

HOT-687
PPGA Celeron processor
Based AGP MAIN BOARD
User's Manual

Shuttle® Spacewalker™ HOT-687

PPGA Celeron processor based AGPset Mainboard Manual Version 1.0

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
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- Consult the dealer or an experienced radio/television technician for help and 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 004-000-00345-4

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This device complies with the requirements of the EEC directive 89/336/EEC with regard to EMC (Electromagnetic Compatibility). Following standards are applied to this product, in order to achieve compliance with the EMC:

- Immunity is in accordance with EN 50082-1 (1992).
- Emissions are in accordance with EN 55022 (1987) Class B.

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1

INTRODUCTION

Congratulations on your purchase of the Shuttle® Spacewalker™ HOT-687 computer mainboard.

HOT-687 is a highly integrated IBM PC/ATX compatible system board designed to meet the industry's most demanding desktop applications.

Based on the Intel 82440BX AGPset chipset which support up to 500MHz PPGA Celeron processor with MMX technology.

HOT-687 is equipped with an Accelerated Graphics Port (A.G.P.), a high-performance interconnect for graphic-intensive application, such as 3D applications. The A.G.P. is independent of the PCI bus and is designed to exclusively use with graphical-display devices. The HOT-687 supports 3.3 V A.G.P. devices with data transfer rates up to 133 MHz, allowing data throughput of 500 MB/sec.

The Intel's 82440BX AGPset chipset provides an integrated Bus Mastering IDE controller with two high performance IDE interfaces which allows up to four IDE devices connection and up to 33 MB/sec of data transfer rates.

Onboard FM801 is an advanced PCI audio controller, it is compatible with Microsoft Windows, DirectX and Adlib Music Synthesizer, Sound Blaster Pro and supports thousands of DOS games.

The on-board I/O controller provides standard PC I/O functions:

floppy drive interface, two FIFO serial ports, an IrDA device port and a SPP/EPP/ECP capable parallel port.

HOT-687 is built with three PCI local bus slots providing a high bandwidth data path for data-movement intensive functions such as graphics, and with one ISA slot.

HOT-687 provides the foundation for cost effective, high performance and highly expandable platforms, which delivers the latest in the Intel PPGA Celeron processor and new advanced chipset technology.

2

FEATURES

Specification

The HOT-687 Mainboard is carefully designed for the demanding PC user who wants high performance and many intelligent features in a compact package:

Intel Chipset:

Features Intel's 440BX AGPset with I/O subsystems.

CPU Support:

Intel PPGA Celeron processor 300~500 MHz.

Versatile Memory Supports:

Supports **three banks of normal or PC/100 SDRAM** maximum memory size up to 768MB.
Configurable support for ECC (Error Checking and Correcting)

PCI and ISA Expansion Slots:

Provides three 32-bit PCI slots, one 16-bit ISA slot and one AGP slot.

AGP (Accelerated Graphics Port):

AGP Specification 1.0

HOT-687 main board equipped with an AGP slot for an AGP VGA card that supports 133MHz 2X mode for texture mapping z-buffering and alpha blending. AGP allows 3D applications to run faster and smoothly.

Onboard I/O:

One Floppy port;

One PS/2 mouse and PS/2 Keyboard port connector

Two high-speed UART compatible serial ports

Serial Port 2 can also be directed from COM2 to the Infrared Module for wireless connections. One parallel port with ECP and EPP capabilities.

Onboard Audio Controller:

Proprietary logic for Real DOS games support

Hardware Synthesizer for AdLib and General MIDI compatibility

Optional QSound HSP dynamic 3-D positional audio support

S/PDIF digital output port

Built-in SRC (sampling rate converter)

Onboard PCI Bus Master IDE Controller:

Two **Ultra DMA/33 Bus Master IDE** Ports supports four IDE devices up to 33 MB/sec IDE transfers and supports Enhanced PIO Modes 3 and 4 and Bus Master IDE DMA Mode 2 devices.

Onboard 20-pin ATX Power Supply:

ATX power supply unit can connect to the 20-pin ATX power connector onboard, supporting Suspend and soft-on/off by dual-function power button.

System BIOS:

Provides licensed Award V4.51PG BIOS on Flash EEPROM.
Supports Green PC, DMI and Bundled with NCR SCSI BIOS.

ACPI:

Support **ACPI (Advanced Configuration and Power Interface)** function. ACPI provide more Energy Saving Features for the future operating system supporting OS Direct Power Management (OSPM) functionality.

Board Size:

ATX form factor 244mm x 190mm.

Advanced Features:

Low EMI -- Spread Spectrum built in - $\pm 0.5\%$ or $\pm 0.3\%$ modulation and automatic clock shut-off of unused PCI/SDRAMS slots to reduce the EMI.

Dual Function Power Button -- The system can be one of two states, one is Suspend mode and the other is the Soft-off mode. Pushing the power button for less than 4 seconds will place the system into Suspend mode. When push the power button for more than 4 seconds, the system enters the Soft-off mode.

Wake-On-LAN -- The system will power-on automatically by activating of LAN.
(This function support Intel LAN card only).

Modem Ring Power-on -- The system will power-on automatically by activating of modem ring.

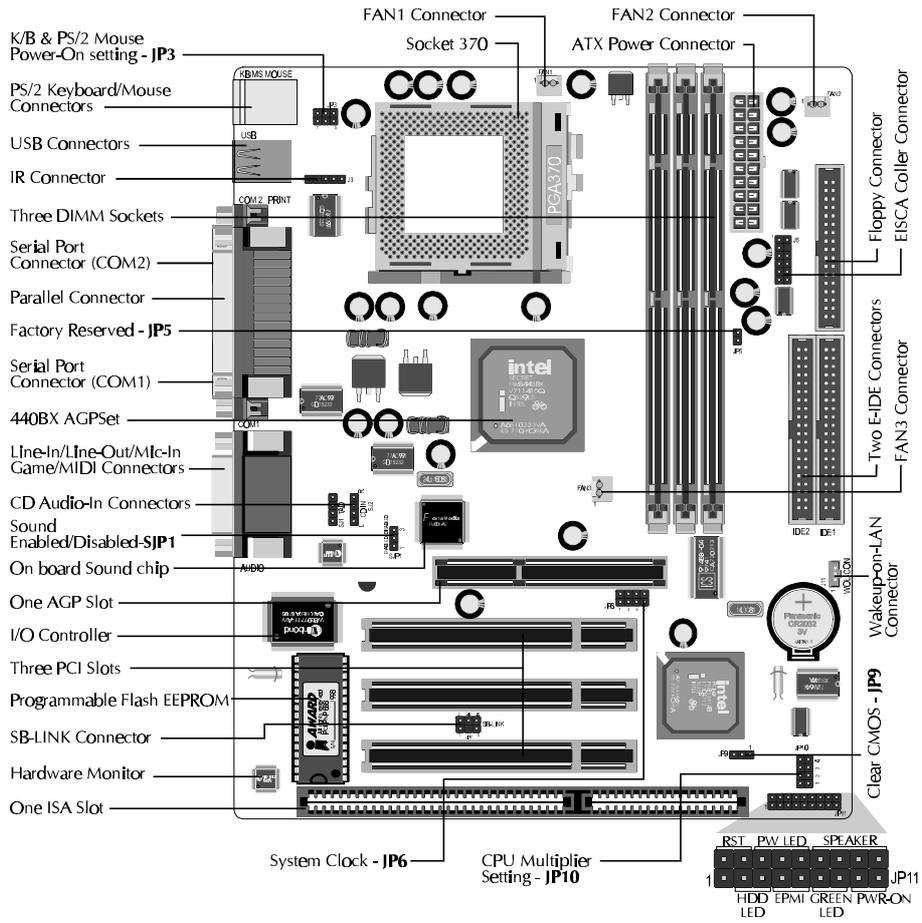
PS/2 Keyboard & Mouse Power-on -- The system will power-on automatically by stroke keyboard or double click PS/2 mouse.

Optional Features:

Voltages Monitoring -- System voltages levels are monitored to ensure stable current to main board components.
System voltages include V_{CORE} and V_{TT} for CPU, and +5V, +12V, -5V, -12V for system.

FAN Status Monitoring -- To prevent CPU overheat, CPU fans is monitored for RPM and failure. (CPU Cooling FAN with RPM sensor is required)

 **Accessories of HOT-687**



3

HARDWARE INSTALLATION

Install The CPU

The Installation PPGA Celeron Processor

HOT-687 mainboard provides a 370-pin ZIF Socket370 for Intel PPGA Celeron CPU. The CPU that came with the mainboard should have a fan attached to it to prevent overheating. If this is not the case then purchase a fan before you turn on your system.

To install a CPU, first turn off your system and remove its cover. Locate the ZIF Socket370 and open it by first pulling the lever sideways away from the socket then upwards to a 90-degree right angle. Insert the CPU with the correct orientation as shown.(Figure 2-1) Use the notched corner of the CPU as your guide. The notched corner should point towards the end of the lever. Notice that there are two blank area where one hole is missing from that corner of the square array of pin holes. Because the CPU has a corner pin for two of the four corner, the CPU will only fit in the one orientation, hold down on the CPU and close the socket's lever.

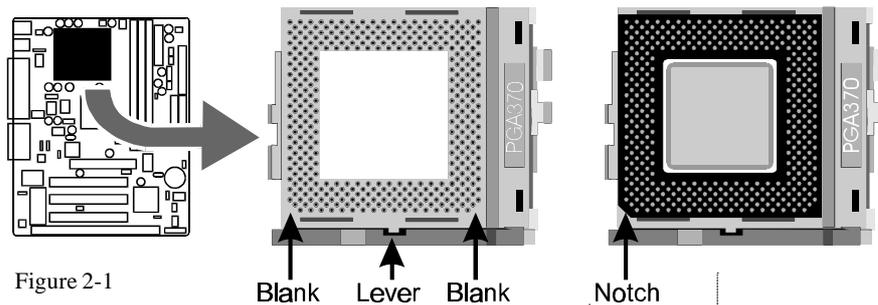


Figure 2-1

Then you should have a CPU fan that will cover the face of the CPU. Apply thermal jelly to the CPU metallic top and then install the fan onto the CPU. (Figure 2-2)

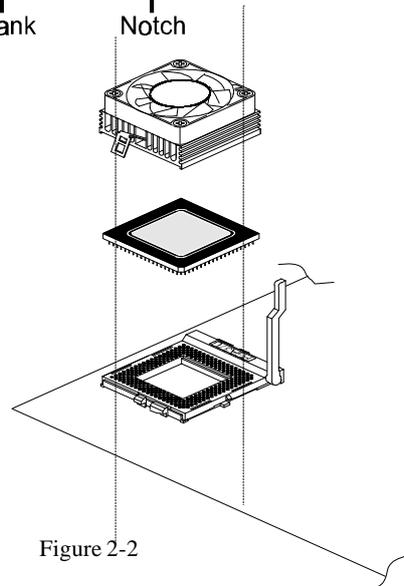


Figure 2-2

Jumpers

Several hardware settings are made through the use of jumper caps to connect jumper pins on the main board. The jumper's pin 1 on main board will be on the top or on the left when holding the main board with the keyboard connector away from yourself.

Jumpers with two pins will be shown as  for Close (On) and  for Open (Off). To connect the pins, simply place a plastic jumper cap over the two pins.

CPU Clock Speed and ratio Selection - JP6 and JP10

HOT-687 mainboard features a clock generator to provide adjustable system clock frequency. JP6 is a 8-pin jumpers which determine the system clock frequency 66 MHz to 150 MHz. and JP10 is a 8-pin jumper which determine the processor clock ratio from 2X to 8X.

Figure 2-3 shows the position of JP6 and JP10 on the mainboard.

Table 2-1 shows adjustable System clock on jumper JP6.

Table 2-2 shows adjustable CPU Clock Ratios on jumper group JP10.

System Clock (JP6)			
66 MHz		112 MHz	
75 MHz		124 MHz	
83 MHz		133 MHz	
100 MHz		140 MHz	
103 MHz		150 MHz	

Table 2-1

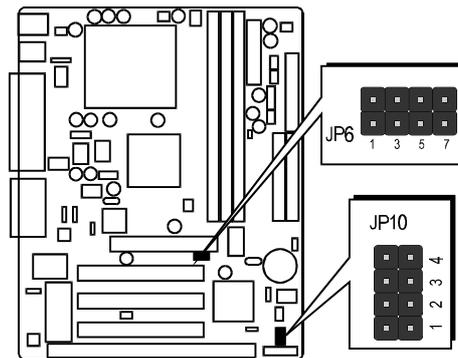


Figure 2-3

Multiplier JP10						
2X	2.5X	3X (300/100)	3.5X (350/100)	4X (400/100)	4.5X (300/66) (450/100)	5X (333/66) (500/100)
						
5.5X (366/66)	6X (400/66)	6.5X (433/66)	7X (466/66)	7.5X (500/66)	8X	
						

Note: Present PPGA Celeron CPU Clock ratio is fixed and unable to adjust, for those processors, JP10 is not functional.

Table 2-2

CPU Host Clock and Clock Ratios Configuration Table (Table 2-3) shows the PPGA Celeron processor 300 MHz ~ 500 MHz quick setting on the mainboard.

Processor	System Clock JP6	Multiplier JP10
300 MHz (66MHz x 4.5)		
333 MHz (66MHz x 5)		
366 MHz (66MHz x 5.5)		
400 MHz (66MHz x 6)		
433 MHz (66MHz x 6.5)		
466 MHz (66MHz x 7)		
500 MHz (66MHz x 7.5)		

Table 2-3

On Board Audio Controller Setting - SJP1

HOT-687 mainboard provides on-board QSound HSP dynamic 3-D positional audio controller chip. Jumper SJP1 is used to enabled or disabled it.



On-board Audio Controller Enabled



On-board Audio Controller Disabled

Special Tip for User's Reference Only

HOT-687 mainboard provides a special **Jumper JP5** to overspeed your 66 MHz based Intel PPGA Celeron processor to 100 MHz when jumper group JP10 set to MANUAL.

Normally, CPU Host Clock 100 ~ 133 MHz are not available for 66 MHz based processor no matter Soft-Configure or Hard-Configure.

But, when pull out mini jumper from JP5 (let it open), the user can Hard-Configure your 66 MHz based processor to 100 MHz based. For example, overspeed your 333 MHz (66 MHz x 5) PPGA Celeron to 400 MHz (100 x 4) or more.

Clear CMOS - JP9

HOT-687 mainboard supports jumper **JP9** for discharging mainboard's CMOS memory.

This jumper can clear the CMOS data stored in the Giga I/O chip. To clear the CMOS data please follow listed steps:

- 1) Turn off the PC,
- 2) Remove mini jumper from JP9 pin 1-2,
- 3) Insert mini jumper to JP9 pin 2-3 for a brief while,
- 4) Remove mini jumper from JP9 in 2-3,
- 5) Reinsert mini jumper to JP9 pin 1-2,
- 6) Turn on the PC.

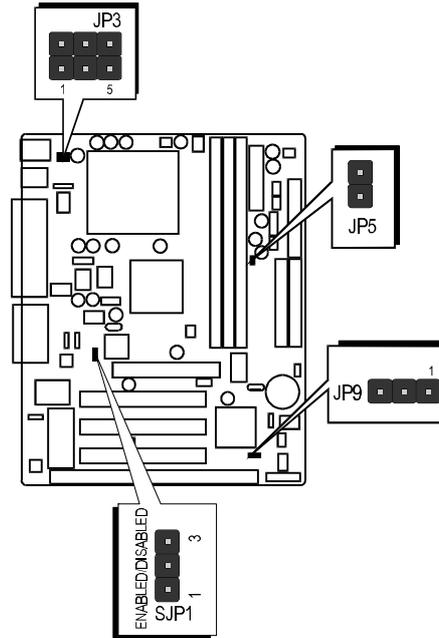


Figure 2-4

Keyboard & PS/2 Mouse Power-On Setting - JP3

HOT-687 mainboard provides an optional power-on function by stroke any key (or hot-key) on keyboard or double click on PS/2 mouse.

Note: Power-on by serial mouse is not supported

JP3 is the jumper used to set the functions of keyboard & PS/2 mouse power-on Enabled or Disabled.

When you enabled K/B & PS/2 Mouse Power-ON function, you also have to set the proper item on **POWER ON function** category of **Integrated Peripherals** of BIOS setup.

K/B & PS/2 Mouse Power-On JP3		
Keyboard & PS/2 Mouse Power-On Disabled	Keyboard & PS/2 Mouse Power-On Enabled	PS/2 Mouse Power-On Enabled

Table 2-4

Connectors

Front Panel Connectors (JP11)

Speaker Connector - SPEAKER

PC speaker connector may attach a 4-pin PC speaker cable from the case to this connector.

HDD LED Connector - IDE LED

Attach a 2-pin IDE drive LED cable to this connector. The LED lights when an IDE device is active.

ATX Power On/Off Switch Connector - PW ON

Attach a 2-pin momentary type switch to this connector for turning on or off your ATX power supply.

Hardware Reset Connector - RST

Attach 2-pin hardware reset switch to it. Closing the reset switch restarts the system.

PW-LED Connector - PW LED

Power LED connector is a 3-pin connector for attached to the case's Power LED.

EPMI Connector - EPMI

Hardware System Management Interface connector may attach a 2-pin momentary switch to it. When push it will force system get into power saving mode, and the system will resume when switch is pushed again.

GLEED Connector - GREEN LED

Attach a 2-pin Green LED cable to it. The Green LED lights when the system get into power saving mode.

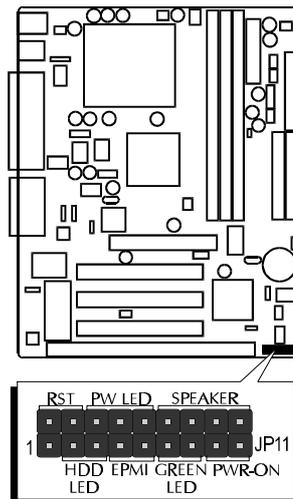


Figure 2-5

Back Panel Connectors

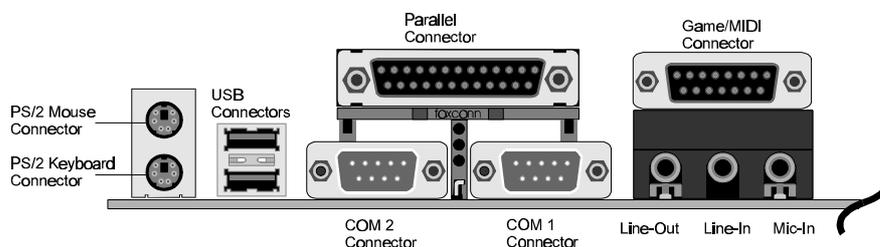


Figure 2-6

COM1/COM2 Connectors

This mainboard can accommodate up to two serial devices on COM1 and COM2. Attach each serial device cable to the DB9 serial port COM1/COM2 at the back panel of your computer.

PS/2 Keyboard & PS/2 Mouse Connector

Two 6-pin female PS/2 keyboard & Mouse connectors are located at the rear panel of the main board. Depending on the computer housing you use (desktop or minitower), the PS/2 Mouse connector is situated at the top of the PS/2 Keyboard connector when the mainboard is laid into a desktop, as opposed to a mini-tower where the PS/2 Mouse connector is located at the right of the PS/2 Keyboard's. Plug the PS/2 keyboard and mouse jacks into their corresponding connectors.

Parallel Port Connector

One DB25 female parallel connector is located at the rear panel of the mainboard. Plug the connection cable from your parallel device (printer, scanner, etc.) into this connector.

USB1/USB2 Port Connectors

Two female connectors USB1/USB2 share the same USB (Universal Serial Bus) bracket at the rear panel of your mainboard. Plug each USB device jack into an available USB1/USB2 connector.

Line-Out

Line-Out is a stereo output through which the combined signal of all internal and external audio sources on the board is output. It can be connected to 1/8-inch TRS stereo headphones or to amplified speakers.

Line-In

Line-In is a stereo line-level input that accepts a 1/8-inch TRS stereo plug. It can be used as a source for digital sound recording, a source to be mixed with the output, or both.

Mic-In

MIC-IN is a 1/8-inch jack that provides a mono input. It can use a dynamic mono or stereo microphone with a resistance of not more than 600 ohms.

GAME/MIDI

The GAME/MIDI port is a 15-pin female connector. This port can be connected to any IBM PC compatible game with a 15-pin D-sub connector.

MIDI Instrument Connection

You need a MIDI adapter to connect a MIDI instrument to the sound card. The MIDI adapter can be connected to the Joystick/MIDE port. You will also need MIDI sequencing software to run MIDI instruments with your computer.

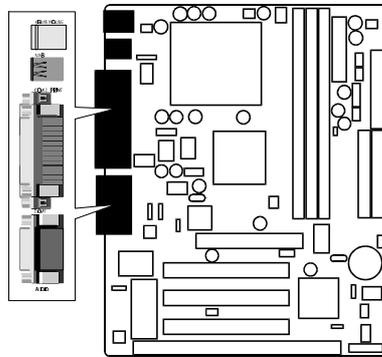


Figure 2-7

Other Connectors

ATX Power Supply Connector - J4

It is a 20-pin male header connector is connected to the ATX power supply. The plug of the power supply will only insert in one orientation because of the different hole shade and size. Find the proper orientation and push down firmly making sure that the pins are aligned.

IR Connector - J3

If you have an Infrared device, this mainboard can implement IR (Infrared) transfer and meet both ASKIR and HPSIR specifications. To enable the IR transfer function, follow these steps:

- Step 1.** Attach the 5-pin infrared device cable to J3 connector. (Refer to the above diagram for IR pin assignment.)
- Step 2.** Configure the Infrared transfer mode in the UR2 Mode field of Integrated Peripherals menu in BIOS Setup. This mainboard supports IrDA 1.0, ASKIR, MIR 0.57M and MIR 1.15M transfer modes. FIR is not currently supported.

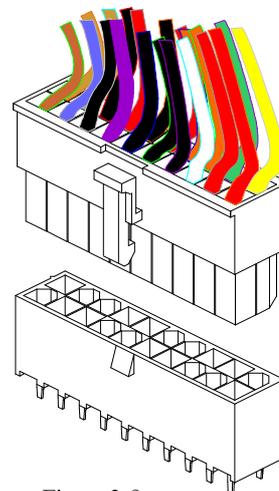


Figure 2-8

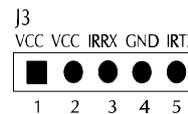


Figure 2-9

Audio Connectors SJ1/SJ2

MODEM/TAD IN/OUT

Port SJ1 can be used to connect a modem audio line to HOT-687. You would use this connector when using telephone answering machine software for input and output.

TAD

SJ1:

1=PHONE

2=Ground

3=Ground

4=MONO

CD AUDIO INPUT

Port SJ2 is used to attach a CD-ROM audio connector.

CD_IN

SJ2:

1=Left Channel

2=Ground

3=Ground

4=Right Channel

CPU, Chassis & AGP cooling Fan connectors - FAN1, FAN2, FAN3

The main board provides three onboard 12V cooling fan power connectors. Depending on the fan maker, the wiring and plug may be different. The red wire should be connected to +12V and black wire should be connected to ground (GND).

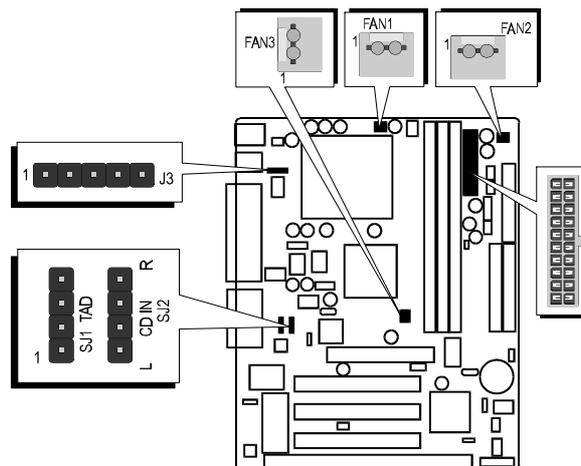


Figure 2-10

Wake-On-LAN Connector - J11

Attach a 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function. This function lets users wake up the connected system through the LAN card.

Enhanced IDE and Floppy connectors

The mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2) providing support for up to four IDE devices, such as CD-ROM and Hard Disk Drives (H.D.D.). This mainboard also includes one 34-pin floppy disk controller (FDC) to accommodate the Floppy Disk Drive (F.D.D.).

This mainboard comes with one 40-pin ribbon cable to connect to IDE H.D.D and one 34-pin ribbon cable for F.D.D.

● Ribbon cables are directional, therefore, make sure to always connect with the red cable-strip on the same side as pin #1 of the IDE1/IDE2 or FDC connector on the mainboard.

SB-Link connector - JP7

The main board provides a 2x3 pin SB-Link header accepts the Creative CT4600 series PCI sound cards with PCI solution to connect the legacy Sound Blaster compatible audio to the PCI bus.

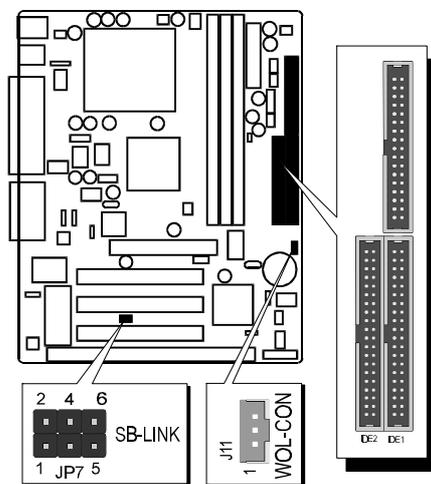


Figure 2-11

4

MEMORY CONFIGURATION

The HOT-687 mainboard provides three 168-pin DIMM sockets that make it possible to install from 8MB up to 768MB of SDRAM. The DIMM socket support 8MB, 16MB, 32MB, 64MB, 128MB and 256MB 3.3V single- or double- side SDRAM DIMM.

The three DIMM sockets are arranged in three banks of one socket each, Each bank provides a 64/72-bit wide data path.

HOT-687 provides optional data integrity features including EC (Error Checking) or ECC (Error Checking and Correcting) in the memory array. EC mode provides single and multiple bit error detection. In ECC mode, during reads from the DRAM, the HOT-687 provides error checking and correction of the data.

To support ECC, you must use true (opposed to phantom parity generated by TTL chips) 72-bit parity-type DIMM for all modules.

⌘ Install Memory

Install memory in any or all of the banks and in any combination, as follows:

DIMM Socket	Memory Modules	Moudule Quantity
DIMM 1	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1
DIMM 2	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1
DIMM 3	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1

Table 3-1

⌘ Upgrade Memory

You can easily upgrade the system memory by inserting additional SDRAM modules in available DIMM banks. The total system memory is calculated by simply adding up the memory in all DIMM banks. After upgrade, the new system memory value will automatically be computed and displayed by the BIOS Standard CMOS Setup menu.

5

FLASH UTILITY

This chapter briefly discusses Award Flash utility in order to guide you through updating your old BIOS. The file name we use to program here is test.bin, and the file name to save old BIOS is 687.OLD. Please note that those file names are not absolute. They are only examples to let you have a more clear understanding of the updating process.

How to Begin

1. Please type "awdf flash" and press the ENTER key to begin the updating process.
2. Once you enter, you will see a main menu displaying:
3. Move the cursor to "File Name to Program: "
4. Type the program name "test.bin", and then press the ENTER key.
5. At the bottom of the menu, you will be requested to answer:

"Do You Want to Save BIOS (Y/N)? "

```
FLASH MEMORY WRITER v5.5
Copyright (C) 1996-1997, Award Software, Inc.

For 8 1440EX M5135 2069JH2DC  DATE: 04/20/19
Flash Type - WINBOND 29EE011 /5U

File Name to Program : test.bin

Error Message: Do You Want To Save Bios (Y/N)
```

The following manual is intended to guide you through the process of both "No" and "Yes" cases respectively.

If "No"

If you do not wish to save the old BIOS:

1. Please type "N", and then press the ENTER key.
2. Then you will be requested to answer:

"Are You Sure to Program? "

3. Answer "N" if you do not want to program, and then it will exit.

If “Yes”

To save the old BIOS:

1. Please respond “Y”, and then press the ENTER key.
2. Move the cursor to “File Name to Save: “
3. Type file name “TEST.BIN”, and then press the ENTER key. (Your old BIOS will be saved in the file name you create. In this case, the old BIOS is saved in the file name, 687.OLD).
4. Then you will be requested to answer:
“Are You Sure to Program (Y/N)? “

```
FLASH MEMORY WRITER v5.5
Copyright (C) 1996-1997, Award Software, Inc.

For 8-1440BX-M5135-2A69JH2BC  DATE: 04/20/19
Flash Type - WINBOND 29EE011 /5U

File Name to Program : test.bin
File Name to Save   : 687.old

Error Message:
```

5. Type “Y” to begin programming, and press the ENTER key.
6. When the programming is finished, the showing message will appear:
7. Once you see the showing message “Power Off or Reset System”, please restart your system.
8. When you power on the computer again, you will find your old BIOS has already been successfully updated.

To view a complete usage of FLASH utility, please type “awdf flash /?” and press the ENTER key.

Notes About Award Flash Utility

Please note that Award Flash Utility cannot run under **EMM386** or **QEMM**. Thus, when executing the command “awdf flash”, an error message will appear:

“Error Message: Fail — Due to EMM386 or QEMM !”

6

BIOS SETUP

The BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appear briefly at the bottom of the screen during the POST (Power On Self Test), press key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

“Press DEL to enter SETUP”

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF the ON or pressing the “RESET” button on the system case. You may also restart by simultaneously press <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

“Press F1 to Continue, DEL To Enter Setup”

The Main Menu

ROM PCI/ISA BIOS (2A69KHZE) 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 BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color

Standard CMOS setup

This setup page includes all items in a standard compatible BIOS.

BIOS features setup

This setup page includes all items of Award special enhanced features.

Chipset features setup

This setup page includes all items of chipset features.

Power Management Setup

This setup page includes all items of Power Management features.

PnP/PCI Configuration setup

This item specifies the value (in units of PCI bus blocks) of the latency timer for the PCI bus master and the IRQ level for PCI device. Power-on with BIOS defaults

Load BIOS Defaults

BIOS defaults loads the values required by the System for the maximum performance. However, you can change the parameter through each Setup Menu.

Load Setup Defaults

Setup defaults loads the values required by the system for the O.K. performance. However, you can change the parameter through each Setup Menu.

Integrated Peripherals

This setup page includes all items of peripheral features.

Supervisor Password

Change, set, or disable supervisor password. It allows you to limit access to the system and Setup, or just to Setup.

User Password

Change, set, or disable user password. It allows you to limit access to the system and Setup, or just to Setup.

IDE HDD auto detection

Automatically configure IDE hard disk drive parameters.

Save & Exit setup

Save CMOS value change to CMOS and exit setup

Exit without saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup

```
ROM PCI/ISA BIOS (2A69KHZE)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Tue, Apr 20 1999
Time (hh:mm:ss) : 13 : 56 : 41

HARD DISKS      TYPE      SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE
-----
Primary Master  : Auto      0      0    0     0      0      0  AUTO
Primary Slave   : Auto      0      0    0     0      0      0  AUTO
Secondary Master : Auto      0      0    0     0      0      0  AUTO
Secondary Slave  : Auto      0      0    0     0      0      0  AUTO

Drive A : 1.44M, 3.5 in.
Drive B : None

Video : EGA/UGA
Halt On : All Errors

Base Memory: 0K
Extended Memory: 0K
Other Memory: 512K
-----
Total Memory: 512K

ESC : Quit          ↑ ↓ → ← : Select Item      PU/PD/+/- : Modify
F1  : Help          (Shift)F2 : Change Color
```

Date

The date format is <day>, <month> <date> <year>. Press <F3> to show the calendar.

Time

The time format is <hour> <minute> <second>. The time is calculated base on the 24-hour military-time clock. For example. 5 p.m. is 17:00:00.

Hard Disks Type

This item identify the types of hard disk drives that has been installed in the computer. There are 46 predefined types and a user definable type.

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this item. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. Those information should be provided in the documentation from your hard disk vendor or the system manufacturer.

The user may also set those items to AUTO to auto configure hard disk drives parameter when system power-on.

If a hard disk drive has not been installed select NONE and press <Enter>.

Drive A type/Drive B type

This item specifies the types of floppy disk drive A or drive B that has been installed in the system.

Video

This item selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

Error halt

This item determines if the system will stop, when an error is detected during power up.

Memory

This item is display-only. It is automatically detected by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the mainboard, or 640K for systems with 640K or more memory installed on the mainboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

BIOS Features Setup

ROM PCI/ISA BIOS (2A69KH2E) 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
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D4000-D7FFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	D8000-DBFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up Floppy Seck	: Enabled		
Boot Up NumLock Status	: On		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/UGA Palette Snoop	: Disabled		
OS Select For DRAM > 64MB	: Non-OS2		
Report No FDD For WIN 95	: No		
		ESC : Quit	↑↓←→ : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values (Shift)	F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

!WARNING!
Disk boot sector is to be modified
Type "Y" to accept write or "N" to abort write
Award Software, Inc.

CPU Internal Cache

This item enables CPU internal cache to speed up memory access.

External Cache

This item enables CPU secondary cache to speed up memory access.

CPU L2 Cache ECC Checking

When you select Enabled, memory checking is enabled when the external cache contains ECC SRAMs.

Quick Power On Self Test

This item speeds up Power On Self Test (POST) after you power on the computer. If it is set to Enabled, BIOS will shorten or skip some check items during POST.

Boot Sequence

This item determines which drive computer searches first for the disk operating system. Default setting is A, C, SCSI. BIOS also support system boot from CD-ROM drive or SCSI hard disk drive.

Swap Floppy Drive

When this item enables, the BIOS will swap floppy drive assignments so that Drive A: will function as Drive B: and Drive B: as Drive A:.

Boot Up Floppy Seek

When this item enables, the BIOS will swap floppy drive assignments so that Drive A: will function as Drive B: and Drive B: as Drive A:.

Boot Up NumLock Status

When this option enables, BIOS turns on *Num Lock* when system is powered on.

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 MByte. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, set to Fast for the system chipset to provide support for gate A20.

Typematic Rate Setting

This determines if the typematic rate is to be used. when disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, this selection allows you select the rate at which the keys are accelerated.

Typematic Delay (Msec)

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins

Security Option

This item allows you to limit access to the System and Setup, or just to Setup.

When *System* is selected, the System will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

When *Setup* is selected, the System will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

PCI/VGA Palette Snoop

This item must be set to enabled if there is a MPEG ISA card installed in the system, and disabled if there is no MPEG ISA card installed in the system.

OS Select For DRAM > 64MB

This item allows you to access the memory that over 64 MB in OS/2.

Report No FDD For WIN 95

This item enable for report No FDD for WIN95 if No FDD install.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

C8000-CBFFF Shadow/DC000-DFFFF Shadow

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of SCSI Add-on card.

Chipset Features Setup

ROM PCI/ISA BIOS (2A69KHZE)	
CHIPSET FEATURES SETUP	
AWARD SOFTWARE, INC.	
Auto Configuration	: Enabled
EDO DRAM Speed Selection	: 60ns
EDO CASx# MA Wait State	: 1
EDO RASx# Wait State	: 1
SDRAM RAS-to-CAS Delay	: 3
SDRAM RAS Precharge Time	: 3
DRAM Idle Timer	: 0
SDRAM CAS latency Time	: 3
SDRAM Precharge Control	: Disabled
DRAM Data Integrity Mode	: Non-ECC
System BIOS Cacheable	: Disabled
Video BIOS Cacheable	: Disabled
Video RAM Cacheable	: Disabled
8 Bit I/O Recovery Time	: 1
16 Bit I/O Recovery Time	: 1
Memory Hole At 15M-16M	: Disabled
Passive Release	: Enabled
Delayed Transaction	: Disabled
AGP Aperture Size (MB)	: 64
Auto Detect DIMM/PCI Clk	: Disabled
Spread Spectrum	: Disabled
CPU Warning Temperature	: Disabled
Current System Temp.	: XXXXX°F
Current CPU1 Temperature	: XXXXX°F
Current CPUFAN1 Speed	: XXXXRPM
Current CPUFAN2 Speed	: XXXXRPM
Current CPUFAN3 Speed	: XXXXRPM
IN0(U)	: XX.XV
IN1(U)	: XX.XV
IN2(U)	: XX.XV + 5 U
+12 U	: XX.XV
-12 U	: -XX.XV
- 5 U	: -XX.XV
Shutdown Temperature	: 60°C/140°F
ESC	: Quit
F1	: Help
F5	: Old Values (Shift)F2 : Color
F6	: Load BIOS Defaults
F7	: Load Setup Defaults
↑↓←→	: Select Item
PU/PD/+/-	: Modify

Auto Configuration

The default setting of the optimal timings for items 3 through 7 for 60ns EDO DRAM modules.

EDO DRAM Speed Selection

This item set the EDO DRAM Read/Write timings that the system uses. When item of "Auto Configuration" is disabled, this item will not show up.

EDO CASx# MA Wait State

The board designer may elect to insert one additional wait state before the assertion of the first CASx# for page hit cycles, thus allowing one additional clock of MA setup time to the CASx# for the leadoff page hit cycle. Do not change from the manufacturer's default unless you are getting memory addressing errors.

EDO RASx# Wait State

The board designer may elect to insert one additional wait state before RASx# is asserted for row misses, thus allowing one additional MAX [13:0] setup time to RASx# assertion. This field applies only if EDO DRAM is installed in the system.

SDRAM RAS-to-CAS Delay

This field lets you control the number of DCLKs between a Row Activate command and a read or write command.

SDRAM RAS Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data. This field applies only if synchronous DRAM is installed in the system.

DRAM Idle Timer

This item specifies the number of clocks that the DRAM controller will remain in IDLE state before precharging all pages.

SDRAM CAS Latency Time

When synchronous DRAM is installed, you can control the number of CLKs between when the SDRAMs sample a read command and when the controller samples read data from the SDRAMs. Do not reset this field from the default value specified by the system designer.

SDRAM Precharge Control

When Enabled, all CPU cycles to SDRAM result in an All Banks Precharge Command on the SDRAM interface.

DRAM Data Integrity Mode

This item allows the user to set DRAM data integrity mode to *Non-ECC* or *ECC*. Non-ECC has byte-wide write capability but no provision for protecting data integrity in the DRAM array. ECC allows a detection of single-bit and multiple-bit errors and recovery of single-bit errors.

System BIOS Cacheable

This item allows the user to set whether the system BIOS F000~FFFF areas are cacheable or non-cacheable.

Video BIOS Cacheable

This item allows the user to set whether the video BIOS C000~C7FF areas are cacheable or non-cacheable.

Video RAM Cacheable

This is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must leave this on the default setting of *Disabled* if your display card cannot support this feature or else your system may not boot.

8 Bit I/O Recovery Time

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much after than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks.

16-Bit I/O Recovery Time

This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

Passive Release

When enabled, the chipset provides a programmable passive release mechanism to meet the required ISA master latencies.

Delayed Transaction

Since the 2.1 revision of the PCI specification requires much tighter controls on target and master latency. PCI cycles to or from ISA typically take longer. When enabled, the chipset provides a programmable delayed completion mechanism to meet the required target latencies.

AGP Aperture Size (MB)

This item allows the user to set memory-mapped, graphics data structures can reside in Graphics Aperture.

Auto Detect DIMM/PCI Clock

Enabling this item allows system auto detect and close clock signal to empty DIMM/PCI slot to reduce EMI.

Spread Spectrum

This item allows the user to enable Spread Spectrum Modulated to reduce the EMI.

CPU Warning Temperature

Since the mainboard support CPU temperature monitoring and overheat alert. This item allows the user to set the threshold of CPU warning temperature. When CPU temperature over the threshold, system will slow down clock to prevent CPU damage.

Current System Temp

Since the mainboard support System temperature monitoring and overheat alert. This item indicate the current main board temperature.

Current CPU1 Temperature

Since the mainboard support CPU temperature monitoring and overheat alert. This item indicate the current Processor temperature.

Current CPUFAN1/2/3 Speed

The mainboard can detect three fans rotation speed for CPU cooler and system.

IN0(V) ~ IN2(V), +5V ~ -5V

The mainboard support CPU and mainboard voltages monitoring. The onboard hardware monitor is able to detect the voltages output of the voltage regulators and power supply.

Shutdown Temperature

Select the combination of lower and upper limits for the system shutdown temperature, if your computer contains an environmental monitoring system. If the temperature extends beyond either limit, the system shuts down.

Power Management Setup

ROM PCI/ISA BIOS (2A69KHZE) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.		
Power Management	: Min Saving	** Reload Global Timer Events **
PM Control by APM	: Yes	IRQ13-7,9-15I,NMI : Disabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 0 : Disabled
Video Off After	: Standby	Primary IDE 1 : Disabled
MODEM Use IRQ	: 3	Secondary IDE 0 : Disabled
Doze Mode	: Disabled	Secondary IDE 1 : Disabled
Standby Mode	: Disabled	Floppy Disk : Disabled
Suspend Mode	: Disabled	Serial Port : Enabled
HDD Power Down	: Disabled	Parallel Port : Disabled
Throttle Duty Cycle	: 62.5%	Resume by LAN : Disabled
PCI/UGA Act-Monitor	: Disabled	
Soft-Off by PWR-BTTM	: Instant-Off	
CPUFAN Off In Suspend	: Enabled	
PowerOn by Ring	: Disabled	
Power On on PCI card	: Disabled	
Resume by Alarm	: Disabled	
IRQ 0 Break Suspend	: Enabled	
		ESC : Quit ↑↓←→ : Select Item
		F1 : Help PU/PD/+/- : Modify
		F5 : Old Values (Shift)F2 : Color
		F6 : Load BIOS Defaults
		F7 : Load Setup Defaults

Power Management

This item determines the options of the power management function. *Max Saving* puts the system into power saving mode after a brief period of system inactivity; *Min Saving* is the same as *Max Saving* except the time of the system inactivity period is longer; *Disabled* disables the power saving feature; *User Defined* allows you to set power saving options according to your preference.

PM Control by APM

If this item set to *No*, system BIOS will be ignored and APM calls the power to manage the system.

If this item setup to *Yes*, system BIOS will wait for APM's prompt before it enter any PM mode e.g. *DOZE*, *STANDBY* or *SUSPEND*.

Video Off Method

This item define the video off features -*V/H SYNC + Blank*, *DPMS*, and *Blank Only*. The first option, which is the default setting, blanks the screen and turns off vertical and horizontal scanning; *DPMS* allows the BIOS to control the video display card if it supports the *DPMS* feature; *Blank Screen* only blanks the screen.

Video Off After

This item define when to activate the video off feature for monitor power management. The settings are *N/A*, *Doze*, *Standby* and *Suspend*.

MODEM Use IRQ

This item determines the IRQ in which the MODEM can use.
The choice: 1, 3, 4, 5, 7, 9, 10, 11, N/A.

Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

HDD Power Down

This item defines the continuous HDD idle time before the HDD enters power saving mode (motor off). The options are from 1 min to 15 min and *Disabled*.

Throttle Duty Cycle

This item determines the duty cycle for the clock control thermal throttling mode. The duty cycle indicates the percentage of time while in the thermal throttle mode. The settings between 12.5% and 87.5%.

PCI/VGA Act-Monitor

If this item is set to Enabled, the VGA activity event will be monitored to reload global timer.

Soft-Off by PWR-BTTN

The setting of **Instant-Off** allows the ATX switch to function as a normal system power off button when pressed for less than 4 seconds. The setting of **Delay 4 Sec.** allows the button to have a dual function where to press the button for less than 4 seconds will place the system in suspend mode, and pressing the button for more than 4 seconds will shut place the system off.

CPUFAN OFF In Suspend

This item determine CPU fan status when the system enters suspend mode.
The options Enabled and Disabled.

PowerOn by Ring

This item determine the system will resume by activating of modem ring.

Power On on PCI card

This item determine the system will power-on by activity of PCI card which with "PME" signal.

Resume by Alarm

This item determine the system will resume by activity of R.T.C. If enabled this feature and enter resume date and time. When date and time expire, system will power-on itself from power off.

IRQ 8 Break Suspend

You can turn On or Off monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

**** Reload Global Timer Events ****

If any of these items is set to Disabled, that system activity event will not be monitored to reload global timer.

If these items is set to Enabled, that system activity event will be monitored to reload global timer.

These items include IRQ[3-7, 9-15], NMI, Primary IDE0/1, Secondary IDE 0/1, Floppy Disk, Serial Port and Parallel Port.

Resume by LAN (Wake-ON-LAN)

This item determine the system will resume by activity of LAN. If enabled this feature system will power-on itself from power off when the activity of LAN.

Note : HOT-687 support Wake-ON-LAN function with Intel LAN card only.

PCI Configuration Setup

ROM PCI/ISA BIOS (2A69KHZE) PNP/PCI CONFIGURATION AWARD SOFTWARE, INC.	
PNP OS Installed : No	PCI IDE IRQ Map To : ISA
Resources Controlled By : Manual	Slot 1 Use IRQ No. : Auto
Reset Configuration Data : Disabled	Slot 2 Use IRQ No. : Auto
IRQ-3 assigned to : PCI/ISA PnP	Slot 3 Use IRQ No. : Auto
IRQ-4 assigned to : PCI/ISA PnP	Used MEM base addr : N/A
IRQ-5 assigned to : PCI/ISA PnP	Assign IRQ For USB : Enabled
IRQ-7 assigned to : PCI/ISA PnP	PCI Latency Timer(CLK): 64
IRQ-9 assigned to : PCI/ISA PnP	MS IRQ Routing Table : Disabled
IRQ-10 assigned to : PCI/ISA PnP	ESC : Quit ↑↓←→ : Select Item
IRQ-11 assigned to : PCI/ISA PnP	F1 : Help PU/PD/+/- : Modify
IRQ-12 assigned to : PCI/ISA PnP	F5 : Old Values (Shift)F2 : Color
IRQ-14 assigned to : PCI/ISA PnP	F6 : Load BIOS Defaults
IRQ-15 assigned to : PCI/ISA PnP	F7 : Load Setup Defaults
DMA-0 assigned to : PCI/ISA PnP	
DMA-1 assigned to : PCI/ISA PnP	
DMA-3 assigned to : PCI/ISA PnP	
DMA-5 assigned to : PCI/ISA PnP	
DMA-6 assigned to : PCI/ISA PnP	
DMA-7 assigned to : PCI/ISA PnP	

PNP OS Installed

When this item is set to Yes, it will allow the PnP OS(Windows 95) control the system resources except PCI devices and PnP boot devices.
Default setting is *No*.

Resources Controlled By

The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system as Windows 95.

Reset Configuration Data

This item allows you to determine whether to reset the configuration data or not.

IRQ 3/4/5/7/9/10/11/12/14/15, assigned to

These items allow you to determine the IRQ assigned to the ISA bus and is not available for PCI slot. Choices are *Legacy ISA* and *PCI/ISA PnP*.

DMA 0/1/3/5/6/7 assigned to

These items allow you to determine the DMA assigned to the ISA bus and is not available for PCI slot. Choices are *Legacy ISA* and *PCI/ISA PnP*.

PCI IDE IRQ Map to

This items allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA device rather than a PCI controller.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A, B, C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard disk drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary as described in "*Slot x Using INT#*" above.

Selecting "*PCI Auto*" allows the system to automatically determine how your IDE disk system is configured.

Slot 1/2/3 Use IRQ No

These items are used to assign system interrupt to each PCI slot automatically or manually.

The choices are 3, 4, 5, 7, 9, 10, 11, 12, 14, 15 and Auto.

Used MEM base addr

This item is used to select a base address for the memory area used by any peripheral that requires high memory.

The choices are *C800*, *CC00*, *D000*, *D400*, *D800*, *DC00* and *N/A*.

Assign IRQ for USB

This item allows the user to assign IRQ to on-board USB controller or not.

Since on-board controller is enabled always, if none of IRQ is assigned to it, there will be a question mark report on system device under windows 95.

PCI Latency Timer

The number of clocks programmed in the PCI Latency Timer represents the guaranteed time slice allocated to the 440BX, after which it must complete the current data transfer phase and surrender the bus as soon as its bus grant is removed.

The PCI Latency Timer is used to guarantee to the PCI agents a minimum amount of the system resource.

The default setting is 64 PCI clocks.

MS IRQ Routing Table

This item allows the user to set BIOS IRQ Routing Table Enabled or Disabled.

Integrated Peripherals

ROM PCI/ISA BIOS (2A69KHZE) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.			
IDE HDD Block Mode	: Enabled	Onboard Serial Port 2	: Auto
IDE Primary Master PIO	: Auto	UART Mode Select	: Standard
IDE Primary Slave PIO	: Auto	RxD , TxD Active	: Hi.Lo
IDE Secondary Master PIO	: Auto	IR Transmittiion delay	: Enabled
IDE Secondary Slave PIO	: Auto	Onboard Parallel Port	: 378/IQ7
IDE Primary Master UDMA	: Auto	Parallel Port Mode	: SPP
IDE Primary Slave UDMA	: Auto	ECP Mode Use DMA	: 3
IDE Secondary Master UDMA	: Auto	EPP Mode Select	: EPP1.9
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Init Display First	: PCI Slot		
POWER ON Function	: BUTTON ONLY		
KB Power ON Password	: Enter	ESC : Quit	F10+ : Select Item
Hot Key Power ON	: Ctrl-F1	F1 : Help	PU/PD/+/- : Modify
RBC input clock	: 8 MHz	F5 : Old Values (Shift)	F2 : Color
Onboard FDC Controller	: Enabled	F6 : Load BIOS Defaults	
Onboard Serial Port 1	: Auto	F7 : Load Setup Defaults	

IDE HDD Block Mode

This item is used to set IDE HDD Block Mode. If your IDE Hard Disk supports block mode, then you can enable this function to speed up the HDD access time. If not, please disable this function to avoid HDD access error.

IDE Primary Master PIO

In this items, there are five modes defined in manual mode and one automatic mode.

There are 0, 1, 2, 3, 4, and AUTO is the default settings for on board Primary Master PIO timing.

IDE Primary Slave PIO

In this items, there are five modes defined in manual mode and one automatic mode.

There are 0, 1, 2, 3, 4, and AUTO is the default settings for on board Primary Slave PIO timing.

IDE Secondary Master PIO

In this items, there are five modes defined in manual mode and one automatic mode.

There are 0, 1, 2, 3, 4, and AUTO is the default settings for on board Secondary Master PIO timing.

IDE Secondary Slave PIO

In this items, there are five modes defined in manual mode and one automatic mode.

There are 0, 1, 2, 3, 4, and AUTO is the default settings for on board Secondary Slave PIO timing.

IDE Primary Master UDMA

On this mainboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/sec. The options are *Disabled, Enabled and Auto*, *Auto* is the default settings for on board Primary Master *UltraDMA33*.

Note : Your hard drive must also support UDMA for this feature to work.

IDE Primary Slave UDMA

On this mainboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/sec. The options are *Disabled, Enabled and Auto*, *Auto* is the default settings for on board Primary Slave *UltraDMA33*.

Note : Your hard drive must also support UDMA for this feature to work.

IDE Secondary Master UDMA

On this mainboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/sec. The options are *Disabled, Enabled and Auto*, *Auto* is the default settings for on board Secondary Master *UltraDMA33*.

Note : Your hard drive must also support UDMA for this feature to work.

IDE Secondary Slave UDMA

On this mainboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/sec. The options are *Disabled, Enabled and Auto*, *Auto* is the default settings for on board Secondary Slave *UltraDMA33*.

Note : Your hard drive must also support UDMA for this feature to work.

On-Chip Primary PCI IDE

As stated above, your system includes two built-in IDE controllers, both of which operate on the PCI bus. This setup item allows you either to enable or disable the primary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

On-Chip Secondary PCI IDE

As above for the Primary controller, this setup item you either to enable or disable the secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller

USB Keyboard Support

This item is used to defined USB Keyboard is *Enabled or Disabled*.

Init Display First

This item is used to determine initial device when system power on. The options are *PCI* and *AGP*.

POWER ON Function

This item is used to defined Keyboard & PS/2 mouse power-on function enabled or disabled. The options are **Button Only**, **HOT-Key** and **PS/2 Mouse**.

Button Only - Only soft-on/off button on the front panel is available.

KB Power ON Password

This item set the keyboard power-on password. When using keyboard to power on , just Enter the password.

Hot Key Power ON

Power-on by soft-on/off button and keyboard are available. The user may set power-on hot-key from <Ctrl><F1> to <Ctrl><F12>.

KBC input clock

This item to set the input clock to onboard keyboard controller. The options are 8MHz, 12MHz and 16MHz.

Onboard FDC Controller

This item specifies onboard floppy disk drive controller. This setting allows you to connect your floppy disk drives to the onboard floppy connector. Choose the "Disabled" settings if you have a separate control card.

Onboard Serial Port 1

This item is used to define onboard serial port 1 to *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3*, *Auto* or *Disabled*.

Onboard Serial Port 2

This item is used to define onboard serial port 2 to *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3*, *Auto* or *Disabled*.

UART Mode Select

The main board support IrDA(HPSIR) and Amplitudes Shift Keyed IR(ASKIR) infrared through COM 2 port. This item specifies onboard Infra Red mode to *IrDA 1.0*, *ASKIR*, *MIR 0.57M*, *MIR 1.15M*, *FIR* or *Standard (Disabled)*.

Note : FIR is not available currently.

RxD , TxD Active

This item specifies the Active level for RxD & TxD signal.

IR Transmittion delay

This item enable/disable the delay of the IR state change from Rx to Tx mode or Tx to Rx mode.

Onboard Parallel Port

This item specifies onboard parallel port address to *378H*, *278H*, *3BCH* or *Disabled*.

Parallel Port Mode

This item specifies onboard parallel port mode. The options are *SPP* (Standard Parallel Port), *EPP*(Enhanced Parallel Port), *ECP* (Extended Capabilities Port), and *EPP+ECP*.

ECP Mode Use DMA

This item specifies *DMA* (Direct Memory Access) channel when ECP device is in use. The options are *DMA 1* and *DMA 3*. This item will not show up when SPP and EPP printer mode is selected.

EPP Mode Select

This item select the EPP Mode, EPP 1.9 or EPP 1.7.

Password Setting

This section describes the two access modes that can be set using the options found on the Supervisor Password and User Password.

ROM PCI/ISA BIOS (2A69RH2E) 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 BIOS DEFAULTS	Enter Password: <input type="text"/> UT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color
Change/Set/Disable Password	

Supervisor Password and User Password

The options on the Password screen menu make it possible to restrict access to the Setup program by enabling you to set passwords for two different access modes: Supervisor mode and User mode.

In general, Supervisor mode has full access to the Setup options, whereas User mode has restricted access to the options. By setting separate Supervisor and User password, a system supervisor can limit who can change critical Setup values.

Enter Password

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Password Disable

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

Warning : Retain a record of your password in a safe place. If you forget the password, the only way to access the system is to clear CMOS memory, please refer to page 11 "Clear CMOS".

FM801
PCI Audio Controller
Software Installation
User's Guide



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1 SPECIFICATION

Features of FM801 PCI Audio Controller

- + PCI 2.1 Compliant
- + PCI Bus Power Management rev. 1.0 Compliant
- + PCI Bus Master For PCI Audio
- + AC97 ver. 2.0 Compliance
- + Microsoft DirectSound Compliance
- + Software 64-voice WaveTable Synthesizer support available
- + Native DOS Game Support without Software Emulation
- + Analog/Digital Joystick Interface
- + Legacy Audio compatibility
- + AdLib compatible Music Synthesizer
- + Hardware Sound Blaster Pro compatibility
- + MPU401 UART mode MIDI interface Joystick

About The FM801

FM801 is an advanced audio controller for the PCI Bus. It is compatible with Microsoft Windows, Microsoft DirectX and Thousands of DOS games. Legacy Audio block supports AdLib Music Synthesizer, Sound Blaster Pro, MPU401 UART mode and Joystick function in order to provide highest hardware compatibility for numerous PC games on real DOS environment.

FM801 PCI audio controller contains the result of many years of experience in PC games, sound and communication development. The sound can be created with FM or wavetable synthesis and held to a professional performance standard. Each sound in the wavetable is derived from real instrument sounds that have been carefully produced for inclusion in ForteMedia's extensive sound library.

This manual contains Software Installation guides for you to setup your FM801 audio controller and its Driver Software for Win95/98, WIN NT4.0 and DOS environment. It also provides the instructions on how to use EzAudio Audio Rack, an easy to use application for playing digital MIDI music, wave sound and CD audio on your PC. There is a "Setup" section in this manual, providing instructions on how to recover, refresh and reinstall FM801 PCI audio controller drivers in a quick and convenient way. Readers can also use the Setup program provided to install or upgrade drivers.

2 Driver Installation

The FM801 PCI audio controller has the following driver support,

- Microsoft Windows95/98
- Microsoft NT4.0
- Native DOS

The Win95/98 and DOS drivers were not just designed for the latest Microsoft compliance and direct sound games but also designed to support the legacy DOS SoundBlaster Pro compatible games. The following sections describe the steps on driver installation under different operating systems.

Note:

- If you have not enabled the FM801 PCI Audio Controller, please go back Section 2, Hard ware Installation, for FM801 audio controller enabling.
- The Windows95/98 driver set is in the CD and comes with your main board.

2.1 Windows95/98 Driver Installation

2.1.1 Installing FM801 Audio Controller Windows95/98 Driver (DOS Legacy Mode Included)

Note: the following section is based on Win98 operating system. Win 95 users may find some different screens but similar procedures as shown in this section.

1. After the audio controller is enabled and the device driver in the CD-ROM drive, turn on the PC.



- As Windows95/98 starts up, it will automatically detect the audio controller and start the driver installation. Windows95/98 will detect the audio controller as "**PCI Multi media Audio Device**". The Wizard will guide you to begin the driver installation.

Click "**Next**" to continue.

- Follow the instruction on the Windows. We recommend you selecting the top option to allow the Windows to search for the driver device. Click "**next.**" to continue.



(For Win98 users only)

- Check the "**specify a location**" box. Click the "**Browse**" option to search for the location of the driver.



5. Open up the folder or the directory that contains the driver and click "OK".



6. Press "Next" when the location is specified.



7. Windows will detect the FM801 Audio/Game device when the driver has been properly located. Press "**Next**" again.



8. Windows now starts copying the files. Click "**Finish**" to finish the Audio/Game Device installation.

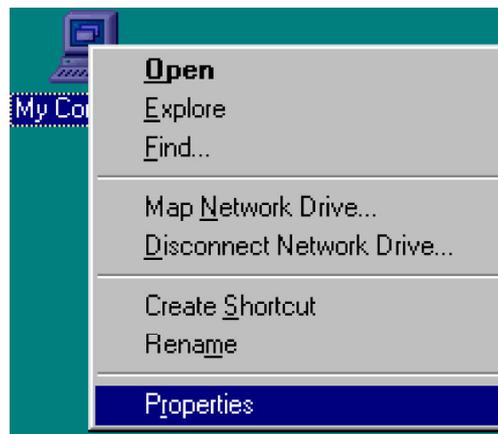


9. FM801 Joystick Device should be found again. This is the second part of the installation. Repeat the same procedures indicated above from step 2 to step 8).

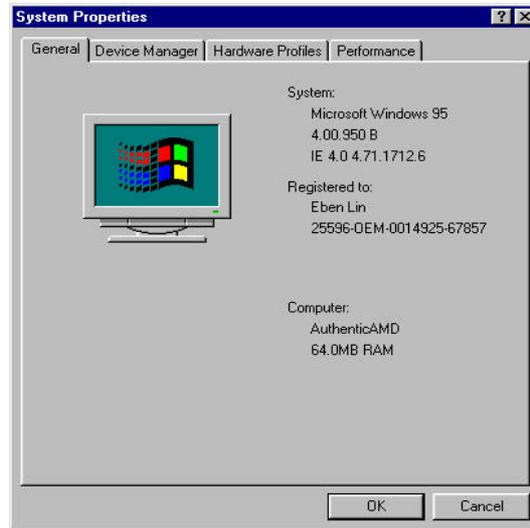


2.1.2 Verifying the FM801 Driver Installation for Win95/98

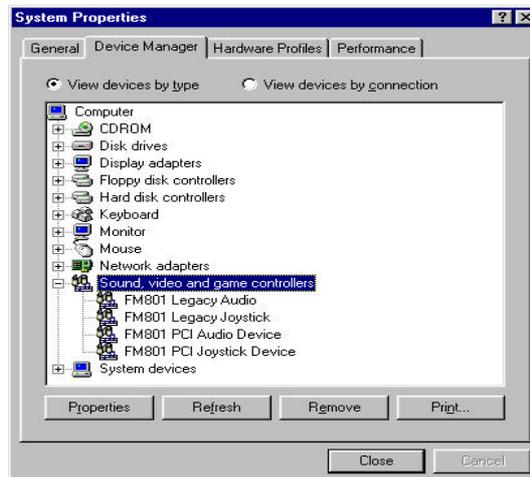
1. Open the System Properties screen by right click on "**My Computer**" and selecting "**Properties**".



2. Click on the "Device Manager" tab.



3. Double-click "Sound, video and game controllers" from the hardware tree to verify the ForteMedia FM801 installation. You should see at least these four entries: FM801 Legacy Audio, FM801 Legacy Joystick, FM801 PCI Audio Device, and FM801 PCI Joystick Device.



2.1.3 Q3D Control Panel

Q3D is a positional 3D audio technology provided by QSound Labs for use in accelerating current games with superb 3D rendering as well as featuring new output options and enhancing acoustic environments for tomorrow's game titles. Positional 3D relies on access to multiple individual sounds in order to place them independently and dynamically in 3D space. Compared to the traditional two-speaker output, Q3D may be configured to drive multiple speaker outputs in addition to standard stereo configurations. Fully compatible with Microsoft DirectSound, A3D API and the Environmental Audio Extensions™ (EAX) from Creative Labs, FM801 audio controller provides a PC-home-theater experience and brings instant gratification for listeners and gamers.

Installing the FM801 Q3D on Windows 95/98

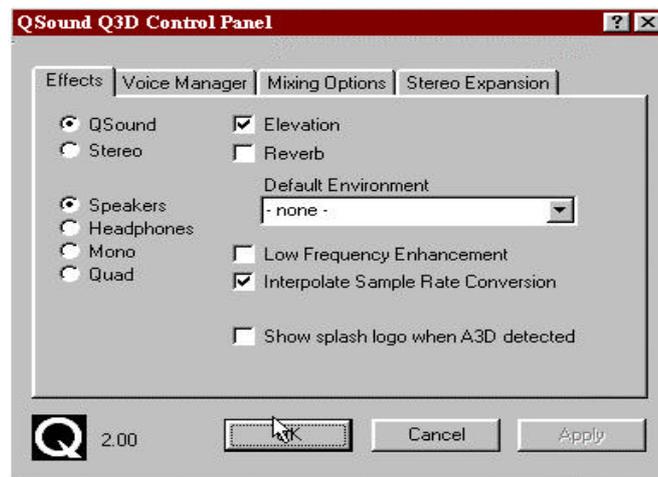
This program should automatically be installed upon driver installation of the audio controller.

Activating the FM801 Q3D on Windows 95/98

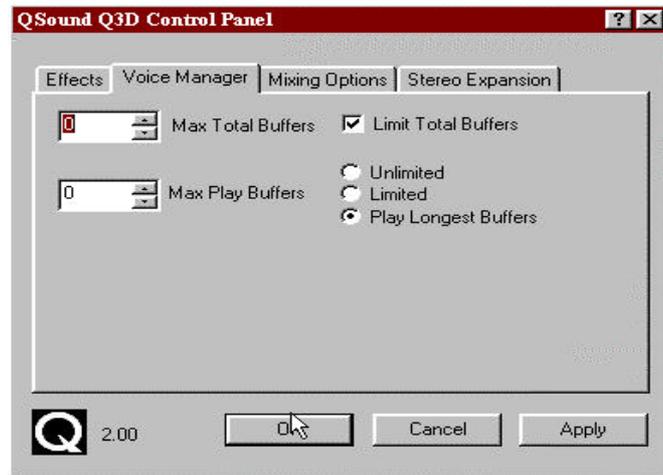
- Double click on Q3D icon locating on the bottom-right corner of your screen.



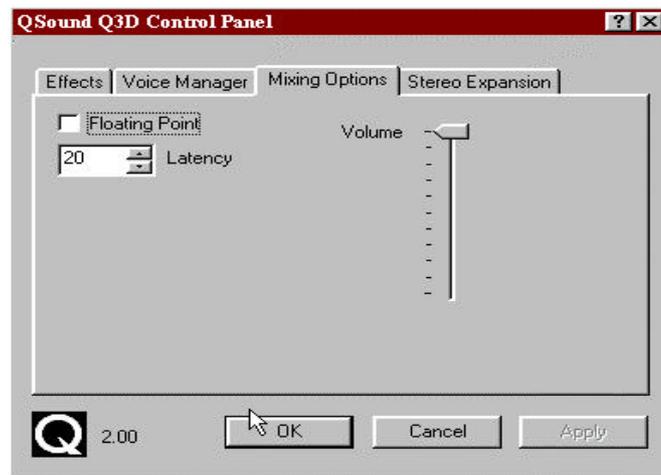
- This should bring up Q3D Control Panel. The Control Panel further divides into four different sections. Users get to choose for different sound-effect experience by selecting **Effects** tab. This allows users to choose for different output options by selecting "Speakers", "Headphones", "Mono" speaker, or "Quad" speakers.



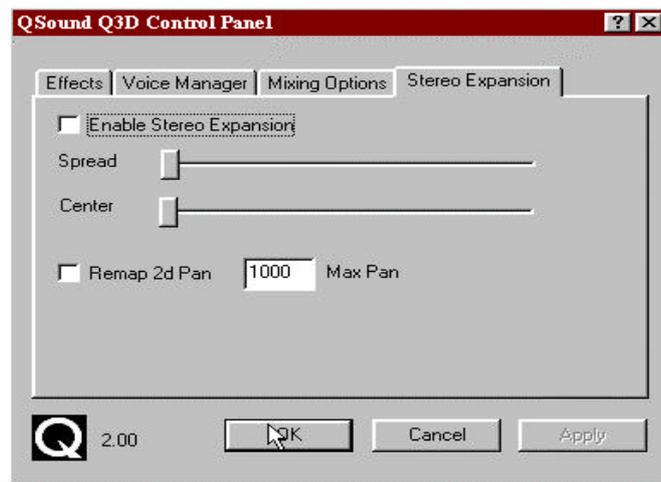
- The **Voice Manager** allows users to choose for the desired buffers.



- **Mixing Options** allows users to adjust the mixer and volume control.



- **Stereo Expansion** is available with alternatives of adjusting the level of "Spread", the range of surround-sound to be around the listener, and "Center", the distance of the sound away from the play unit.



2.1.4 Driver un-installation

1. To uninstall the FM801 PCI audio controller drivers, first go to the **Control Panel** by clicking on the **Start** Menu, selecting Settings, and choosing **Control panel**.
2. Double-click the Forte Media Icon in "**Control Panel**".
3. This brings up the **ForteMedia** Dialog Box. Click on "**Uninstall**" key.



4. Windows will ask you for confirmation to uninstall the drivers for your FM801 sound card. Click "Yes" if you wish to uninstall.



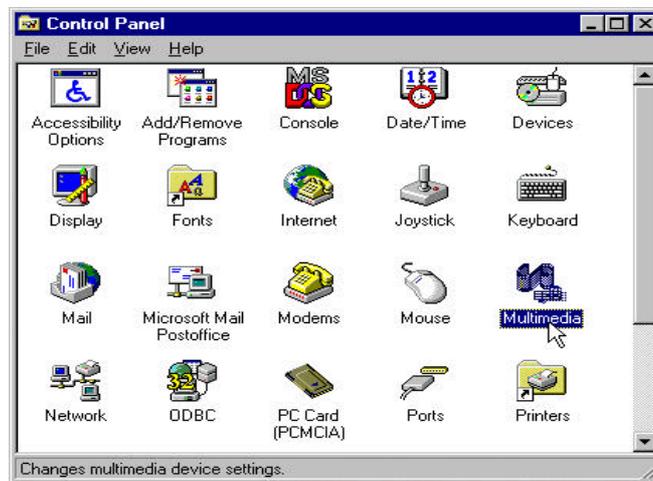
Once the process has finished, click "OK" to return to Windows.

2.2 Windows NT 4.0 Driver Installation

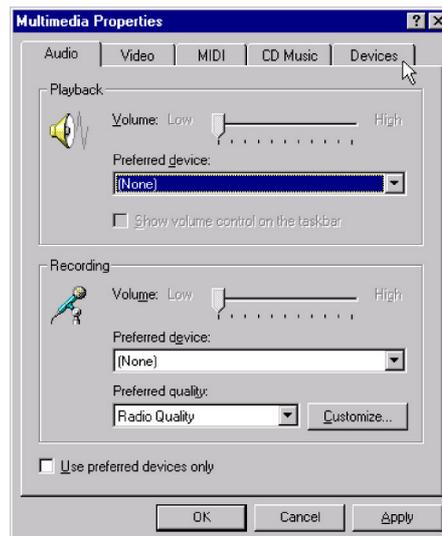
2.2.1 Installing FM801 Audio Controller Driver

FM801 Wave, Mixer, and FM-Syn Driver Installation

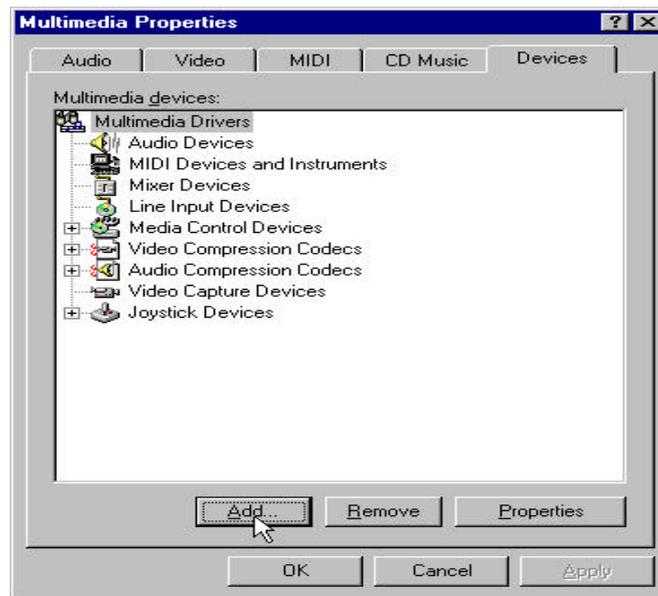
1. Turn on the PC
2. To open control Panel, please open "**Start**" icon located on the bottom-left corner of your screen, and select "**Settings**", then go to "**Control Panel**".
3. Run "**Multimedia**" icon by double clicking the "**Multimedia**" icon



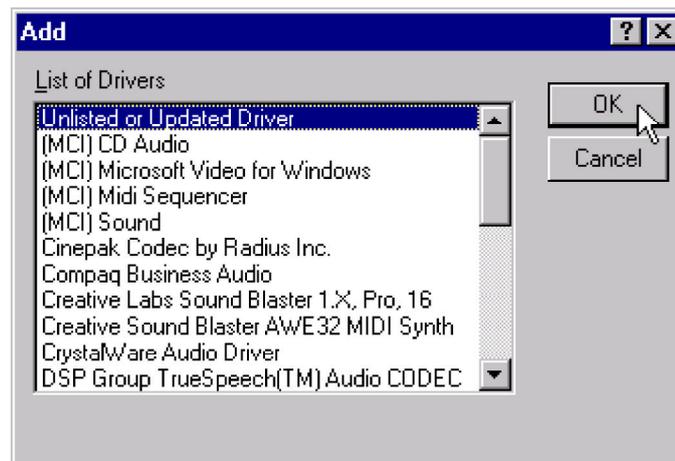
4. To install FM801 Wave, Mixer, and FM-Syn driver, select "**Devices**" tab in Multimedia Properties Window.



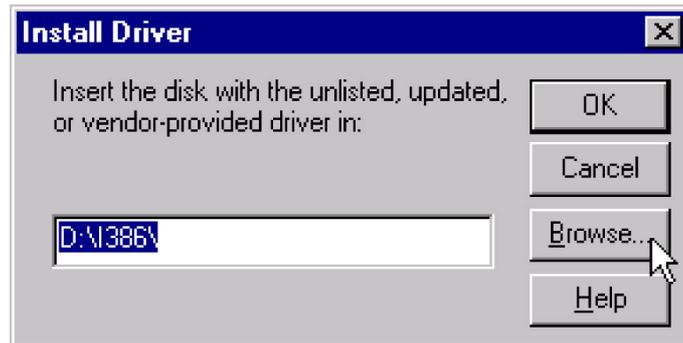
5. Click "Add" key as shown below.



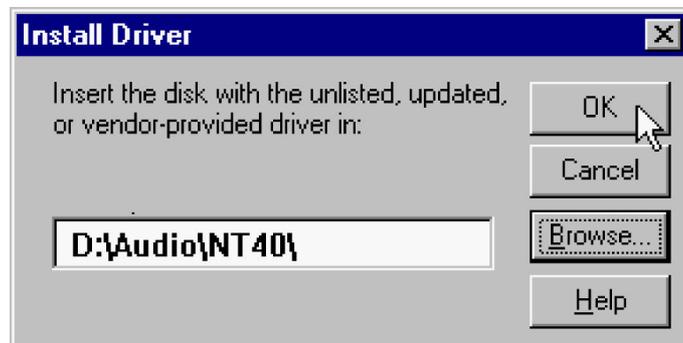
6. An "Add" dialogue box is displayed. Select the "Unlisted or Updated driver " item, then click the "OK" button.



7. An "Install Driver" dialogue box is displayed. Insert the driver in the CD-ROM drive. Search the directory in which the driver locates using "Browse", then click the "OK" button.



8. Select "D:\Audio\NT40\" folder for NT4.0 driver installation.



9. An "Add unlisted or update driver " dialog box is displayed. Select the "FM801 Wave, Mixer and FM-Syn" item, then click the "OK" button to finish.



10. Select "Restart Now " to reboot your system to complete the installation process.



2.2.2 Verifying the FM801 installation for Win NT 4.0

1. Open the Control Panel screen by clicking on the Start Menu, then selecting Settings, and then **Control Panel**.



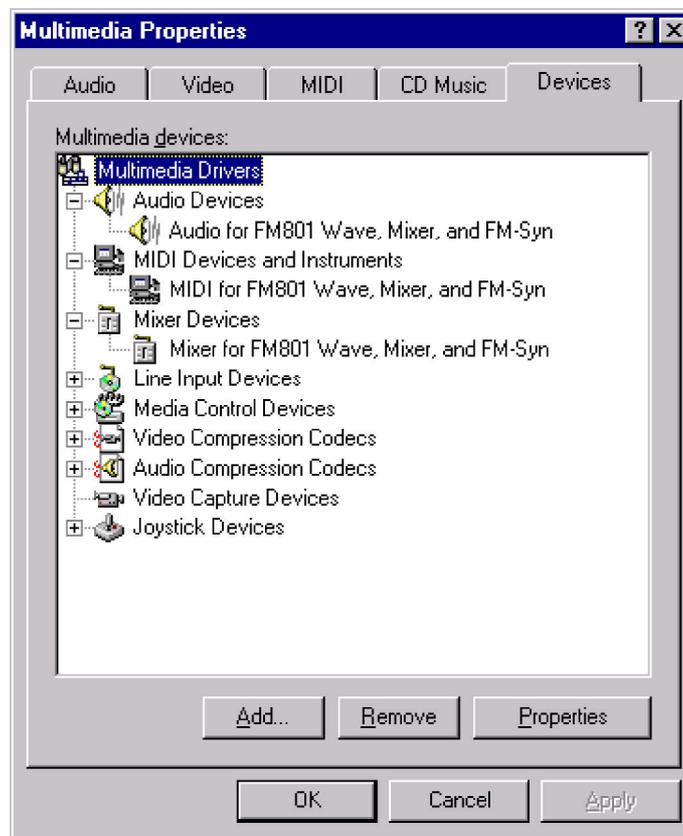
2. Double-click on the **Multimedia** icon.



3. Click on the Devices tab to bring up the software tree for multimedia drivers. FM801 should have installed five drivers as followed:

- Audio for FM801 Wave, Mixer, and FM-Syn
- MIDI for FM801 Wave, Mixer, and FM-Syn
- Mixer for FM801 Wave, Mixer, and FM-Syn
- Line Input for FM801 Wave, Mixer, and FM-Syn

The following confirms a correct installation of the Windows NT drivers.



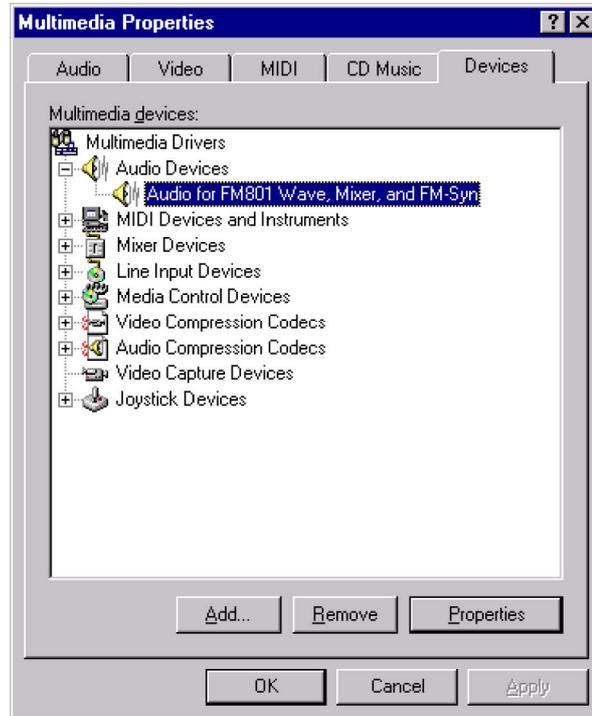
If there is a yellow mark on one of the component or a missing component, try uninstalling and then reinstall the drivers. If it still does not work we recommend you contact your board manufacture.

2.2.3 Windows NT4.0 Driver Un-installation

1. Go to the Control Panel by clicking on the **Start Menu**, selecting **Settings**, and then clicking on **Control Panel**. Double-click on the **Multimedia icon**.



2. Select "**Audio for FM801 Wave, Mixer and FM-Syn** " under Audio Devices in the Multimedia Drivers tree. Click "**Remove.**" key.



3. Windows will require confirmation before removing this software driver. Click "**Yes**" if you wish to uninstall this driver.



4. Windows will now need to restart. Click on "**Restart Now**" to finish the un-installation.

2.3 For Machines running DOS (without Windows)

This package is intended for Machines running DOS with Windows as its operating System. There is DOS sub-directory in FM801 Software Package containing tools for DOS support.

Installation Procedure for FM801 Device under Native DOS

- Turn off your PC & Insert your PCI audio controller
- Turn on PC and reboot system
- At DOS Prompt, type D:\Audio\DOS622\INSTALL if it is from CD and CD Drive is D Drive .
- Just follow the procedure of the INSTALL program to finish the Installation
- Since DOS is not a Plug-n-Play OS, make sure you select the IO/IRQ/DMA which are available and safe for the DOS games.

Troubleshooting

[1] Check list if Audio Controller not found or IRQ not assigned to FM801

- 1) Change Slot: Insert the Audio Card into another PCI Slot. Reboot.
- 2) if problem persists, please Adjust BIOS Settings.
- 3) Adjust BIOS Settings:
 - a. Getting into BOIS (usually, hit "F1", "Del" or "F10" after Reboot)
 - b. Get into the Section with title "PCI/PnP"
 - c. Make sure it reserves enough IRQ for PCI devices
 - d. If there is "Reset Configuration" option, change it to "Yes/Enable".
 - e. If there is "PnP OS" option, change it to "NO".
 - f. Reboot.

[2] Check list if a SB Game is not working

- 1) For the best result of DOS game play and to reduce potential problem(s) of the additional layer of routing. Please change BIOS Setting to reserve PCI IRQ 5/7/9 for PCI Devices.

[3] Adjust SB IRQ/IO/DMA for some DOS Games

- 1) Some DOS games may need certain fixed resource (IO, IRQ and DMA)
- 2) This adjustment can be achieved through the INSTALL program.
- 3) Make sure that IRQ/IO/DMA resource is available, then choose the IRQ/IO/DMA which is good for the games by running the INSTALL again.

3 Setup Utility

The Autorun utility can be run either through CD AutoRun feature implemented by Microsoft Windows if properly activated, or one may run it manually by executing the Setup program provided in the driver CD.

The utility will give users flexibility on driver installation. It can be used for the following purposes.

- Install driver before the hardware enabled.
- One step driver installation
- Refresh installation when encountering difficulties in manual installation of the driver.
- Same utility will also be used for driver upgrading to the newest audio controller driver.

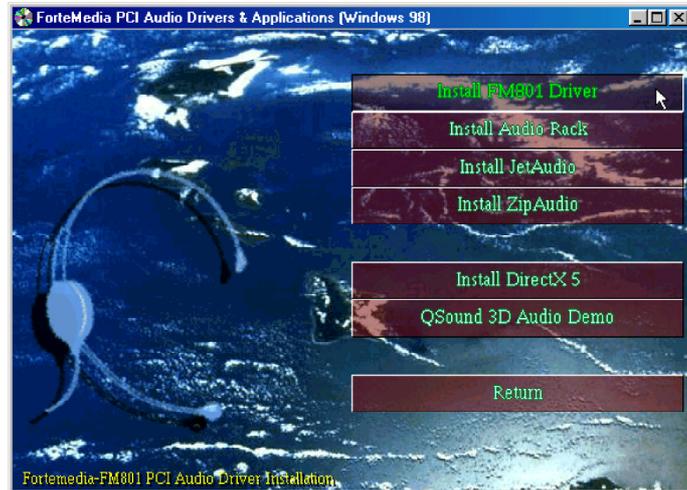
3.1 CD AutoRun Setup

The AutoRun setup feature can only run with CD. This utility will enable you to install drivers for Windows 95/98 and NT4.0. As the CD is inserted (assuming the auto-insertion feature is enabled under your Windows operating system) the Mainboard Software Setup window will appear on your screen.

1. Select using your pointing device (e.g. mouse) on the "**Install Audio Device Software**" bar.



2. Then "**ForteMedia PCI Audio Driver & Applications**" windows will appear on your screen. Select "**Install FM801 Driver**" bar.



3. Once you made your selection, the **ENJOY THE DIFFERENCE!** screen will show up for 2 seconds, followed by a **Setup** window which automatically runs the installation.
4. Once the files are done copying make sure you **reboot** the system to insure that the files are updated correctly.



Congratulations!! The FM801 PCI audio controller drivers has been successfully installed.

4 EzAudio™ Software Application

Introduction

ForteMedia's EzAudio™ is a software application developed for the PC music lover through CD, MIDI, and WaveTable features. EzAudio™ provides the overall application-driven capacity in music listening.

EzAudio™ consists of Power ON/OFF controller, CD player, MIDI player, and Wave (digital sound) player and recorder. It also linked with Microsoft Mixer for easy access of volume control.

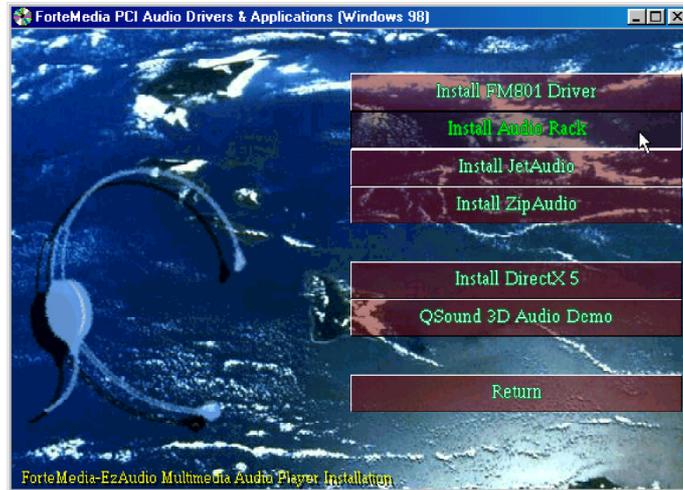
4.1 Installing EzAudio™

Inserting the Driver CD (assuming the auto-insertion feature is enabled under your Windows operating system) the Mainboard Software Setup window will appear on your screen.

1. Select using your pointing device (e.g. mouse) on the "**Install Audio Device Software**" bar.



2. Then "**ForteMedia PCI Audio Driver & Applications**" windows will appear on your screen. Select "**Install FM801 Driver**" bar, followed by a **Setup** window which runs the installation.



4.2 Activating EzAudio™

The proper way to activate EzAudio™ is:

1. Double click the EZ Audio icon in the task bar.



2. You will then see the whole appearance of EzAudio™ .



EzAudio™ Component Description

- **Power ON/OFF Control**
This component manages and launches the other components. The "Power" button acts as a power switch, when clicked, the EzAudio™ application will close itself. EzAudio™ also support the application minimization, so you may shrink it to the bottom of your screen.
- **CD Player**
This component plays audio CDs. The window display shows the track and time.
- **MIDI Player**
This component play General MIDI files (a computer music format). The display window shows the file name it plays and times it plays.
- **WAVE Player**
This component plays and records WAVE (digital PCM format) files. The recording source can be CD (AUX), MIC, MIDI or LINE.
- **MIXER**
This component controls all sources volume input & output for playback & recording. The playback source can be AUX, WAVE, FM, CD, MIC, LINE IN, VIDEO, I2S. The recording source can be AUX, MIC, CD, LINE IN, MIX or VIDEO.

4.3 EzAudio™ Recording

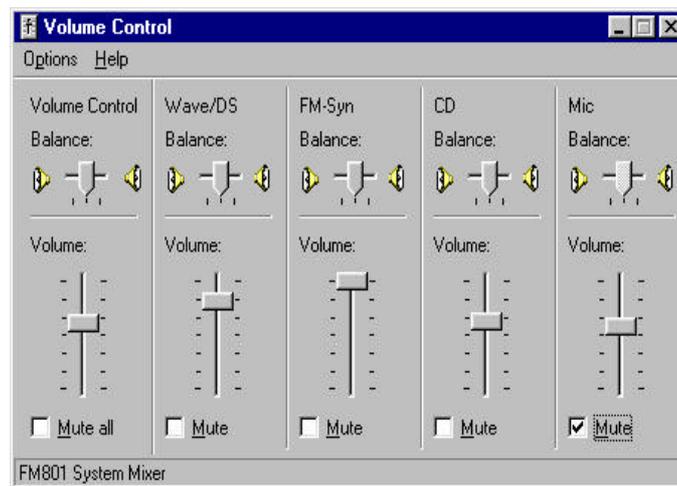
Clicking on the record button on the WAVE component and EzAudio™ will start to record your favorite sound or song. To stop recording simply press the stops button.

4.4 Playlist

The Playlist allows you to arrange CD tracks, MIDI songs, and WAVE sound files into a program of your choice. Playback starts with the first item in the playlist and continues until all items have been played.

4.5 PLAY MIXER

- For volume control, click the **MIXER** button. The following Volume Control window will appear.
- To adjust the Volume Control, or the applicable Wave/DS, FM-Syn, CD and Mic:
 - Move the corresponding **Balance** dial left and right
 - Move the corresponding **Volume** dial up and down
- If mute is preferred on particular channel, click inside the corresponding **Mute Box**. To re-activate sound, click inside **Mute Box** again

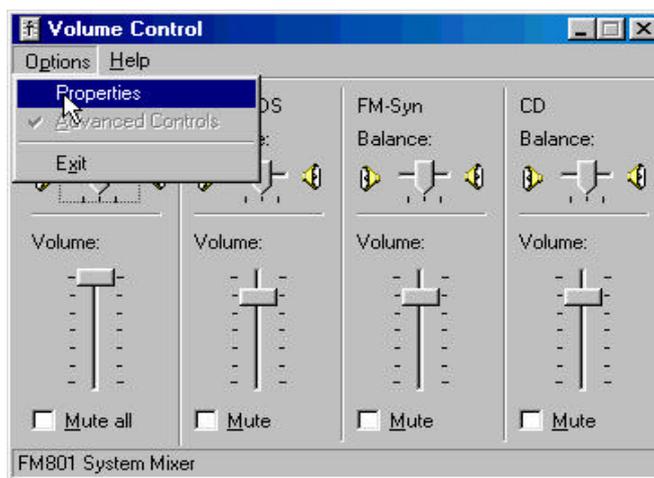


4.6 RECORD MIXER

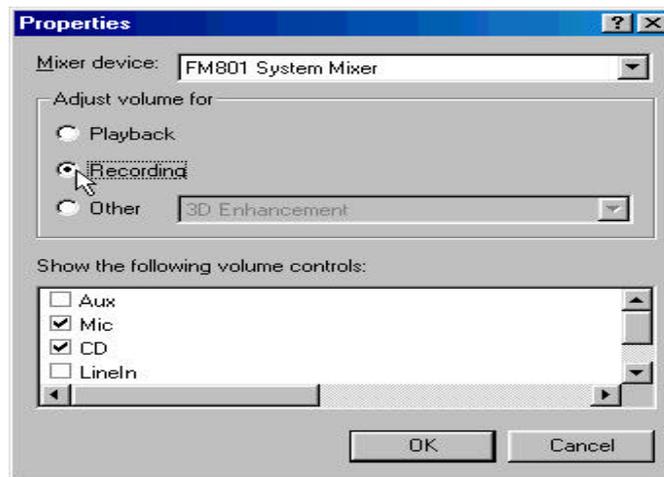
- The recording mixer is inside MIXER component. To activate it, first press the MIXER button.



- Then the Master Volume control panel will show up. Press the Option item in the above frame as indicated in the following.
- From drawdown menu choose the properties icon.



- From properties control panel, highlight the "Recording" icon in the "Adjust volume for" windows. Choose the input source then press "OK", The Record control screen should show up in the screen.



- To record, the "Select Box" has to be checked for the recording channels selected. If one prefer to record the entire source at same time, then the "Mix Balance" should be chosen.

