtes used**

[/L: drive letter]
Specifies the drive letter to be assigned to the first CD-ROM drive. Do not assign a letter already used bv an existing drive or

the computer will be unable lo access the CD-ROM drive. For example, you might use:

O   C:\BIN\MSCDEX.EXE /D:MSCD000 /L:f

Normally, the CD-ROM drive is assigned the next available drive letter oп the computer after the floppy drives, hard drives, RAM drives, etc. Therefore you only need to use this option if it is necessary to assign a drive letter beyond the last letter in use.

Step 3.   Create two sub-directory BIN & DEV under the root directory on your boot hard disk (drive C in general). Copy both files CDMKE.SYS to the subdirectory BIN & **MSCDEX.EXE to the** subdirectory DEV from the subdirectory \CDROM\SON Y on the floppy diskette.

If you are installing the CD-ROM drive in a networked system, please consult your system manager or system setup for proper drive specifications in Step 1 to Step 3.

4.4.2   SONY Audio Utility Installation

To install the audio utility, von may insert the diskette to the drive that you selected. Then change to A or B drive, where the floppy diskette is in, by entering the following command at the system prompt:

O   C:\>A: **[Enter]**
O   A:\>cd \SONYUTIL   **[Enter]**

or

3   C:\>B: **[Enter]**
O   B:\>cd \SONYUTlL   **[Enter]**

Then, assuming A drive is used, do the following;

O   A:\SON YUTIL>IN STALL   **[Enter]**

You will be prompted to select the target drive and subdirectory to which the audio utility software will be copy.
Afterwards, you will be asked to enter the CD-ROM drive letter and the monitor type J.e., color or mono. The CD-ROM drive letter should be the same as the one specified in the Autoexec.bat file, (see Step 2 on page 16)

Upon successful completion of the installation, you should find **CDPALY.BAT, ESSVOL.EXE, SONYCD.EXE, EJECT.COM, LOCK.COM, and UNLOCK.COM** under the subdirectory that you selected or created on your hard disk. This driver enables you to use your CD-ROM drive as **a regular audio CD player.** EJECT.COM allows you to eject the CD tray from the CD-ROM drive. LOCK.COM will lock your tray even if you push the eject bottom on the CD-ROM front panel. Run UNLOCK.COM to re-release the tray.

4.5 MITSUMI CD-ROM Software

The diskette labeled "CD-ROM Device Driver & Audio Utility", under the subdirectory **\CDROM\MITSUMI,** contains the **Mitsumi CD-ROM device driver** software and, **OPTIONALLY,** the **Microsoft MS-DOS CD-ROM Extension file,** i.e., MSCDEX.EXE, Another subdirectory **MTMUTIL** contains the **Mitsumi audio utilities** in order for you to use the CD-ROM drive as an audio CD player. Please follow steps below to install the driver & utilities:

NOTE:

The file MSCDEX.EXE is not furnished unless the card is bundled with a CD-ROM drive supplied by us. Automatic CD-ROM software installation by running SETUP.EXE will fail without this file. You may obtain this file from your CD-ROM drive supplier, or, if you have DOS version 6.0 or up, obtain the file from the operating system. Once you secure the MSCDEX.EXE, you may copy this file to the subdirectory \CDROM\MITSUMI, and then follow instructions to automatically or manually install the CD-ROM software.

4.5.1 CD-ROM Device Driver Installation

Put the diskette into your floppy drive, change driver to drive A or B. At the system prompt, change the directory by entering:

A:\>cd \CDROM\MITSUMI [Enter]
or
B:\>cd \CDROM\MITSUMI [Enter]
depending on which drive you use. An installation routine SETUP.EXE has been provided to assist you installing the software,

Assuming you are in A, enter:

A:\CDROM\MITSUMI>SETUP   lEntcr]

This program will guide you step by step lo setup CD-ROM device driver parameters. Please refer to the section below to learn more about how to change device driver parameters.

You may manually install the driver, by completing the following steps:

Step 1. Use any text editor to add the following two lines to the file **"CONFIG.SYS"** under your boot hard disk root-directory (Drive C in general).

ODevice=[drive:]\DE V\ MTMCDAS.SYS [/Drdevice name] [/P:xxx]
OLASTDRTVE = *drive letter*

IDidevice   name
specifies device driver name that is used by the Microsoft MS-DOS CD-ROM extension file as MSCDEX. MSCD000 is the commonlv used device driver name, when none is specified.

/P∗xxx
xxx is the I/O port address as set on S1 of the sound card. The default is 320H.

/Lastdnve:=i/n'vc *letter*
Enter the proper drive letter name according to your system configuration. For example, if you already have 3 hard drives, use "f\ If this qualifier is not specified, the default used by DOS is V.

Step 2. Add the following line to the file "AUTOEXEC.BAT" under your boot hard disk root-directory (Drive C in general).

3   [drive: 1 [path] MSCDEX [/D:device name] [/M:n] [/E] [/V]
[IL:drive letter]

NOTE:
The actual MSCDEX.EXE command line in the autoexec.bat file is not truncated and should be placed entirely on one line.

[drive:][path] MSCDEX.EXE

Specifies the location (drive and directory) of the MSCDEXEXE file. The default setting is the BIN directory of the boot drive

/Didevice   name
Specifies the name of the CD-ROM drive (8 characters maximum). This must be identical to the device name specified in the device driver in the CONFIG.SYS file. For example:

O   C:\BIN\MSCDEX.EXE   /Dr:MSCD0OO

[/M:n]
Specifies the number of sector buffers for temporary storage of the most recent disc data. For example to specify ten sector buffers you would use:

O   C:\BIN\MSCDEX.EXE   /D:MSCD000   /M:10
     The installation program will set this value to 10.
     The default value is 4.

NOTE:
The greater this value , the better the CD-ROM drive will perform. However, each buffer uses about 2K of memory and specifying too many buffers may slow down computer operation or interfere with other programs which have large memory usage requirements. Using expanded memory (see the /E option in this section) or loading *MSCDEX.EXE* into high memory (refer to your MS-DOS Users Manual or Memory Manager Users Manual) may allow you to specify a larger number of buffers to enhance CD-ROM performance and operate programs with large memory usage requirements simultaneously.

l/E]
Instructs the computer to use expanded memory, if available. For example:

O   C:\BIN\MSCDEXEXE   /D:MSCD000   /E
Note that you must first load an expanded memory driver before using this option. If no expanded memory driver is load, the following error message appears:
     Expanded memory not present or not usable

[/VI

Instructs the computer to display a summary of RAM allocation and expanded memory usage at booting. For Example, specifying:

O   C:\BIN\MSCDEXEXE /D:MSCD«00 /V

will cause the computer to display memory information in the following format:

5556864	bytes free memory
0	bytes expanded memory
12752	bytes CODE
1712	bytes static DATA
12618	bytes dynamic DATA
27344	bytes used

[/Lulrive letter]
Specifies the drive letter to be assigned to the first CD-ROM drive. Do not assign a letter already used by an existing drive or the computer will be unable to access the CD-ROM drive. For example, you might use:

O C:\BINYMSCDEX.EXE /D:MSCD000 /L:f

Normally, the CD-ROM drive is assigned the next available drive letter on the computer after the floppy drives, hard drives, RAM drives, etc. Therefore you only need to use this option if it is necessary to assign a drive letter beyond the last letter in use.

Step 3.   Create two sub-directory **BIN & DEV** under the root directory on your boot hard disk (drive C in general). Copy **CDMKJLSYS** to the subdirectory BIN and **MSCDEX.EXE** to the subdirectory DEV from the subdirectory **\CDROM\MITSUMI** on the floppy diskette.

If you are installing the CD-ROM drive in a networked system, please consult your system manager or system setup for proper drive specifications in Step 1 to Step 3.

4.5.2   MITSUMI Audio Utility Installation

To install the audio utility, you may insert the diskette to the drive that you selected. Then change to A or B drive, where the floppy diskette is in, by entering the following command at the system prompt:

O   C:\>A: **lEnter]**

O   A:\>cd \MTMAUDIO   [Enter]
or
O   C:\>B: [Enter]
O   B:\>cd \MTMAUDIO   [Enter]

Then, assuming A drive is used, do the following:

O   A:\MTMAUDIO>INSTALL '   [Enter]

You will be prompted to select the target drive and subdirectory to which the audio utility software will be copy.

Upon successful completion of the installation, you should find **MTMCD.EXE, ESSVOL.EXE, CDPLAY.BAT** under the subdirectory that you selected or created on your hard disk. Those drivers enables you to use your CD-ROM drive as a regular audio CD player, simply execute CDPLAY by entering:

O   C:\MTMAUDIO>CDPLAY '   [Enter]