

**MGX7520**  
**User's Manual Version A**

**Note**

**Only use SDRAM (3.3V)**

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## Chapter 1 Introduction

**The GXM mainboard offers a highest level of integration of any Pentium-Class mainboard in the marketplace, enabling the development of full-featured personal computers at previously unachievable price points.**

**The GXM mainboard line offers Cyrix MediaGXM Processors performance levels with integrated graphics (Xpress-GRAPHICS), sound and memory interface (XpressRAM)**

**1**

## 1-1 KeyFeatures

- 64 bit Cyrix Media GXM Processors
- Cyrix CX5520 chipset supports integrated Graphics, Sound and Memory control.
- An internal 16-K Byte Write-Back L1 cache
- Desktop System Management Interface (DMI)
- Enhanced System Management Mode (SMM).
- Providing CPU Power Management status in suspend mode.
- Windows 95 Compliant.
- 2 x 168pin DIMM socket support SDRAM.
- Expandable memory up to 256MB.
- DIMM module 3.3V.
- 2 PCI slots (can use master mode) and 1 ISA slot for Baby AT.  
1 EISA slot and 1 ISA slot for SLIM.
- On board VGA supports 1024 x 768 with 65536 high color and 1280 x 1024 with 256 colors.
- Supports 2 kinds of display devices-CRT monitor and TV.
- On board Audio controller compatible with Sound Blaster 16/PRO MPU-401 interface.
- 3D surround sound
- Game Port
  - Standard IBM PC joystick/game port (dual channel)
  - Extended MIDI port for external MIDI keyboard

## Chapter 1

- On board super Multi-I/O chip supports 2 x 16550 compatible serial ports, 1x standard SPP/EPP/ECP parallel port, 1 x 1.2MB/1.44MB/2.88MB floppy disk drive interface.
- 2 x PCI IDE port (PIO mode 4)
- IR Interface
- Support PS/2™ mouse Connector.
- 2M PnP Flash ROM
- 4 layer PCB, 22cm x 22cm Baby AT form factor.

## 1-2 Static Electricity Precautions

Static electricity can easily damage your mainboard.

Observing a few basic precautions can help you safeguard against damage that could result in expensive repairs. Follow the measures below to protect your equipment from static discharge:

- Keep the mainboard and other system components in their anti-static packaging until you are ready to install them.
- Touch a grounded surface before you remove any system component from its protective anti-static packaging. A grounded surface within easy reach is the expansion slot covers at the rear of the system case. or any other unpainted portion of the system chassis.
- During configuration and installation, touch a ground surface frequently to discharge any static electric charge that may build up in your body. Another option is to wear a grounding wrist strap.
- When handling a mainboard or an adapter card, avoid touching its components. Handle the mainboard and adapter cards either by the edges or by the mounting bracket that attaches to the slot opening in the case.

### 1-3 What 's included in the package?

The mainboard comes packed in a sturdy cardboard shipping carton.  
The carton contains :

for Baby AT :

- The GXM Mainboard
- This User's Guide
- MIDI Board
- 1 IDE Cable/ 1 FDD Cable/1 Game Port Cable/MIDI Cable
- RS232 Cable/Printer Port + PS/2 Mouse Cable
- 2 Diskette or CD (1 VGA/ 1 Sound)

for SLIM AT :

- The GXM Mainboard
- This User's Guide
- MIDI Board
- 1 IDE Cable/ 1 FDD Cable/1 Game Port Cable
- RS232 Cable/MIDI Cable
- 2 Diskette or CD (1 VGA/ 1 Sound)

#### **Note :**

**Do not remove the mainboard from its original packing until you are ready to install it.**



## Chapter 2

### Hardware Configuration

**Before you install the mainboard into the system chassis, you may find it convenient to first configure the mainboard hardware. This chapter describes how to set jumpers and install memory modules, and where to attach components.**

# 2

## 2-1 Mainboard Component Locations

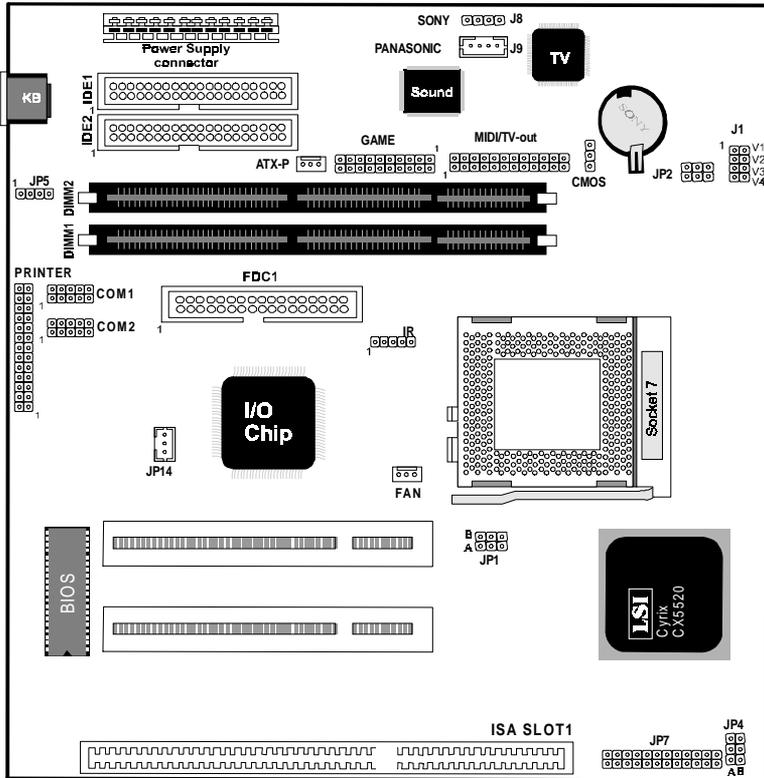


Figure 2-1 Mainboard Component Locations for Baby AT

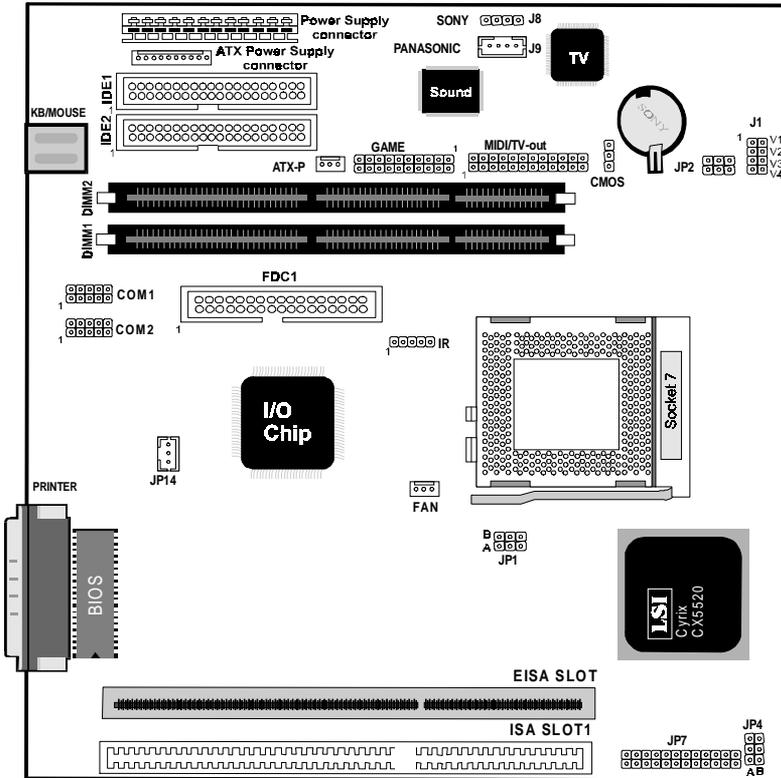


Figure 2-1 Mainboard Component Locations for SLIM

## 2-2 Power Precautions

Before you begin configuration, make sure you are working with an unplugged mainboard. Many components are powered by low-voltage current, but there still may be a dangerous electric current coming from the leads and power supply. You should take the following precautions:

- Turn off the power supply, and unplug the power cord before you begin
- Unplug all cables that connect the mainboard to any external devices.

## 2-3 Connectors

Attach system components and case devices to the mainboard via the mainboard connectors. A description of each .i.connector; and its connector pins follows. See Figure 2-1 for the location of the connectors on the mainboard.

### Note:

**Before making connections to the board, make sure that power to the system is turned off.**

## 2-4 Jumper Settings

You can configure hardware options by setting jumper on the mainboard. See Figure 2-1 for jumper locations.

Set a jumper as follows:

- Short a jumper by placing the plastic jumper cap over two pins of the jumper.
- Open the pins of a jumper by removing the jumper cap.

### Note:

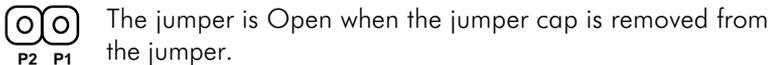
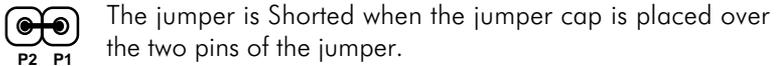
**When you open the jumper, attach the plastic jumper cap to one of the pins so you won't lose it.**

Symbols:

For setting 3-pin jumpers, the symbols below are used:



For setting 2-pin jumpers, the following symbols are used:

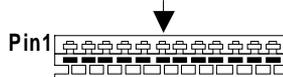


## **P1 Power Supply Connectors**

The power supply connectors are two six-pin male header connectors. Plug the dual connectors from the power directly onto the board connectors.

Most of power supply have two leads. Each lead has six wires. Two of which are black, orient the connectors, so the black wires are in the middle.

**The black wires should  
be in the middle**

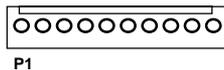


Pin	Description	Pin	Description
1	Power Good	7	Ground
2	+5V DC	8	Ground
3	+12V DC	9	-5V DC
4	-12V DC	10	+5V DC
5	Ground	11	+5V DC
6	Ground	12	+5V DC

## **P2(10-pin black)&ATX-P(3-pin black) ATX Power Supply Connectors (for SLIM)**

This connector connects to a ATX power supply. The plug from the power supply will only insert in one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned.

**P2 :**



Pin	Description	Pin	Description
1	VCC	2	NC
3	VCC	4	GND
5	GND	6	GND
7	-12V	8	+12V
9	VCC	10	Power Good

**ATX-P :**



Pin	Description
1	GND
2	5VSB
3	Power On

## Chapter 2

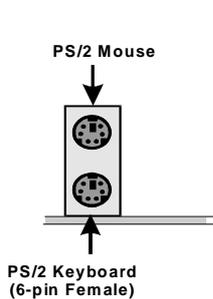
**KB1 Keyboard Connector**

A standard five-pin female DIN keyboard connector is located at the rear of the board.

Pin	Description
1	Keyboard Clock
2	Keyboard Data
3	N.C.
4	Ground
5	+5VDC

**JP5 PS/2 Mouse Connector**

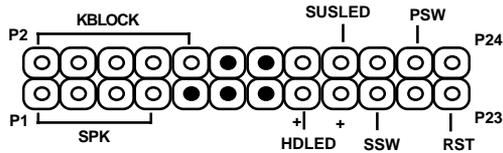
Pin	Description
1	VCC - Yellow
2	M.DATA - Red
3	M. CLK- Brown
4	Gnd- Green

**PS1 Keyboard & PS/2 Mouse Connector (for SLIM)****K/B**

Pin	Description	Pin	Description
1	Keyboard Data	2	N.C.
3	Ground	4	+5VDC
5	Keyboard Clock	6	N.C.

**PS/2 Mouse**

Pin	Description	Pin	Description
1	Mouse Data	2	N.C.
3	Ground	4	+5VDC
5	Mouse CLK	6	N.C.

**JP7 KBLOCK, SPK, HDLED, SUSLED, SSW, PSW, RST****KBLOCK Keylock + Power LED Connectors**

KB Lock is a keylock connector that enables and disables the keyboard and the Power-LED on the case.



Pin	Description
2	LED Output
4	NC
6	Ground
8	Keylock
10	GND

**SPK Speaker Connector**

Attach the system speaker to connector SPK.



Pin	Description
1	DATA Out
3	NC
5	Ground
7	+5V

**HDLED Hard Disk LED Connector**

Pin	Description
15	5V
16	Active Low

**SUSLED Suspend Mode LED Connector**

Pin	Description
17	VCC
18	LED (-)

**SSW Suspend Switch Connector**

Attach the power suspend switch cable to this connector. Holding the power switch for more than 4 seconds will power off the system. Pushing the power button for less than 4 seconds the system is into sleep mode.

**PSW ATX Power Switch****RST Reset Switch Connector**

Attach the Reset switch cable to this connector.



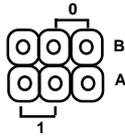
Setting	Description
Open	Normal Mode
Short	Reset System

**FAN CPU FAN POWER Connector**

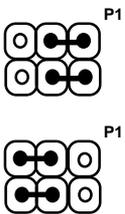
Pin	Description
1	Ground
2	+12VDC
3	Ground

**CMOS RAM Connector**

JP13	Voltage Selectors
Normal	<p>P1 P2 P3</p>
Clear CMOS	<p>P1 P2 P3</p>

**JP1 CPU Internal Clock Speed Selectors**

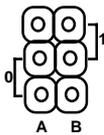
JP1A	JP1B	Rate
1	0	6 x
0	1	7 x

**JP2 CPU Jumper**

Pin	voltage
1-2	3.3V for I/O 2.9/3.6V for Core
2-3	2.9/3.6V for I/O & Core

Note :

Please setting the JP2 to determine the 2.9V or 3.6V

**JP4 CPU Speed Selectors**

A	B	BCLK
0	0	30MHz
0	1	33MHz

**IR Connector**

Pin	Description
1	VCC
2	FIR
3	IRRX
4	Ground
5	IRTX

**COM1 Onboard Serial Port Connector****COM2 Onboard Serial Port Connector****PRN1 Onboard Parallel Printer Connector****FDC1 Onboard Floppy Drive Connector****IDE1 Primary IDE Connector****IDE2 Secondary IDE Connector****J8/J9 Sony/Panasonic CD Audio Connector**

The 4-pin connector enables the system to receive the audio output from the CD-ROM.

<b>J8</b>	<b>Description</b>
1	GND
2	CD-R
3	GND
4	CD-L

<b>J9</b>	<b>Description</b>
1	CD-L
2	GND
3	GND
4	CD-R

**TV-Out MGX-MIDI Board Connector**

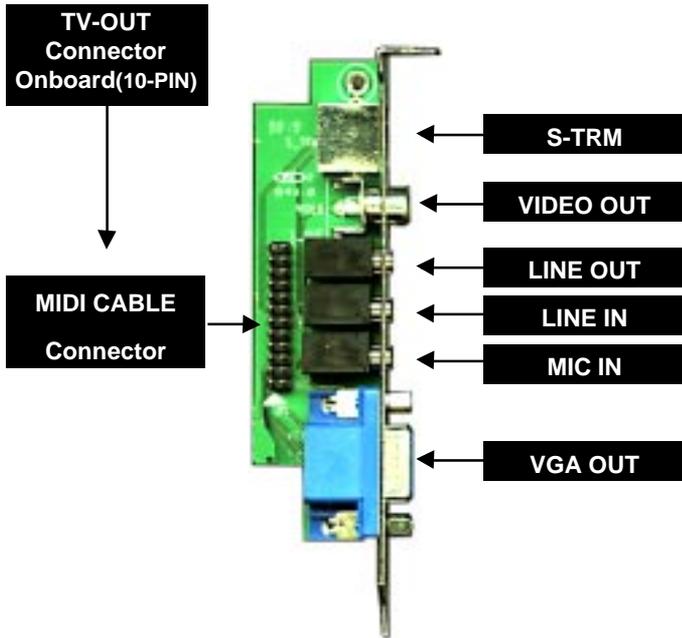
This connector enables you to connect MIDI Board.

**GAME Port CableConnector**

You may connect game joysticks or game pads to this connector.

**Extend MIDI Board**

0



## 2-6 Memory Installation

The mainboard lets you add up to 256MB of system memory via DIMM sockets on the mainboard. The mainboard supports the following memory configurations and DIMM socket consists of two 168-pin DIMM Modules.

BANK	MEMORY MODULE
DIMM 1 Bank 0 & 1	8MB, 16MB, 32MB, 64MB, 128MB 168PIN DIMM (Single Side, Double Side)
DIMM 2 Bank 2 & 3	8MB, 16MB, 32MB, 64MB, 128MB 168PIN DIMM (Single Side, Double Side)

### Notes:

**SDRAM type : 3.3V**



**3**

**Chapter 3**  
**AWARD BIOS Setup**

**This chapter explains how to  
configure the mainboard's  
BIOS setup program.**

After you have configured the mainboard, and have assembled the components, you can turn on the completed system. At this point, run the software setup to ensure that the system information is correct.

The software setup of the system board is achieved through Basic Input-Output System (BIOS) programming. You use the BIOS setup program to tell the operating system what types of devices are connected to your system board.

The system setup is also called CMOS setup. Normally, you need to run system setup if either the hardware is not identical with information contained in the CMOS RAM, or if the CMOS RAM has lost power.

### 3-1 Award BIOS Setup

Enter the Award Setup program's Main Menu as follows:

1. Turn on or reboot the system. The following message appears at the bottom of the screen:  
"Press <DEL> to enter setup, ESC to skip memory test"
2. Press the <DEL> key to enter the Award BIOS setup program and the following screen appears:

ROM PCI/ISA BIOS CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : Quit	← → ↑ ↓ : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color
Time , Date , Hard Disk Type ...	

3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections for more information.)
4. Press <ESC> at anytime to return to the Main Menu.
5. In the Main Menu, choose "SAVE AND EXIT SETUP" or <F10> to save your changes and reboot the system.  
Choosing "EXIT WITHOUT SAVING" or <ESC> ignores your changes and exits the program.

## 3-2 Main Menu Options

The Main Menu options of the Award BIOS are as below.

### **STANDARD CMOS SETUP**

Run the Standard CMOS Setup as follows.

1. Choose "STANDARD CMOS SETUP" from the Main Menu and a screen with a list of items appears.

ROM PCI/ISA BIOS							
STANDARD CMOS SETUP							
AWARD SOFTWARE, INC.							
Date (mm:dd:yy) : SAT, MAY 30 1998							
Time (hh:mm:ss) : 15 : 50 : 44							
HARDDISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR MODE
Primary Master:	Auto	0	0	0	0	0	Auto
Primary Slave:	Auto	0	0	0	0	0	Auto
Secondary Master:	Auto	0	0	0	0	0	Auto
Secondary Slave:	Auto	0	0	0	0	0	Auto
Drive A	: 1.44M, 3.5 in						
Drive B	: None						
Video	: EGA/VGA						
Halt On	: All, But Keyboard						
					Base Memory	:	640K
					Extended Memory	:	392192K
					Other Memory	:	384K
					Total Memory	:	393216K
Esc	:	Quit	←	→	↑	:	Select Item
F10	:	Save & Exit Setup			PU/PD/+/-	:	Modify
					(Shift)F2	:	Change Color

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/- keys. Some fields let you enter numeric values directly.

**Date (mm/dd/yy)** Type the current date

**Time (hh:mm:ss)** Type the current time

### **Hard Disk Configurations**

**TYPE** : Select from 1 to 45 to fill remaining fields with predefined values of disk drives. Select user to fill the remaining fields. Select auto to detect the HDD type automatically.

**SIZE** : The hard disk size. The unit is Mega Bytes.

**CYLS** : The Cylinder number of the hard disk.

**HEAD** : The read/write head number of hard disk.

**PRECOMP** : The cylinder number at which the disk drive changes the write timing.

**LANDZ** : Landing zone.

**SECTOR** : Number of sectors

**MODE** : Select auto to detect the mode type automatically. If your hard disk supports the LBA mode, select LBA or Large. However, if your hard disk cylinder is more than 1024 and does not support the LBA function, set at Large. Select Normal if your hard disk supporting cylinders is below 1024.

### **Drive A & B**

Choose	360KB 5 1/4"	1.2MB 5 1/4"
	720KB 3 1/2"	1.44MB 3 1/2"
	Not installed	2.88MB 3 1/2"

### **Video**

Choose	Monochrome	Color 40x25
	VGA/EGA	Color 80x25
	Not installed	

### **Halt On**

Choose	All Errors (Default)	No Errors
	All, But Keyboard	All, But Diskette
	All, But Disk/Key	

### **Note :**

**You can select Auto under the TYPE and MODE fields. This will enable auto detection of your IDE drives during bootup.**

3. After you have finished with the Standard CMOS Setup program, press the <ESC> key to return to the Main Menu.

## **BIOS FEATURES SETUP**

Run the BIOS Features Setup as follows.

1. Choose "BIOS FEATURES SETUP" from the Main Menu and a screen with a list of items appears.
2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/- keys.

ROM PCI/ISA BIOS BIOS FEATURES SETUP AWARD SOFTWARE, INC.		
Virus Warning	: Disabled	Video BIOS Shadow : Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow : Disabled
External Cache	: Enabled	CC000-CFFFF Shadow : Disabled
Quick Power On Self Test	: Enabled	D0000-D3FFF Shadow : Disabled
Boot Sequence	: A,C,SCSI	D4000-D7FFF Shadow : Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow : Disabled
Boot Up Floppy Seek	: Enabled	DC000-DFFFF Shadow : Disabled
Boot Up NumLock Status	: On	
Typematic Rate Setting	: Disabled	
Typematic Rate (Chars/Sec)	: 6	
Typematic Delay (Msec)	: 250	
Security Option	: Setup	
PCI/VGA Palette Snoop	: Disabled	
OS Select for DRAM >64MB	: Non-OS2	
		ESC : Quit ←→↑↓:Select Item
		F1 : Help PU/PD/+/- : Modify
		F5 : Old Values (Shift)F2 : Color
		F7 : Load Setup Defaults

### **Virus Warning**

Choose Enabled or Disabled. Enable this option and a SYSTEM WARNING MESSAGE appears when the system detects a virus.

### **CPU Internal Cache**

Choose Enabled or Disabled. This option lets you enable the CPU's internal cache memory.

### **External Cache**

Choose Enabled or Disabled. This option lets you enable the external cache memory. For better performance, make sure you always choose "Enabled."

### **Quick Power On Self Test**

Choose Enabled or Disabled. Enabled provides a fast POST and boot-up speed.

**Boot Sequence**

The default setting first to boot from drive C: You can reverse this sequence with "A:C:", will then drive A: boot directly.

**Swap Floppy Driver**

Choose Enabled or Disabled. When Enabled Floppy drives A & B are swapped under DOS.

**Boot Up Floppy Seek**

Choose "Enabled" or "Disabled". "Disabled" provides a fast boot and reduces the possibility of damage to the heads.

**Boot Up Num Lock Status**

Choose On or Off. On puts numeric keypad in Num Lock mode at boot-up. Off puts this keypad in arrow key mode at boot-up.

**Typematic Rate Setting**

This determines the typematic rate.

Enabled : Enable typematic rate and typematic delay programming.

Disabled :Disable typematic rate and typematic delay programming.

The system BIOS will use default value of these 2 items and the default is controlled by keyboard.

**Typematic Rate(Chars/Sec)**

Choose the rate a character keeps repeating.

**Typematic Delay (Msec)**

Choose how long after you press a key that a character begins repeating.

**Security Option**

Choose Setup, or System. Use this feature to prevent unauthorized system boot-up or unauthorized use of BIOS Setup.

"System" - Each time the system boots the password prompt appears.

"Setup" - Password prompt only appears if you attempt to enter the Setup program.

**PCI/VGA Palette Snoop**

Some display cards that are nonstandard VGA such as graphics accelerators or MPEG Video Cards may not show colors properly. The setting Enabled should correct this problem. Otherwise leave this on the setup default setting of Disabled.

**C8000-CBFFFF to DC000-DFFFF**

These fields are used for shadowing others expansion card ROMs. If you install other expansion cards with ROMs on them, you will need to know which addresses the ROMs use to shadow them specifically. Shadowing a ROM reduces the memory available between 640KB and 1024KB by the amount used for this purpose.

3. After you have finished with the BIOS Features Setup program, press the <ESC> key and then follow screen instructions to save or disregard your settings.

## **CHIPSET FEATURES SETUP**

The “CHIPSET FEATURES SETUP” is used to control the values of the chipset registers. These registers control most of the system options in the computer.

*Run the Chipset Features Setup as follows:*

1. Choose “CHIPSET FEATURES SETUP” from the Main Menu and a screen with a list of items appears.

ROM PCI/ISA BIOS CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.	
SDRAM CAS latency Time : Auto SDRAM Clock Ratio Div By : 4 SDRAM RAS-to-CAS Delay : Slow	CPU Warning Temperature : Disabled Current CPU Temperature : 26°C/78°F
8 Bit I/O Recovery (CLK) : 1 16 Bit I/O Recovery (CLK) : 1	
ESC : Quit ←→↑↓:Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F7 : Load Setup Defaults	

### **SDRAM CAS Latency Time**

The SDRAM Timing type : 2, 3 (Default)

### **8 Bit I/O Recovery Time**

The timing for 8-bit ISA card.

### **16 Bit I/O Recovery Time**

The timing for 16-bit ISA cards

2. The items are optimal setting for this mainboard, you should not change them unless you are familiar with the chipset.

## **POWER MANAGEMENT SETUP**

The Power Management controls the mainboard's "green" features that for the power saving Mode, Display turn off and HDD power down that together form the hardware power conservation scheme.

*Run the Power Management Setup as follows:*

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of items appears.

ROM PCI/ISA BIOS POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.			
Power Management	: User Define	IRQ1 (keyboard)	: ON
Doze Mode	: Disable	IRQ3 (COM2)	: ON
** PM Timer **		IRQ4 (COM1)	: ON
Standby Mode	: Disable	IRQ5 (LPT2)	: OFF
Suspend Mode	: Disable	IRQ6 (Floppy Disk)	: OFF
HDD Power Down	: Disable	IRQ7 (LPT1)	: OFF
MODEM Use IRQ	: NA	IRQ9 (IRQ Redir)	: OFF
Throttle Duty Cycle	: 33.3%	IRQ10 (Reserved)	: OFF
Ring Power On Controller	: Disabled	IRQ11 (Reserved)	: OFF
Net Power On Controller	: Disabled	IRQ12 (PS/2 Mouse)	: OFF
		IRQ13 (Coprocessor)	: OFF
		IRQ14 (Hard Disk)	: OFF
		IRQ15 (Reserved)	: OFF
ESC : Quit   ←→↑↓: Select Item			
F1 : Help   PU/PD/+/- : Modify			
F5 : Old Values   (Shift)F2 : Color			
F7 : Load Setup Defaults			

2. A short description of the screen items follows:  
"POWER MANAGEMENT" is the master control for the four power saving modes, doze, standby, suspend mode and HDD power down mode..

### **Power Management : User Define**

**Disabled** : The system operates in NORMAL conditions (Non-GREEN), and the Power Management function is disabled.

**Max.saving** : This mode will maximize the power saving capability.

**Min.saving** : This mode will minimize the power saving capability.

**User define** : Allow user to define time out parameters to control power saving timing. Refer to item B shown below.

**Doze Mode**

When disabled, the system will not enter Doze mode. The specified time option defines the idle time the system takes before it enters Doze mode.

**Suspend Mode**

When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode.

**MODEM use IRQ**

When the system is in green function, modem wakes up the system through IRQ.

**HDD Power Down**

Selecting Disabled "will turn off the hard disk drive (HDD) motor. Selecting "1 Min..15Min" allows you to define the HDD idle time before the HDD enters Power Saving Mode. The option "When Suspend" lets the BIOS turn the HDD motor off when the system is in Suspend mode.

The options "1Min..15Min" and "When Suspend" will not work concurrently. When HDD is in Power Saving Mode, any access to the HDD will wake the HDD up.

**Throttle duty Cycle**

Choose the duty cycle time : 12.5%, 25%, 37.5%, 50%, 62.5%(default), 75%, or 87.5%. The bigger of the percentage, the more saving power it gets.

## **PNP/PCI SLOT CONFIGURATION**

The “PNP/PCI SLOT CONFIGURATION” sets the system for use with PCI bus cards.

Run the PNP/PCI Slot Configuration program as follows.

1. Choose “PNP/PCI CONFIGURATION” from the Main Menu and a screen with a list of items appears.

ROM PCI/ISA BIOS PNP/PCI CONFIGURATION AWARD SOFTWARE, INC.	
PNP OS Installed : Yes	
Resources controlled by : Auto	
Reset configuration Data : Disabled	
ESC : Quit   ←→↑↓:Select Item F1 : Help   PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F7 : Load Setup Defaults	

2. Explained below:

### **PNP OS Installed**

If your operating system is a Plug-and-Play one, such as Windows NT, Windows 95, select Yes. The options are : No (Default), Yes.

### **Resource Controlled By**

**Manual** : The field defines that the PNP Card's resource is controlled by manual. You can set which IRQ-X and DMA-X assigned to PCI/ISA PNP or Legacy ISA cards.

**Auto** : If your ISA card and PCI card are all PNP cards. To set this field Auto.

The BIOS will be assigned the interrupt resource automatically.

### **Reset Configuration Data**

**Disabled** : Normal Setting

**Enabled** : If you had plugged some Legacy cards in the system and there were records into ESCD (Extended System Configuration Data). You can set this field to Enabled and to clear ESCD one time . When some Legacy cards were removed.

## **LOAD SETUP DEFAULTS**

This Main Menu item loads the default system values. These settings are recommended for optimum performance. If the CMOS is corrupted when enter BIOS setup utility you must load setup default again. Choose this item and the following message appears:

“Load SETUP Defaults (Y/N)? Y”

To use the Setup defaults, change the prompt to and press “Y” and press <Enter>.

## **INTEGRATED PERIPHERALS SETUP**

The “INTEGRATED PERIPHERALS” is used to control the values of the I/O chipset registers. These registers control the mode of HDD type and I/O address port.

*Run the Integrated Peripherals as follows:*

1. Choose “INTEGRATED PERIPHERALS” from the Main Menu and a screen with a list of items appears.

ROM PCI/ISA BIOS INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.			
IDE HDD Block Mode	: Enabled	Parallel Port Mode	: SPP
Primary IDE Channel	: Enabled	Build In Onboard Audio	: Enabled
Read Prefetch	: Disabled	Video Memory Size	: 2.5M
Write Buffering	: Disabled	TV Output Mode	: NTSC
Master DriverPIO Mode	: Auto		
Slave Driver PIO Mode	: Auto		
Secondary IDE Channel	: Enabled		
Read Prefetch	: Disabled		
Write Buffering	: Disabled		
Master DriverPIO Mode	: Auto		
Slave Driver PIO Mode	: Auto		
KBC Input Clock	: 8MHz		
Onboard FDD Controller	: Enabled		
Onboard Serial Port 1	: 3F8/IRQ4	ESC : Quit	←→↑↓: Select Item
Onboard Serial Port 2	: Disabled	F1 : Help	PU/PD+/- : Modify
UR2 Mode	: Standard	F5 : Old Values (Shift)	F2 : Color
Onboard Parallel Port	: 378/IRQ7	F7 : Load Setup Defaults	

**IDE HDD Block Mode:**

The BIOS support two kind of methods to set up your IDE Hard Disk drive Mode. One is auto, the other is manual mode.

In auto mode BIOS can auto detect HDD's mode, but in some old type HDD that can't meet ATA specification, the BIOS will detect wrong Mode and cause system boot fail. You must change auto mode to manual mode and try a proper mode that can meet your HDD specification. There are five modes defined in manual mode. They are mode 0,1,2,3,4. The default setting for on board timing is auto mode that it will provide optimum performance for your HDD.

Choose Enabled or Disabled. If your IDE HDD supports BLOCK MODE, then you can enable this function to speed up the HDD Access time. If not, please disable this function to avoid an HDD Access Error.

**Primary IDE Channel**

Use the on-board IDE (default).

**Secondary IDE Channel**

Use the on-board IDE (default).

**Onboard FDD Controller**

The default setting for the "Onboard FDC Controller" is "Enabled". This setting allows you to connect your floppy disk drivers to the onboard "Floppy" connector. Choose the "Disabled" setting if you want to use a separate controller card.

**Serial Port**

The "Onboard Serial Port 1" and "Onboard Serial Port 2" lines control the assignments for the mainboard's two onboard serial connectors.

**Parallel Port**

The options for "Onboard parallel Port" is 378/IRQ7. This item controls the on-board parallel port connector, if you are using an I/O card with a parallel port, make sure the address don't conflict.

**Parallel Port Mode**

The option for "Parallel Port Mode" is default SPP(Standard Parallel Port), you can select EPP, ECP, and SPP Mode just change settings, if you have a parallel interface peripheral device, use one of the parallel port enhancements and set this line for the enhanced mode that your peripheral supports.

**Build In Onboard Audio**

Choose Enabled or Disabled. This option lets you enable the audio function.

**Video Memory Size**

Choose "1.5M" or "2.5M" (see the page38)

**TV Output Mode**

Choose the TV Output Mode according to the TV system(PAL/NTSC).  
Enable : USB keyboard. Disable : AT keyboard.

**USER PASSWORD SETTING**

This Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. The password cannot be longer than 8 characters.

If CMOS is corrupted or the option was not used, a default password stored in the ROM will be used. The screen will display the following message:

Enter Password :

## **IDE HDD AUTO DETECTION**

1. If your system has an IDE hard drive, you can use this utility to detect its parameters and automatically enter them into the Standard CMOS Setup.
2. For IDE hard disk driver, the BIOS provides three modes to support both normal IDE hard disk and also drives larger than 528MB, a short description of three modes as follows:
  - a. Normal mode: For drives small than 528MB
  - b. Large Mode: For drives larger than 528MB that do not use LBA. There can only be used with MS-Dos operating system.
  - c. LBA mode: For drives larger than 528MB and up to 8.4GB that use logic block addressing mode. Normally we recommend to select LBA Mode if your HDD drives large than 528MB.
3. This utility will auto detect as many as four IDE drivers.

**SAVE & EXIT SETUP**

After you have made changes under Setup, press "Esc" to return to the main menu. Move cursor to "Save and Exit Setup" or press "F10" and then press "Y" to change the CMOS Setup. If you did not change anything, press "Esc" again or move cursor to Exit Without Saving and press "Y" to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility.

Save to CMOS and EXIT (Y/N)?

**EXIT WITHOUT SAVING**

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications

Quit Without Saving (Y/N)?

### 3-3 Updating your Mainboard's BIOS

Updating BIOS procedures (only when necessary):

1. Create a bootable system floppy diskette by typing [FORMAT A:/S} from DOS Prompt without creating "AUTOEXEC.BAT" and "CONFIG.SYS" files.
2. Download an updated AWARD BIOS file from FTP, or internet (WWW) and save to the Diskette you created above.
3. Boot from the floppy diskette you created above.
4. At the "A:\>" prompt, type : [ AWDFLASH] and then the <Enter> key.
5. Type in the complete file name and extension of the new BIOS, and then press the <Enter> key. The utility will be update the BIOS file from disk.  
(You can save the old BIOS or not, please follow the screen message)
6. After updating the new BIOS file, trun off your system.
7. Turn on your computer and hold down the <Delete> key to enter BIOS setup. You must select "LOAD SETUP DEFAULTS" to affect the new BIOS setting, then you may set other item's from the Main Menu.
8. Save the new BIOS setting and exit to boot the computer.

### 3-4 Memory Capacity Requirement

This chart describes the minimum memory capacity requirement for you to have the different VGA resolution.

Resolution	Colors	1.5MB	2.5MB
640 x 480	16 colors	✓	✓
	256 colors	✓	✓
	High color	✓	✓
800 x 600	16 colors	✗	✗
	256 colors	✓	✓
	High color	✓	✓
1024 x 768	16 colors	✗	✗
	256 colors	✓	✓
	High color	✗	✗

Resolution	Colors	Refresh	Dot	PCLK	Graphics
		Rate (Hz)	Clock(MHz)	(MHz)	Port Width(Bits)
640 x 480	16 colors	60.13	50.5	25.25	8
	256 colors	59.65	50.11	25.05	8
	High colors 16 bit	59.65	50.11	50.11	16
800 x 600	256 colors	60	65	65	8
	High colors 16 bit	60	65	65	16
1024 x 768	256 colors	60.35	80	40	8
	High colors 16 bit	60.35	80.5	80.5	16

## Chapter 4 Audio Installation

**The Audio is a stereo 16 bit PnP sound device. It is compatible with Sound Blaster 16 and Microsoft Windows Sound System.**

**Especially it supports Plug and Play function for all interface.**

**The Audio supports 3D surround sound function.**

**What we provide at the side of sound device are line-in jack, micro-phone jack, audio output jack, and a 15 pin D-SUB multiplexed joystick/MIDI connector.**

# 4

## 4-1 Product Features

- Special Features
  - ISA bus Plug and Play (PnP)  
device support: WSS, MPU401, GAME/MIDI PORT. SB16
  - 3D surround sound
  - Full duplex playback and recording
  - Support Windows 95/98 and Window NT 4.0
  - Auto hardware switching mode between WSS and SB without program setting
- Compatibility
  - Windows Sound System
  - AdLib/ Sound Blaster 16/PRO/2.0
  - MPU-401 UART MIDI
- Digitized Audio
  - 16 bit stereo 44KHz sampling rate voice playback/recording
  - Full duplex playback and recording
- Stereo Mixer
  - Stereo analog mixing from CD-Audio, Line-in
  - Stereo digital mixing from Voice. FM/Wave-table, Digital CD-Audio
  - Mono mixing from MIC
  - Software adjustable volume
- FM Music Synthesizer
  - OPL3 FM synthesizer (4 operators)
- MIDI Interface
  - MPU-401 MIDI UART mode
- Game Port
  - Standard IBM PC joystick/game port (dual channel)
  - External MIDI port for external MIDI keyboard

- Wave Table Synthesis
  - MPU-401 interface for Wave Table Synthesis (optional)
  
- 3D Surround Sound
  - Built-in 3D Surround sound (software control ON/OFF)
  
- Software configurable I/O Address, IRQ, DMA channel for all interface (Jumperless)

## 4-2 3D Surround Sound

Our 3D surround function takes any ordinary stereo signal as input and produces an output signal with dramatically widened stereo imaging and enhanced realism. And requires no extra speakers or special encoding of input signals.

You can turn 3D sound on or off by program CMMIX.COM at DOS. At Windows you also can turn it on or off by Audio Rack mixer. And you can run Windows applications DEMO3D to test 3D surround sound functions.

### 4-3 DOS and Windows 3.1 Applications Installation

Please make sure that your hard disk has 4MB free spaces at least. Insert the "udio Driver Disk" Diskette into drive A: (or B:).

1. Change to drive A(or B) at DOS prompt, type in INSTALL [Enter].
2. Type DOS utilities path that you want to install.
3. Type the path of Windows 3.1 when asking Windows path.
4. Program will expand file to path that you specify.
5. After expanding DOS utilities. program CMINIT.EXE will be executed and showing current value of all I/O. Please adjust I/O to avoiding conflict.
6. Mixer program CMMIX.COM will be executed too. You can adjust default volume to your favorite value. Press ESC key to exit.
7. Install program will continue execute testing program CMTEST.EXE to check output of sound card.
8. Program will launch Windows 3.1 to install device drivers and applications.
9. Please restart PC after installation completed.

#### Note :

1. **After installation, if you want to change I/O of Windows device drivers, please execute file CMINIT.EXE to adjust item "WSS I/O", "WSS IRQ" and "WSS DMA".**
2. **If you didn't install Windows applications (only install DOS utilities), run "WSE1 UP.EXE" in disk root directory to install Windows applications.**

#### DOS Utilities Installation only

To install DOS utilities only, please follow steps that described above. Press ENTER key when asking Windows path for none.

#### Set DOS environment variables for Sound Blaster compatible

The Audio is compatible with Sound Blaster, so you can execute programs which can run with it, but you need to set the DOS environment variables like below:

```
C:\SET BLASTER = A2x0 ly Dz T4
x  = 2 or 4      (This is address number)
y  = 5 or 7 or 9 or 10 (This is IRQ number)
z  = 0 or 1 or 3  (This is DMA number)
```

Utilities Software

It is always a good idea to make backup copy of your original software. Make a backup copy of your "Audio Driver Disk" & "Audio Application Software" now and store, your original diskettes in a safe place. \

**Note :**

**In the following paragraphs, Utilities are assumed to be installed in default Drive:\Path directory, which is C:\CM8330.**

*CMINIT*

The CMINIT.EXE can change the Audio address, DMA channel, IRQ channel. Game port and MPU-401 MIDI port without jumper setting.

In main menu, you can use arrow keys to select items that you want to change. The sub window will display the I/O you can select. If any PCI or PnP card use this I/O, item will gray to avoiding conflict and display the PnP card title that use it. In Windows 95, "DOS prompt" or "shut down to DOS" are still in Windows 95 protected mode, changing I/O by user are not expected. So program will display current value of all I/O, called "status" mode. At DOS prompt type CMINIT [Enter]

*You can see all I/O settings in the main Menu.*

WSS Base I/O Address .....	Select WSS mode base I/O address
WSS IRQ Channel .....	Select WSS mode IRQ channel
WSS DMA Channel .....	Select WSS mode DMA channel
Voice I/O Address .....	Select SB mode base I/O address
Voice IRQ Channel .....	Select SB mode IRQ channel
Voice DMA Channel .....	Select SB mode DMA channel
Voice 16bit DMA Channel .....	Select SB mode 16-bit DMA transfer channel
MPU-401 I/O Address .....	Select MIDI base I/O address
MPU-401 IRQ Channel .....	Select MIDI IRQ channel
Game Port I/O Address .....	Display Game Port base I/O address
FM(OPL3) I/O Address .....	Display FM(OPL3) base I/O address

Using arrow key to move to the item that you want to change and press [ENTER] key to execute. To quit or save change, press [ESC] key Program will automatically update file "AUTOEXF.C.BAT" if selecting "save setting k exit". Otherwise, it will remain unchanged. Once you save the change, a new I/O setting will he got ever since.

**Note :**

**The arguments after CMINIT in the file AUTOEXEC.BAT are updating by file CMINIT.EXE.**

**CMMIX**

CMMIX.COM is a mixer control program. At DOS prompt, type CMMIX [Enter]

*You can adjust the volumes of all channels or change recording channel.etc.*

```

Master ..... MASTER volume control
FM ..... FM music volume control
WAVE ..... WAVE volume control
LINE-IN ..... LINE-IN volume control
Ext. synth ..... wave-table output volume control
Analog CD-IN ..... Analog CD-Audio volume control
IC ..... Microphone volume control
3D SURROUND ..... Enable/Disable 3D surround sound
LOUDNESS ..... Enable/Disable output gain
SB Mixer emu ..... Enable/Disable SB mixer emulation
Recording Setup ..... Recording gain and channel selection
Exit ..... Save setting and exit to DOS

```

When exit this program, it will automatically update AUTOEXEC.BAT file for next time reboot (power ON) initialization.

**Note :**

**We set default SB mixer emulation functions to disable. It fits to most applications and games. If there is any applications using SB mixer panning function to separate left and right sound channel, you can set this functions to enable.**

## CMTEST

CMTEST.EXE checks the Audio address, IRQ channel, DMA channel, and tests the Audio hardware functionality including synthesized music, voice playback and voice recording. At DOS prompt, type CMTEST [Enter]

CMTEST scans I/O address, IRQ channel and DMA channel jumper settings on the Audio.

After I/O settings are tested, you may proceed to choose to test synthesized music, output voice and recording functions. Speakers connected to the Audio are necessary for all the tests. Microphone is necessary for test recording.

Synthesized music test generates music output with the Audio on board synthesizer. Output voice test generates voice with the Audio digitized output channel. To test recording, you need to speak to the microphone. Your speech will be reproduced on the digitized output channel.

If you can't hear sound during any of the above tests, check connections between the Audio and speakers, microphone then run the test again. If your Audio passes these tests, it is OK for your applications. When CMTEST shows the I/O address, IRQ and DMA information, please add the follow setting to your AUTOEXEC.BAT file.

```
SET BLASTER=A220 I5 D1
```

### Note :

<b>A# .....</b>	<b># is the I/O address</b>
<b>I# .....</b>	<b># is the IRQ number</b>
<b>DA#.....</b>	<b># is the DAM channel</b>

This setting in AUTOEXEC.BAT will be helpful to some software to recognize the Audio.

### *CMUTIL*

CMUTIL.EXE is an integrated voice utility program to help you create and replay voice files. At DOS prompt, type CMUTIL [Enter]

Integrated environment of CMUTIL appears on screen.

### *CMORGAN*

This program lets you play PC keyboard like an electronic organ. There are 128 tones can be changed by pressing F1. Press F2 can play MIDI file (\*.MID).

### *CMPLAY*

CMPLAY.EXE lets you play voice file at DOS prompt. Voice is played in a background process. You may specify optionally a foreground process running at the same time when voice is playing.

### *CMREC*

CMREC.FXE lets you record voice into file at DOS prompt. Voice is recorded in a background process. You may specify optionally a foreground process running at the same time when voice is being recorded.

### *CMCDPLYR*

CMCDPLYR.EXE lets you play CD-Audio at DOS prompt. At DOS prompt, type CMCDPLYR [Enter]

### *PLAYWAV*

PLAYWAV.EXE lets you play wave file at DOS prompt. To run PLAYWAV, at DOS prompt, type in PLAYWAV filename [Enter]

Example : PLAYWAV DEMO.WAV

## 4-4 Installation of Windows 95

**Note :**

- 1. We recommend that you have already installed Microsoft Windows 95 before installing Audio. And you didn't install any other sound card device drivers in your current system.**
- 2. If you got any problem with installing Windows 95, please contact your local Microsoft's agent.**

### *Installing the Windows 95 driver*

Steps of installing Windows 95 driver of Audio

1. Turn on the computer, and enter into Microsoft Windows 95.
2. Insert the Audio Windows 95 installation diskette into drive A(Audio Driver Disk).
3. You will see a windows prompt like this:  
"New Hardware Found  
CMI8330 Audio Adapter  
Windows has found new hardware and is installing the software for it", then the dialog box shown.
4. Select "Driver form disk provided by hardware manufacturer", click "OK".
5. When system requests for Audio Windows 95 installation disk. Please make sure the path is point to the drive that installation disk is in, and click "OK".
6. Now, system is installing PnP device drivers automatically. After a while, system finished installation. Then enter Windows 95 main screen. You will hear a wave playing from the system if you"have installed speakers.
7. Now, you have already installed Audio on Microsoft Windows 95 successfully.

If you want to install Windows applications of Audio. Please follow the following steps:

1. Click "start" key. Select "Run".
2. Please make sure your Audio Windows 95 driver disk is in floppy A ( Audio application Software)
3. Please Key in the path name of Windows applications install program as "A:\WSETUP.EXE"
4. Click "OK" to start the procedure of installation. and follow questions to finish installation.
5. Shut down Windows 95 system and reboot your system, when all of application software have been installed.

#### Install DOS drivers under Windows 95 DOS

If you enter DOS and executing applications or games by press "Alt-F5" or "F8" key before Windows 95 system booting. You need to install DOS drivers. Please run "INSTALL .EXE" program in root directory of "Audio Driver Disk" disk( Refer user manual section 2.3). Please do not specify Windows path when program request. You need only DOS drivers.

If you just running applications and games in Windows 95 system or shut down to DOS, you don't have to install DOS drivers.

#### *About Full Duplex:*

How to test the Full-Duplex function of Audio (PLAY and RECORD at same time)?

1. Press "Start" key
2. Select "Programs" "Accessories" "Multimedia" and press "Media Player".
3. Please click item of "Device" and click "Sound"
4. Press the left key of your mouse.
5. Select "The Microsoft Sound", and press "Open"".
6. Click item of "Edit" and "Options"".
7. Please click "Auto Rewind" and "Auto Repeat", then "OK"".
8. Press play key of "Media Player"

At this moment, you can hear the sound from "The Microsoft Sound".

Prepared for recording.

1. Click "Start" key
2. Moved the mouse cursor to "Programs".
3. Then move the cursor to "CMI8330 Audio Rack"
4. Select item "Audio Rack" and click.
5. Now you can see the Audio Rack program shown on your screen.
6. Set recording channel to "Wave" from mixer program
7. Click the red spot on wave player to start recording.
8. Now you can see the recording function works fine here.

**NOTE :**

**If there is no problem when playing WAV in "Media Player" and recording WAV in "Audio Rack", then your Full-Duplex sound system should work OK now.**

Windows 95 Important Note

As we recommended in this manual before, you should install Win95 to your PC system before you installed Audio. If you do the installation VICE VERSA, then, the drivers of Audio cannot be installed automatically and "Device Manager" in Win95 will detect Audio as "Other devices", an "?CMI8330 Audio Adapter" will also appear on the screen. If this happens, please follow the steps to remove the existing drivers in your system and re-install all the Audio drivers again:

1. Press "Start", move cursor to "Setting" then press "Control Panel"
2. Select "System", then press "Device Manager" and find the "Other devices".
3. Select "?CMI8330 Audio Adapter" and "Remove". There are total 4 or 3 "?CMIS330 Audio Adapter"s, so you should "Remove" them one by one.
4. Press "Refresh". Win95 will automatically execute the installation of the sound card drivers. Please follow the previous chapters of this manual to complete the installation.

## 4-5 Installation of Windows NT 4.0

### Note :

- 1. We recommend that you have already installed Windows NT 4.0 before installing Audio. And you didn't install any other sound card device drivers in your current system.**
- 2. Please make sure your PC BIOS PnP AUTO CONFIG is set to ENABLE, if your PC BIOS supports PnP function.**
- 3. If you got any problem with installing Windows NT 4.0, please contact your local Windows agent.**

Please follow the following steps to install Audio device drivers into Windows NT 4.0.

1. Click "Start" button, move highlight bar to Setting", select "Control Panel".
2. Double click "Multimedia" icon.
3. Select "Devices" page and press "Add" button.
4. Select "Unlisted or Updated Driver" item in "List of Drivers".
5. Specify path that NT drivers is in (ex. A:\NT).
6. Select "C-Media CM8330" item and press "OK " button.
7. Select proper value of I/O.
8. Press "OK" button.
9. Restart system when asking.
10. Now, you have already installed Audio on Microsoft Windows NT 4.0 successfully.

If you want to use MPU-401 MIDI device, please follow the steps describe above. But in steps 4, select "MPU-401 MIDI compatible driver" item. Specify the path of Windows NT 4.0 CD-ROM directory \I386, system will add MPU- 401 MIDI device for you.

## 4-6 Windows Applications (Audio Rack)

### Introduction

Audio Rack lets you control over your PC's audio functions through a user interface as simple to use as a home stereo system.

Audio Rack consists of several major components:

**Control Center :** Controls the display of Audio Rack's components

**MIDI Player:** Plays MIDI music files. Lets you create song playlists and play the song files.

**Wave Player:** Records and plays digital audio (wave) files. Let's you create wave file playlists and playback the wave files.

**CD Player:** Plays standard audio CDs. Allows you to create playlist collections of CD tracks (songs).

**System Mixer:** Sets the volume level of your audio inputs and outputs.

**Showing or Hiding Audio Rack Components**

To remove or add a component from display, click on the component's button on the Control Center's Button Bar or toggle it off.

### System Mixer

System Mixer lets you control all audio output and input levels.

**Volume Control:** Clicking on this button allows you to use the output level controls.

**Recording Control:** Clicking on this button allows you to use the input level controls.

**Input and Output Level Sliders and Buttons:**

For each input or output signal, a control slider controls the loudness, a horizontal slider controls balance between the two speakers, and the mute button temporarily stops input or output without changing slider positions.

Control types and names vary. Some common types are listed below:

- Vol : The master control for all outputs. The strength of an output signal is determined by both the Vol slider and the slider for the individual output. To affect all outputs, move the Vol slider. To change the output of an individual output type, move its slider.
- Line-in : Controls the audio hardware's Line In or Line Out levels. Line In might be for an externally attached cassette player, e.g.
- Mic : Controls the microphone input level.
- Wave : Controls wave (voice) playback or record levels.
- FM : Controls the FM music play or record level.
- Synth : Controls the external MIDI synthesis(wave table) play or record level.
- CD : Controls the CD drive audio output level.
- Dig-CD : Turn on or off the CD drive digital audio output.
- 3D Snd : Toggle the 3D surround sound effect.
- Loud : Toggle the output loudness.
- Mute Buttons: Toggle between muting and resuming the output volume. A button with a lit LED is resuming the output, while a LED not lit is muted. Several output signals can usually be enabled at once.

*MIDI Player, Wave Player, and CD Player*

- Sel (or Trk) field:

If you have multiple selections in your playlist, this shows the number of the current selection or CD track.

- Current File or Track:

The name of the current MIDI file, wave audio file, or CD track.

- Total Length field:

displays the total length of tiles or tracks in minutes and seconds.

- Current Time field:

displays the current time of tiles or tracks in minutes and seconds when playback or recording.

Please refer to help screen for more detail button functions description.  
(click on help "?" button on player)