Getting Started

Multimedia Upgrade Kit

USER'S GUIDE

READ ME FIRST

What you should do:

- Read the **README** file in the setup/installation disk. It provides you with the latest information not available during the printing of the manual.

- Start with Getting Started first. This guide instructs you on the installation of CD-ROM drive.

  When installing CD-ROM drive, refer to CD-ROM Installation Instructions.

- If your kit does not come with the **Master Disc With Windows 3.1 CD**, ignore "Microsoft Windows 3.1 Setup" on page 3.

MP/10-93
P/N: 0431333160
Printed in Singapore

Getting Started

Multimedia Upgrade Kit

USER'S GUIDE

■ Introduction

This guide is intended for individuals who will be installing and configuring the audio card in a PC/AT host system. Throughout this guide, the audio card refers to our range of 8-bit audio cards.

This guide is arranged as follows:

Chapter 1, "Before You Begin"
Describes a list of system requirements and where to get the latest information not available at the time of printing.

Chapter 2, "Installing the Audio Card"
Instructions for installing and testing the card.

Chapter 3, "Connecting External Devices"
Instructions for connecting external devices to the card.

Appendices
Topics covered include general specifications, relevant hardware information, troubleshooting tips and strategies, and what you need to know when changing hardware settings.

■ Contents

■ Chapter 1 Before You Begin

The information in this chapter covers the minimum system requirements and how to get the latest information.

Checking System Requirements

You need to verify that your system meets the following requirements:

- ❒ IBM AT, 286, 386, 486, PS/2 (models 25 and 30), Tandy AT, or 100% compatibles.
- ❒ EGA or VGA card (VGA recommended).
- ❒ 4 MB of hard-disk space for the software.
- ❒ Windows 3.1 for Windows applications.

Note: Except MMPLAY which requires a VGA card, all other applications require at least an EGA card.

Obtaining Latest Information

The README file on the diskette labeled Audio Card Installation Disk #1 contains the latest information and changes not available at the time of printing. Please read the file before you continue. To view the file, insert the diskette in your disk drive and type **README**.

Making a Backup

If you have not made a backup copy of the original diskettes that come with your package, you should do so before installing the software in your system. Store your original diskettes in a safe place.

■ Chapter 2 Installing the Audio Card

This chapter guides you through the process of installing the audio card in your system. It also explains how to run the test program to ensure the card has been installed properly.

Checking the Hardware Settings

Before you install the card in your system, you should take note of the following factory default settings on the card:

Audio Interface		
Base I/O address	:	220H
DMA channel	:	1
Interrupt	:	5
Joystick Port	:	Enabled

You need to change the factory default settings of your audio card if:

- ❒ Hardware conflict occurs between your audio card and another peripheral card.
- ❒ Joystick/Game Port is already in use.

If you need to change those settings, you should do so before installing the card in your system (see Appendix C on how to change the settings).

Installing the Card

Installing the audio card in your system is simple. However, please follow the instructions carefully before installing the card.

To install the card:

1. Turn off your system and all peripheral devices.
2. Leave the power cable connected to the grounded outlet so that your system is grounded.
3. Touch a metal plate on your system to ground yourself and discharge any static electricity that might damage the card's components.
4. Remove the cover from your system.
5. Find a free 16-bit expansion slot in your system.
6. Remove the metal plate from the slot you have chosen and put the screw aside.

7. Align the card's gold-stripped connector with the expansion slot and gently lower the card into the free slot as shown in Figure 2.1.

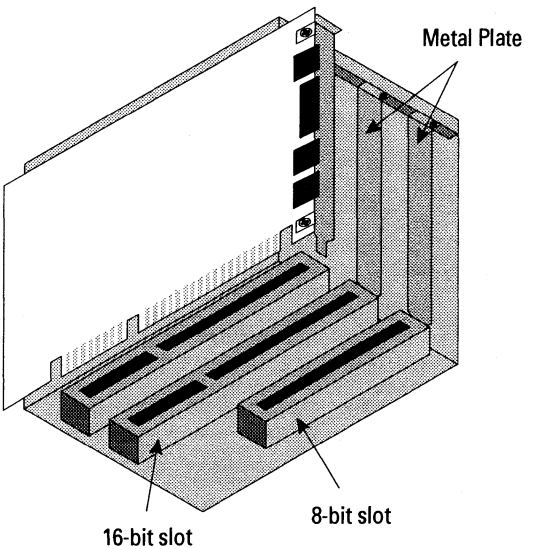

Figure 2.1: Installing the Audio Card.

8. Secure the card to the expansion slot with the screw you removed from the metal plate.
9. Connect speakers to your card's audio output connector (see Figure 3.1).

   Note: If your package comes with a CD-ROM drive, you should install it before replacing the cover. Refer to your *CD-ROM Drive User's Guide* for installation instructions.

10. Replace the cover of your system and turn it on.

Testing the Installation

Once you have installed the card, run the test program TEST-SBP to make sure the card has been installed properly. This program checks the base I/O address, interrupt, and DMA channel used by the card, and then displays a menu to let you test the card's sound and music output.

To run the test program:

1. Insert Audio Card Installation Disk #1 into your disk drive.
2. Change to the drive containing the disk.
3. Type **TEST-SBP** and press <Enter>.
4. Follow the instructions on the screen to complete the test.

If the test program stops or displays an error message when it is checking the card's base I/O address, interrupt, and DMA channel, it may be due to a conflict between the audio card and another peripheral card. To resolve the conflict, you have to change the jumper settings on the audio card. (See Appendix C on how to change the settings and Appendix E on how to resolve the conflicts.)

Sometimes, hardware conflicts will hang the test program. To prevent that from happening, you can use the /m switch. The /m switch changes the way the test program operates. Normally, the test program checks each possible setting automatically. When you use the /m switch, the test program prompts you to enter the settings of the card. To use the /m switch, type **TEST-SBP /m** at the DOS prompt and press <Enter>.

If there is no sound output during the test, check the following:

1. Speakers are connected to the card's audio output connector.
2. Volume control knob is set at mid-range.
3. No hardware conflicts between the audio card and another peripheral card.

Caution: The built-in stereo power amplifier has a maximum output power of four watts per channel for four ohm speakers and two watts per channel for eight ohm speakers. Do not play at maximum if your speakers cannot handle this power.

Installing the Software

After testing your audio card, you can install the software. Several DOS and Windows applications are provided with the package that comes with your audio card. (For a detailed description of the applications provided, refer to your audio card's *User Reference Manual.*) If you have Windows 3.1 and have not installed it, it is advisable that you install it before installing the software.

To install the software:

1. Insert Audio Card Installation Disk #1 into your disk drive.
2. Change to the drive containing the disk.
3. Type **INSTALL** and press <Enter>.
4. Follow the instructions on the screen to complete the installation.

The installation program allows you to add a command to the WIN.INI file to run WINSETUP.EXE. The program automatically sets up the card's audio drivers and Windows applications when you run Windows the next time.

If you choose not to add the command to the WIN.INI file, you can set up the card's audio drivers and Windows applications yourself by running WINSETUP.EXE (see Appendix D).

■ Chapter 3 Connecting External Devices

This chapter describes the various devices such as speakers, microphone, joystick, and so on that can be connected to your audio card (see Figure 3.1).

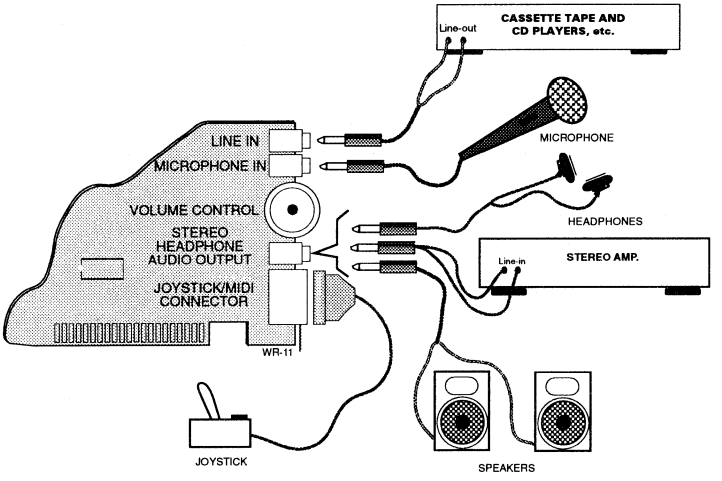

Figure 3.1: Connecting external devices to the audio card.

Installing CD-ROM Drive

The audio card has a built-in CD-ROM drive interface that can be connected to an internal or external CD-ROM drive. Detailed installation instructions and the necessary cables are provided when you purchase the drive.

Joystick/MIDI Port

The joystick port on the audio card is identical to that on a standard PC game control adapter or game I/O port. You can connect any analog joystick with a 15-pin D-sub connector to it. It also works well with any application that is compatible with the standard PC joystick. To use two joysticks, you need a Y-cable.

If there is a game card in your system, it will conflict with the joystick port on your audio card. To avoid the conflict, remove either the game card or disable the joystick port on your audio card by removing the jumper block from JP4 (see Appendix C).

MIDI Kit

To make use of the joystick's MIDI function, you need a MIDI Kit. The Kit contains a MIDI adapter with a joystick port so that you can plug in a joystick and connect a MIDI instrument simultaneously. The Kit also comes with a sequencing software that allows you to record, playback, and edit MIDI files.

Internal Speaker

It is possible to redirect the PC sounds that normally come from the PC speakers to the external speakers connected to the audio card. To do that:

1. Locate the PC speaker connection on the motherboard.
2. Remove the speaker connection from the motherboard.
3. From the motherboard, connect a wire from the +5Vdc pin on the speaker connector to pin 1 of jumper JP1 on the card (see Appendix C).
4. Connect another wire from the data-out pin on the motherboard speaker to pin 2 of JP1 on the card (see Appendix C).

Note: You may need an experienced PC technician or the help of your dealer.

■ Appendix A General Specifications

FM stereo music synthesizer producing 20 voices with 4 FM operators.

Built-in 4 watts stereo power amplifier that can drive the headphones or speakers.

Stereo digitized audio playback capability

- ❒ Plays back all kinds of digitized sounds such as speech, music and special effects through the two 8-bit Digital-to-Analog Converters (DACs).
- ❒ Variable sampling rate from 4 kHz to 44.1 kHz.
- ❒ Hardware ADPCM decompression (2:1, 3:1, and 4:1).
- ❒ DMA or CPU transfer mode.

Stereo digitized audio record capability

- ❒ Digitizes and records any kind of sound through the microphone, line-in, and CD-audio.
- ❒ Sampling rate from 4 kHz to 44.1 kHz (mono) or 11 kHz to 22.05 kHz (stereo).
- ❒ DMA or CPU transfer mode.

Built-in Digital/Analog Mixer

- ❒ Software programmable digital/analog mixer.
- ❒ Mixes stereo DAC, FM music, CD-audio, Line-In, Microphone input, and Master Volume during playback.

Built-in Microphone Jack and Amplifier

- ❒ Automatic Gain Control that automatically adjusts sound input level.

Built-in Master Volume Control

Software Selectable Sound Input

- ❒ Microphone input (mono)
- ❒ Line input (mono or stereo)
- ❒ CD-audio (mono or stereo)

CD-ROM Drive Interface

- ❒ Built-in interface for CD-ROM drive.

Joystick Port

- ❒ Built-in standard Game I/O port for PC analog joystick.

MIDI Interface

- ❒ Built-in MIDI interface for connection to MIDI instruments or keyboards.
- ❒ 64-byte FIFO buffer for high speed transfer.

■ Appendix B Hardware Information

This appendix provides you with the hardware information on the I/O addresses, interrupt line, and DMA channel used by the audio card. It also provides the information you need to resolve conflicts between the audio card and other peripheral cards.

I/O Addresses

I/O addresses are used by the audio card, Game Port, and FM Music Synthesizer for data transfer. Only the I/O addresses of the audio card can be selected. The I/O address for the Game Port ranges from 220H to 207H and FM Music Synthesizer from 388H to 389H.

The audio card occupies 20 consecutive addresses from the base I/O address 220H or 240H. The factory default is 220H. The following table shows the base I/O addresses of the audio card and its I/O address ranges.

Audio Interface	
Base I/O Address	**I/O Address Range**
220H (default)	220H to 233H
240H	240H to 253H

Interrupt Lines

The factory default interrupt setting for the audio card is interrupt 5. The following table shows the interrupt assignments for the PC.

Interrupt	Description
IRQ 0	System Timer
IRQ 1	Keyboard
IRQ 2	Second interrupt controller. Free if not used by adapter or software.
IRQ 3	Free or (COM Port 2)
IRQ 4	COM Port 1
IRQ 5	Audio Card
IRQ 6	Diskette Controller
IRQ 7	Free
IRQ 10	Free

DMA Channels

The factory default DMA channel setting for the audio card is DMA channel 1. The following table shows the DMA channel assignments for the PC.

DMA Channel	Description
DMA Channel 0	Free
DMA Channel 1	Audio Card
DMA Channel 2	Diskette Controller
DMA Channel 3	Free

Audio-in Pin Assignments

PC Speaker Connector (JP1)		
Pin	**Signal**	**I/O**
1	+5V	IN
2	Spk	IN

Audio CD Connector (J2)		
Pin	**Signal**	**I/O**
1	Ground	IN
2	CD Left Channel	IN
3	Ground	IN
4	CD Right Channel	IN

Audio Extension Pin Assignments

Connector JP2		
Pin		**Description**
1	MICR	Mic input: Right channel. Input ranges from 0.004 to 0.7 V rms.
2	MICGEN	Mic input: Ground
3	MICL	Mic input: Left channel. Input ranges from 0.004 to 0.7 V rms.
4	SPKGND	Speaker output: Ground
5	SPKR	Speaker output: Right channel. Maximum output voltage is 3 V rms at 4 ohms.
6	SPKL	Speaker output: Left channel. Maximum output voltage is 3 V rms at 4 ohms.
7	SPKRL	Speaker output return signal: Left channel.
8	SPKRR	Speaker output return signal: Right channel.

Connector JP3		
Pin		**Description**
1	SPKR	Speaker output: Right channel. Maximum output voltage is 3 V rms at 4 ohms
2	SPKRR	Speaker output return signal: Right channel.

■ Appendix C Changing Hardware Settings

This appendix shows you how to change the configuration of the jumpers on the card and run SET-ENV.EXE, a program that allows you to update the BLASTER environment when you change the settings of your card. We strongly suggest, however, you avoid changing the card's hardware settings because many applications are designed to work with those settings.

Changing Configuration of Jumpers

To change the jumpers' configuration:

1. Turn off your computer and all other peripheral devices.
2. Remove the system's cover and card from your system.
3. Select the settings for the card by placing the jumper block on the desired pair of pins. A jumper block is a removable plastic hood that fits over a pair of pins.

The following sections show you how to change the jumper settings of your audio card. The location of each jumper is shown in Figure C-1.

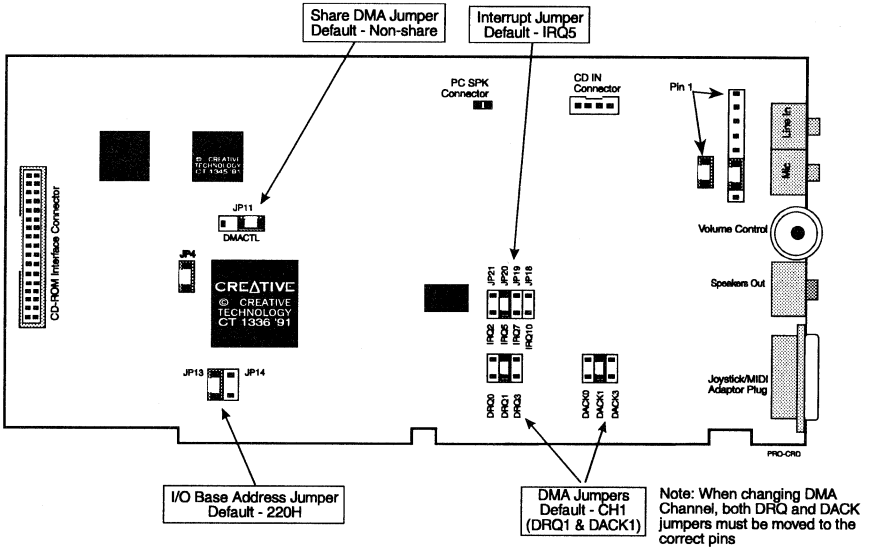

Figure C-1: The location of Jumpers on the audio card.

Changing the I/O Address

The I/O (input/output) address is the address used by your computer's microprocessor to distinguish this audio card from other peripheral devices in your system when sending or receiving data. Two base I/O addresses are available: 220 hex (factory default setting) and 240 hex. To change the base I/O address, place the jumper block on the pins labeled 22X for base I/O address 22O hex and 24X for base I/O address 240 hex (see Figure C-2).

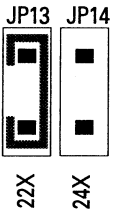

Figure C-2: The default base I/O address setting.

Changing the IRQ Line

The IRQ (interrupt) line is the signal line your audio card uses to notify your computer's central processor that it wants to send or receive data for processing. Four interrupts are available: 2, 5 (factory default setting), 7, and 10. To change the interrupt, place the jumper block on the pins labeled IRQ2 for interrupt 2, IRQ5 for interrupt 5, IRQ7 for interrupt 7, and IRQ10 for interrupt 10 (see Figure C-3).

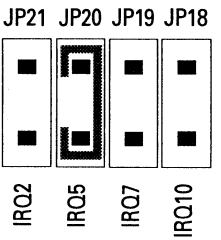

Figure C-3: The default interrupt setting.

Changing the DMA Channel

The DMA (direct memory access) channel is the signal line your audio card uses for data transfer directly to the system memory. Three DMA channels are available: 0, 1 (factory default setting), and 3. The DMA channel is controlled by two jumpers, one for the DRQ setting and the other for the DACK setting. Both settings must be the same. To change the DMA channel, place the jumper block on the pins labeled DRQ0 and DACK0 for DMA channel 0, DRQ1 and DACK1 for DMA channel 1, and DRQ3 and DACK3 for DMA channel 3 (see Figure C-4).

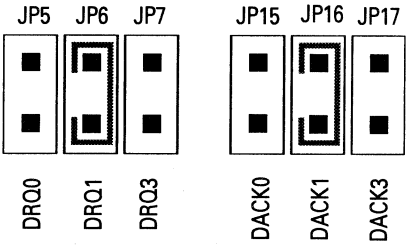

Figure C-4: The default DMA channel setting.

This audio card can share the DMA channel with another peripheral device. Sharing is controlled by the DMACTL pins. The factory default setting prevents the sharing of DMA channel with another peripheral device. To enable this card to share its DMA channel, place the jumper block on pins 2-3 of jumper JP11 (see Figure C-5).

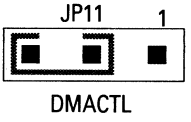

Figure C-5: Jumper JP11 setting for DMA sharing.

Running SET-ENV

When you change the hardware settings of the card, you need to update the BLASTER environment string in the AUTOEXEC.BAT file with the new hardware settings. SET-ENV is program that allows you to update the BLASTER environment.

To run SET-ENV:

1. Enter **SET-ENV** from the \SBPRO directory.
2. Press <Enter>.
3. Follow the instructions on the screen.

When prompted to select the I/O address, interrupt, and DMA channel, you should select the ones that match those on the card. Remember to reboot your system for the changes to take effect.

If the program reports an error while you are selecting the settings, it might be due to a conflict between the audio card and another peripheral card. To resolve the conflict, you need to change the settings of your audio card or the peripheral card (see the section "Changing Configuration of Jumpers" in this Appendix).

■ Appendix D Running WINSETUP

The program WINSETUP allows you to set up the card's audio drivers and Windows applications.

To run WINSETUP:

1. Choose run from the File menu in the Program Manager.
   The Run dialog box similar to Figure D-1 appears.

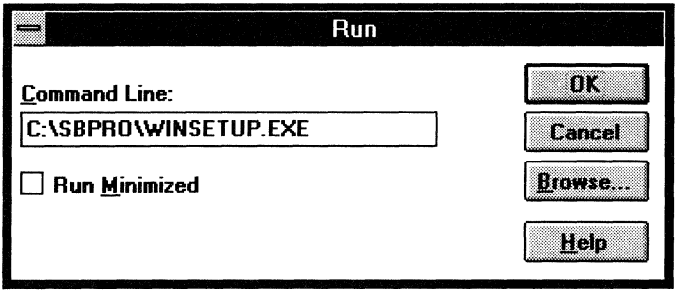

Figure D-1: The Run dialog box.

2. Type **C:\SBPRO\WINSETUP** in the Command Line text box.
3. Choose OK.
4. Follow the instructions on the screen to complete the installation process.
5. Restart Windows for the changes to take effect.

■ Appendix E Troubleshooting

This appendix provides some tips and strategies for some of the problems you might encounter with the audio card either during installation or normal use.

Problems in DOS

Problem : Sound or/and Blaster environment string could not be found.

Cause : The command to set up the Sound or/and Blaster environment may not be included in the AUTOEXEC.BAT file.
The Sound environment specifies the directory location of the audio card while Blaster environment specifies the I/O address, interrupt, and DMA channel settings of the audio card. Both environment strings need to be set up in the DOS environment. When you install the audio card's software, the commands to set up the environment are automatically added to the AUTOEXEC.BAT file so that both environment strings are set up whenever your system is started or restarted. Whenever changes to the environment strings are made, it is advisable that the changes are reflected in the AUTOEXEC.BAT file. The sound environment is SOUND=C:\SBPRO while the Blaster environment is BLASTER=A220 I5 D1 T4.

Solution : To add the command to set up the Sound environment in the AUTOEXEC.BAT file, use a text editor such as MS-DOS Editor. To add the command to set up the Blaster environment in the AUTOEXEC.BAT file, type **SET-ENV** at the \SBPRO directory. Remember to reboot the system for the new settings to take effect.

Problem : Some third party software report an error when detecting the I/O, interrupt, or DMA channel setting.

Cause : These software do not support the Blaster environment string.

Solution : You need to reconfigure the three drivers–CT-VOICE.DRV, SBFMDRV.COM and ORGAN.DRV–to ensure that the hard-coded settings on the drivers correspond with the ones on the card.

To reconfigure SBFMDRV.COM's I/O setting:

1. Change to \SBPRO directory.
2. Type **INST-DRV**.
3. Specify the hardware settings according to the ones on the card.
4. Press <Enter>.

To reconfigure CT-VOICE.DRV's and ORGAN.DRV 's I/O, interrupt, or DMA channel setting:

1. Change to \SBPRO directory.
2. Type **INST-DRV DRV**.
3. Specify the hardware settings according to the ones on the card.
4. Press <Enter>.

Problems in Windows

Problem : No sound when running some Windows applications.

Cause : One or more of the sound drivers may not be included in the SYSTEM.INI file.

Solution : Check the SYSTEM.INI file by following the steps below:

1. Choose RUN from the File menu in Program Manager.
2. Type **SYSEDIT** in the Command Line text box and choose OK.
   You should see the following:

```
[drivers]
timer=timer.drv
midimapper=midimap.drv
Aux=sbpaux.drv
MIDI=sbp2fm.drv
Wave=sbpsnd.drv
MIDI1=sbpsnd.drv

[sndblst.drv]
port=220
int=5
dmachannel=1
```

If one or more of the drivers are missing, run WINSETUP by following the steps below:

1. Choose Run from the File menu in the File Manager.
2. Type **C:\SBPRO\WINSETUP** in the Command Line text box.
3. Choose OK.
4. Follow the instructions on the screen to complete the installation process.

Problems with the Joystick

Problem : Joystick is not working.
Cause : The joystick port on the audio card conflicts with the existing joystick port in your system.
Solution : Remove either the additional joystick in your system or remove the jumper block from JP4 to disable the joystick port on the card.

Problem : Joystick is working erratically in some programs.
Cause : The CPU speed of your system is too fast.
Solution : Some applications depend on the CPU timing to calculate the joystick position. One solution is to reduce the speed of your system.

Problems with Sound

Problem : Background noise from speakers or headphones.
Cause : The noise from the computer power supply may be picked up and amplified to an audible level when the power amplifier is set at a high level.
Solution : Lower the level of the volume. If a louder volume is desired, try to amplify the sound using an external amplifier.

Problem : No sound.
Cause : Audio equipment is not connected properly or the volume is not adjusted to an audible level.
Solution : Check to see that your speakers or headphones are connected to the correct connector on the audio card and the volume control knob is set to mid-range. If you are using powered speakers, make sure that your speakers are plugged into an AC outlet and the speakers are turned on.

Resolving Hardware Conflicts

Hardware conflicts occur when two or more peripheral devices contend for the same signal lines or channels. Conflicts between the audio card and another peripheral device might be due to the settings of the I/O address, interrupt, or DMA channel.

The audio card's factory default settings are:

Base I/O address	:	220H
Interrupt	:	5
DMA channel	:	1

To resolve hardware conflicts:

1. Change the hardware settings of the audio or peripheral card in your system if the peripheral card is using the audio card's setting. (See Appendix B for the available settings on the audio card and Appendix C on how to change the hardware settings of the audio card.)
2. If you are unsure of the settings of the peripheral cards, you can isolate the source of the problem by temporarily removing all cards except the audio card and other essential cards such as disk controller. After that, add the card back one at a time until the card that is causing the conflict is found.

■ Appendix F Technical Support

We are committed to giving you the best product as well as technical support.

Inside USA, Canada and South America:
CREATIVE LABS, INC. Technical Support (USA)
1901 McCarthy Boulevard, Milpitas CA 95035
☎ : 408 - 428 6622
Fax : 408 - 428 6633
BBS : 408 - 428 6660

Outside USA, Canada and South America:
CREATIVE TECHNOLOGY LTD Technical Support (Singapore)
67 Ayer Rajah Crescent #03-18 Singapore 0513
☎ : 65 - 870 0433
Fax : 65 - 773 0353
BBS : 65 - 776 2423

Whether you call, fax or write, please have the following information:
- ❑ I/O address used by your drive.
- ❑ Error message on the screen and how it came about.
- ❑ Information on the adapter card that conflicts with your drive.

■ Index

Printed In Singapore

KKP WK 36/93 0421333020