HOT-685V
PPGA Celeron processor
Based AGP MAIN BOARD
User's Manual

Shuttle® Spacewalker™ HOT-685V

PPGA Celeron® processor based AGPset Mainboard
Manual Version 1.0

Copyright

Copyright© 1999 by Shuttle® Inc. All Rights Reserved.

No part of this publication may be reproduced, transcribed, stored in a retrieval system, translated into any language, or transmitted in any form or by any means, electronic, mechanical, magnetic, optical, chemical, photocopying, manual, or otherwise, without prior written permission from Shuttle® Inc.

Disclaimer

Shuttle® Inc. shall not be liable for any incidental or consequential damages resulting from the performance or use of this product.

This company makes no representations or warranties regarding the contents of this manual. Information in this manual has been carefully checked for reliability; however, no guarantee is given as to the correctness of the contents. In the interest of continued product improvement, this company reserves the right to revise the manual or include changes in the specifications of the product described within it at any time without notice and without obligation to notify any version of such revision or changes. The information contained in this manual is provided for general use by the customers.

Trademarks

Spacewalker is a registered trademark of Shuttle Inc.

Intel, Celeron is a registered trademarks of Intel Corporation.

VIA is a registered trademarks of VIA Corporation.

PC/ATX is a registered trademark of International Business Machines(IBM) Corporation

PS/2 is a registered trademark of IBM Corporation.

AWARD is a registered trademark of Award Software Inc.

Microsoft and Windows are registered trademarks of Microsoft Corporation.

General Notice: Other brand and product names used herein are for identification purposes only and may be trademarks of their respective owners.

Federal Communications Commission (FCC)
Compliance Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy. If not installed and used properly, in strict accordance with the manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

❑ Reorient or relocate the receiving antenna.

❑ Increase the separation between the equipment and receiver.

❑ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

❑ 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

CE Notice

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.

T TABLE OF CONTENTS

1 **INTRODUCTION**

HOT-685V is a highly integrated IBM PC/AT compatible system board designed to meet the industry's most demanding desktop applications.

Based on the VIA Apollo Pro Plus chipset which support up to 500MHz PPGA Celeron processor with MMX technology.

HOT-685V 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-685V supports 3.3V A.G.P. devices with data transfer rates up to 133 MHz, allowing data throughput of 500 MB/sec.

The VIA Apollo Pro Plus 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 InDA device port and a SPP/EPP/ECP capable parallel port.

HOT-685V is built with four PCI local bus slots providing a high bandwidth data path for data-movement intensive functions such as graphics, and with one ISA slot.

HOT-685V 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

The HOT-685V Mainboard is carefully designed for the demanding PC user who wants high performance and many intelligent features in a compact package:

Intel Chipset:

Features VIA Apollo Pro Plus chipset.

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 768 MB.

PCI and ISA Expansion Slots:

Provides four 32-bit PCI slots and one 16-bit ISA slot.

Onboard I/O:

Provides one Floppy port; one PS/2 mouse and one PS/2 Keyboard port connector or one AT keyboard and one PS/2 mouse Header connector; two high-speed UART compatible serial ports and one parallel port with ECP and EPP capabilities. Serial Port 2 can also be directed from COM2 to the Infrared Module for wireless connections.

Onboard PCI Bus Master IDE Controller:

Two Ultra DMA/33 Bus Dual-channel Master IDE ports provide support to a maximum of **four IDE devices** (one Master and one Slave per channel). The IDE Bus implements data transfer speeds of up to 33MB/sec IDE and also supports Enhanced PIO Modes 3 & 4 and Bus Master IDE DMA Mode 2 devices.

Onboard 12-pin AT and 20-pin ATX Power Supply:

Provides AT and ATX Power connectors onboard, and ATX power connector supports soft-on/off function.

System BIOS:

Provides licensed Award V4.51PG BIOS on 2MB Flash EEPROM.
Supports Green PC, Desktop Management Interface (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.
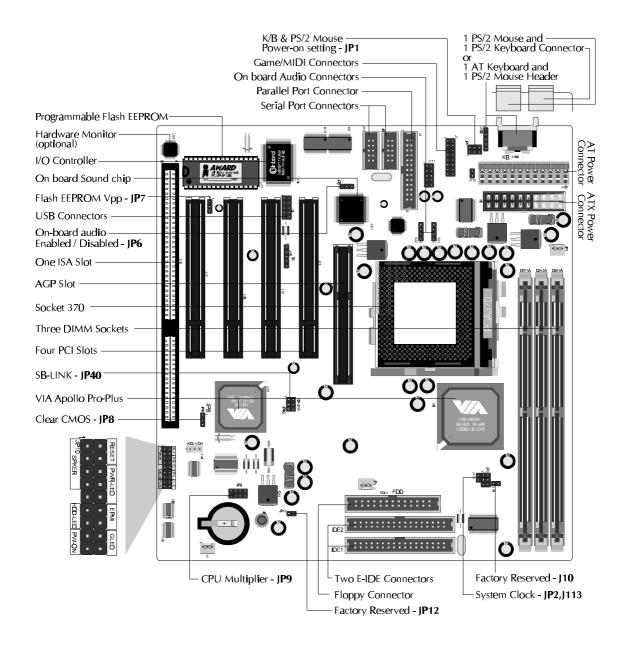
Board Size:

AT form factor, dimension 220mm x 230mm.

Advanced Features:

➢ **Low EMI --** Using built-in Spread Spectrum with 1.5% modulation and automatic clock shut-off of unused PCI/SDRAMS slots to reduce the Electromagnetic Interference (EMI).

➢ **Dual Function Power Button (ATX power only)**-- 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 Wake-On-LAN connector onboard can be attached to a network card that supports this function to wake up the system via the LAN.
(This function support Intel LAN card only).

➢ **Modem Ring Power-on --** The system can be powered on automatically by activation 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** -- Various voltages of key elements, such as the CPU, and other critical system voltage levels are monitored to ensure stable current reach to mainboard components. System voltages include V_{CORE}/VL2 on CPU, and +5V, +12V, -5V, -12V on 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-685V

K/B & PS/2 Mouse Power-on setting - **JP1**

Game/MIDI Connectors

On board Audio Connectors

Parallel Port Connector

Serial Port Connectors

1 PS/2 Mouse and 1 PS/2 Keyboard Connector
or
1 AT Keyboard and 1 PS/2 Mouse Header

Programmable Flash EEPROM

Hardware Monitor (optional)

I/O Controller

On board Sound chip

Flash EEPROM Vpp - **JP7**

USB Connectors

On-board audio Enabled / Disabled - **JP6**

One ISA Slot

AGP Slot

Socket 370

Three DIMM Sockets

Four PCI Slots

SB-LINK - **JP40**

VIA Apollo Pro-Plus

Clear CMOS - **JP8**

AT Power Connector

ATX Power Connector

CPU Multiplier - **JP9**

Two E-IDE Connectors

Floppy Connector

Factory Reserved - **JP12**

Factory Reserved - **J10**

System Clock - **JP2,J113**
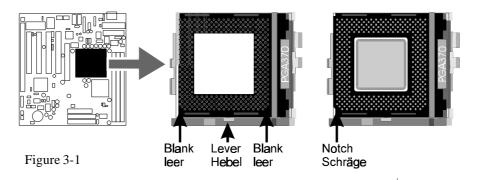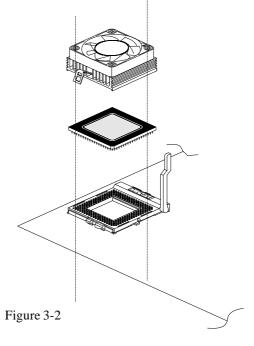
3 HARDWARE INSTALLATION

The Installation PPGA Celeron Processor

HOT-685V 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 over-heating. 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 3-1) 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 3-1

Blank leer   Lever Hebel   Blank leer   Notch Schräge

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 3-2)

Figure 3-2

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 - JP2, J113 and JP9

HOT-685V mainboard features a clock generator to provide adjustable system clock frequency. Jumpers JP2 and J113 determine the system clock frequency 66MHz to 150MHz. and JP9 is a 8-pin jumper which determine the processor clock ratio from 2X to 8X.

Figure 3-3 shows the position of JP2, J113 and JP9 on the mainboard.

Table 3-1 shows adjustable System clock on jumper JP2 and J113.

Table 3-2 shows adjustable CPU Clock Ratio on jumper group JP9.

Figure 3-3

CPU Host Clock	JP2 and J113
66 MHz	
75 MHz	
83 MHz	
100 MHz	
103 MHz	
112 MHz	
124 MHz	
133 MHz	
140 MHz	
150 MHz	

Table 3-1

CPU Clock Ratio	JP9	CPU Clock Ratio	JP9
2 x		5.5 x (366 / 66)	
2.5 x		6 x (400 / 66)	
3 x		6.5 x (433 / 66)	
3.5 x (350 / 100)		7 x (466 / 66)	
4 x (400 / 100)		7.5 x (500 / 66)	
4.5 x (300 / 66) (450 / 100)		8 x	
5 x (333 / 66) (500 / 100)			

Table 3-2

Note: Present PPGA Celeron CPU Clock ratio is fixed and unable to adjust, for those processors, JP9 is not functional.

Special Tip for User's Reference Only

HOT-685V mainboard provides a special **Jumper J10** to overspeed your 66 MHz based Intel PPGA Celeron processor to 100 MHz.

Normally, CPU Host Clock 100 ~ 150 MHz are not available for 66 MHz based processor.

But, when pull out mini jumper from J10 (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 - JP8

HOT-685V mainboard supports jumper **JP8** for discharging mainboard's CMOS memory.

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

1) Turn off the PC,
2) Remove mini jumper from JP8 pin 1-2,
3) Insert mini jumper to JP8 pin 2-3 for a brief while,
4) Remove mini jumper from JP8 in 2-3,
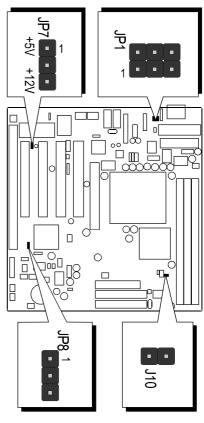5) Reinsert mini jumper to JP8 pin 1-2,
6) Turn on the PC.

Figure 3-4

Flash EEPROM Vpp - JP7

HOT-685V mainboard supports two types of Flash EEPROM : 5 volt and 12 volt. By setting up jumper JP11, the main board can use both 5V or 12V flash EEPROM with new system BIOS files as they come available.

JP7 Pin 2-3 Close for 12V Flash EEPROM

JP7 Pin 1-2 Close for 5V Flash EEPROM

K/B & PS/2 Mouse Power-On Setting - JP1

HOT-685V 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

JP1 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.
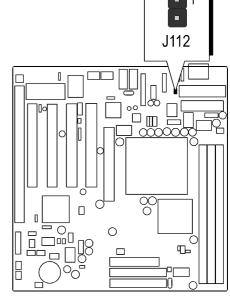
K/B & PS/2 Mouse Power-On JP1	
Keyboard & PS/2 Mouse Power-On Disabled	Keyboard & PS/2 Mouse Power-On Enabled
PS/2 Mouse Power-On Enabled	Keyboard Power-On Enabled

Table 3-3

AT and ATX Power Supply Connectors Setting - J112

The mainboard provides both 12-pin AT type and 20-pin ATX type power supply connectors. Jumper J112 is used to set which type of power supply is used.

J112 Close (On) for AT Power Connector.

J112 Open (Off) for ATX Power Connector.

On Board Audio Controller Setting - JP6

HOT-685V mainboard provides on-board PnP 64 voices wavetable sound chip which based on FortéMedia PnP 3D integrated audio controller chip.
Jumper JP6 is used to enable or disable it.

JP6 Pin 1-2 Close (On)
On-board Audio Controller Enabled (default)

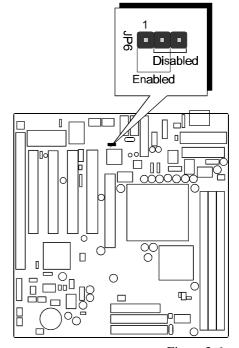JP6 Pin 2-3 Close (On)
On-board Audio Controller Disabled

Figure 3-5

Figure 3-6

Connectors

Front Panel Connectors (JP10)

Speaker Connector - SPKER

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

HDD LED Connector - HDD-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 - RESET

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

PW-LED Connector - PWR-LED

Attach 3-pin Power-LED connector cable from the housing front panel to PW-LED header on the mainboard. The power LED stays lights while the system is running.

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.

Green LED Connector - GLED

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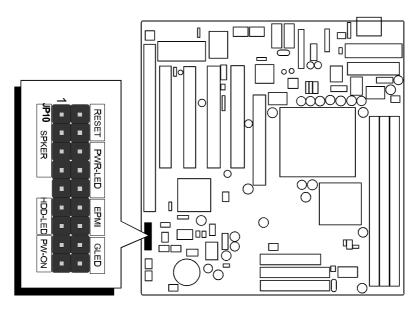

Figure 3-7

Other Connectors

AT and ATX Power Supply Connectors

AT Power Connector is a 12-pin male header connector. Plug the connector from the power directly onto the board connector while making sure the pin 1 is in its position. The main board requires a power supply with at least 200 watts and "power good signal".

Figure 3-9 shows AT Power Supply Connector.

ATX Power Connector 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.

Figure 3-10 shows ATX Power Supply Connector.

AT-power connector

ATX-power connector

Figure 3-8

IR Connector - J18

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 J18 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.
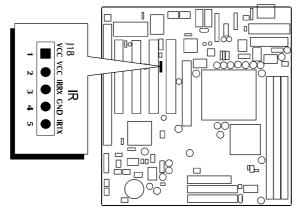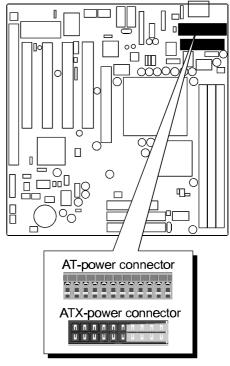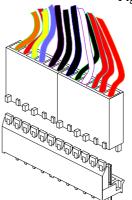

Figure 3-9 :
AT Power Supply Connector

Figure 3-11 : shows J18's pin assignment.
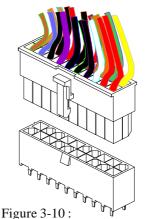

Figure 3-10 :
ATX Power Supply Connector

AT Keyboard & PS/2 Mouse Header or PS/2 Keyboard & PS/2 Mouse Connector

AT Keyboard & PS/2 Mouse Header:
One 5-pin female AT keyboard & one 5-pin PS/2 mouse header is located at the rear of the main board.
The main board provides a 5-pin PS/2 mouse header for an optional PS/2 mouse cable. Figure 3-13 on the right side indicates the pinout of pin header.

PS/2 Keyboard & PS/2 Mouse Connector:
Two 6-pin female PS/2 keyboard & Mouse Connectors is located at the rear of the main board. PS/2 Mouse on top of connector and PS/2 Keyboard on the bottom of connector. Plug the PS/2 keyboard and mouse jack into this connector.

Caution : When a PS/2 mouse adapter cable is used, make sure connect PS/2 mouse adapter cable hole 1 to the pin 1 of onboard PS/2 connector (J109). Reversed connecting may cause damage to your PS/2 mouse.

USB Port Connectors

The mainboard provides two sets of USB (Universal Serial Bus) connector - J108

CPU, Chassis & AGP cooling Fan connectors - JP5, JP3 & J1

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).

Wake-On-LAN Connector - J14

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.

SB-Link connector - JP40

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.
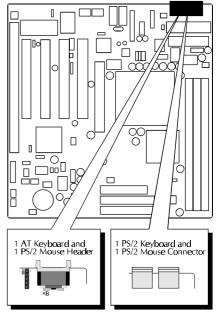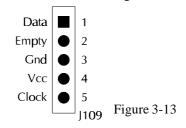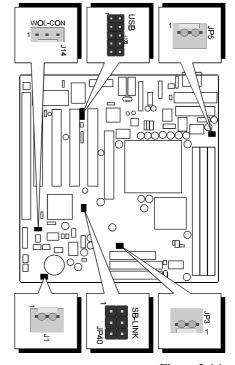

Figure 3-12

Figure 3-13

Figure 3-14

IDE, Floppy, Parallel and Serial port connectors

The mainboard package has included one 40-pin ribbon cable for IDE H.D.D, one 34-pin ribbon cable for F.D.D, one 25-pin ribbon cable for printer and two 9-pin ribbon cables for COM port devices. Flat cables should be connected with the red stripe on the **pin 1** side of the connector.

Game / MIDI and SPK-OUT / Line-IN / Mic-In connectors

The mainboard package included a Game/Audio connecting adapter for connecting Joystick/MIDI device and Audio input/output devices.

J7 and J111 connectors which use to connect attachment Game/Audio connecting adapter. 10-pin flat cable of adapter connect to J111 and 15-pin flat cable connect to J7 on the mainboard. Flat cables should be connected with the red stripe on the **pin 1** side of the connector.

➢ **GAME / MIDI**

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

➢ **MIDI Instrument Connection**

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

➢ **SPK OUT**

SPK 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.
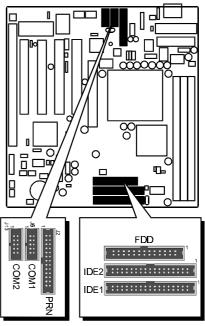

Figure 3-15

Figure 3-16 : Game/Audio Connecting adapter.

➢ **TAD**

Port SJ2 can be used to connect a modem audio line to HOT-685V. You would use this connector when telephone answering machine software for input and output.

SJ2 (TAD) pin assignment :
4 = MONO
3 = Ground
2 = Ground
1 = PHONE

➢ **CD-IN**

Port SJ1 is used to attach a CD-ROM audio connector.

SJ1 (CD_IN) pin assignment :
4 = Right Channel
3 = Ground
2 = Ground
1 = Left Channel
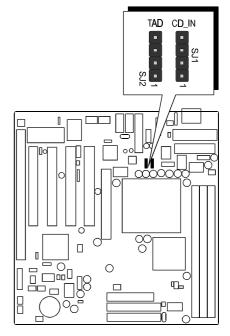
Figure 3-17

4 MEMORY CONFIGURATION

The HOT-685V 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-685V provides optional data integrity features including EC (Error Checking) in the memory array. EC mode provides single and multiple bit error detection. The HOT-685V provides error checking and correction of the data.

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

DIMM Socket	Memory Modules	Mudule Quantity
DIM1A	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1
DIM2A	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1
DIM3A	8MB, 16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1

Table 4-1

Figure 4-1

5 WINDOWS 98 INSTALLATION NOTE

Windows 98 cannot correctly identify the VIA Apollo Pro Plus chipset and controller since the chipset was released after the Microsoft. Besides, the required miniport driver to activate IRQ steering function is not present either. Therefore, you must follow the steps below when you install Windows 98, otherwise, you might experience device error.

Step 1: Install Windows 98, and complete the installation

At this stage, you might see some device error with the "!" signs, despite the fact that the drivers for the devices are correctly installed by Windows 98. Just ignore that for now, and proceed to Step 2.

Step 2: Install the VIA IRQ Miniport driver. For the location of the driver, please refer to the instructions below:

1. Look into the Shuttle CD that came with the mainboard under directory:

   <CD:\MAINBRD\VIRQ\>Run SETUP.EXE and then restart the system.
   At the time of printing this note, the driver may not have been updated to the CD yet. If you cannot find the file in the CD, refer to the instructions below:

   1). Download the driver from Shuttle WEB site at:
       http://www.spacewalker.com/english/download.htm
       Check the utility for your corresponding model.
   2) Download the driver from VIA WEB site at:
       http://www.spacewalker.com/english/download.htm

Step 3: Restart Windows 98

Step 4: Install the Shuttle Patch utility v2.6 or above. For the location of the driver, please refer to the instructions below:

1. Look into the Shuttle CD that came with the mainboard, under directory:
   <CD:\MAINBRD\PATCH9X\> Run Patch.exe and then restart the system.

   At the time of printing this note, the driver may not have been updated to the CD yet. If you cannot find the file in the CD, proceed to the next instruction.

2. Download the driver from Shuttle WEB site at:
   http://www.spacewalker.com/english/download.htm

Step 5: Restart Windows 98

Next, you must see to it that all previous device error should have disappeared. Then you can continue with the rest of the installation procedures of the driver.

Special Note: *We have not encountered problems yet. However, if you do experience problem at the initial stage of Windows 98 installation, remove all add-on cards, except the Video card, and restart the installation process. After the Windows 98 installation is completed, follow the aforementioned* **STEPS***. Then put the add-on cards back in, and continue with the installation of the driver for the add-on cards.*

For any last minute update to this, please check our WEB site at
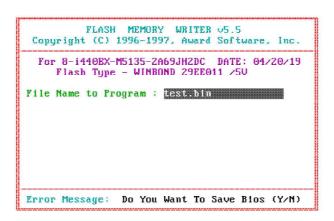*http://www.spacewalker.com/english/faq_e/content.htm*

6 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 685V.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 "awdflash" 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-i440BX-M5135-2A69JH2DC  DATE: 04/20/19
          Flash Type - WINBOND 29EE011 /5V

  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? "

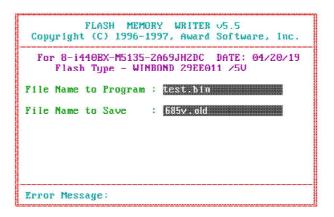3. Answer "N" if you do not want to program, and then it will exit.

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, 685V.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-i440BX-M5135-2A69JH2DC  DATE: 04/20/19
       Flash Type - WINBOND 29EE011 /5V

 File Name to Program : test.bin

 File Name to Save     : 685v.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 "awdflash /?" 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 "awdflash", an error message will appear:

    "Error Message: Fail — Due to EMM386 or QEMM !"

7 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 <Del> 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 <Del> 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 (2A6LGH2A)
                         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) : Wed, Apr 21 1999
    Time (hh:mm:ss) : 15 :  0 : 24

    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                    _____
                                        Base Memory:        0K
                                    Extended Memory:        0K
    Video   : EGA/VGA                  Other Memory:      512K
    Halt On : All Errors              _____
                                        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 matches your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

Halt On

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 (2A6LGH2A)
                        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
Processor Serial Number : Disabled    D4000-D7FFF Shadow  : Disabled
Quick Power On Self Test : Enabled    D8000-DBFFF Shadow  : Disabled
Boot Sequence           : A,C,SCSI    DC000-DFFFF Shadow  : Disabled
Swap Floppy Drive       : Disabled
Boot Up Floppy Seek     : Enabled
Boot Up NumLock Status  : On
IDE HDD Block Mode       : Enabled
Gate A20 Option         : Fast
Memory Parity/ECC Check : Disabled
Typematic Rate Setting  : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec)  : 250         ESC : Quit         ↑↓→← : Select Item
Security Option         : Setup       F1  : Help         PU/PD/+/- : Modify
PCI/VGA Palette Snoop   : Disabled    F5  : Old Values  (Shift)F2 : Color
OS Select For DRAM > 64MB : Non-OS2   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 it 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 enable when the external cache contains ECC SRAMs.

Processor Serial Number

This item Enable/Disable the Pentium III Processor Serial Number. Only Pentium III with Processor Serial Number feature will show this Item.

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.

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.

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 ex-
ample, 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 (2A6LGH2A)
                       CHIPSET FEATURES SETUP
                       AWARD SOFTWARE, INC.

  Bank 0/1 DRAM Timing  : SDRAM 10ns    CPU Warning Temperature  : Disabled
  Bank 2/3 DRAM Timing  : SDRAM 10ns    Current System Temp.     : XX°C/XXX°F
  Bank 4/5 DRAM Timing  : SDRAM 10ns    Current CPU Temperature  : XX°C/XXX°F
  SDRAM  Cycle Length   : 3             Current CPUFAN1 Speed    : XXXXRPM
  DRAM Clock            : Host CLK      Current CPUFAN2 Speed    : XXXXRPM
  Memory Hole           : Disabled      Current CPUFAN3 Speed    : XXXXRPM
  Read Around write     : Disabled      IN0(V) : XX.XV    IN1(V) : XX.XV
  Concurrent PCI/Host   : Disabled      IN2(V) : XX.XV     + 5 V : XX.XV
  System BIOS Cacheable : Disabled      +12 V  : XX.XV     -12 V :-XX.XV
  Video RAM Cacheable   : Disabled      - 5 V  :-XX.XV
  AGP Aperture Size     : 64M           Shutdown Temperature     : 60°C/140°F
  AGP-2X Mode           : Enabled
  OnChip USB            : Disabled

  Auto Detect DIMM/PCI Clk : Disabled
  Spread Spectrum          : Disabled   ESC : Quit         ↑↓→← : Select Item
                                        F1  : Help         PU/PD/+/- : Modify
                                        F5  : Old Values   (Shift)F2 : Color
                                        F6  : Load BIOS  Defaults
                                        F7  : Load Setup Defaults
```

Bank x/x DRAM Timing

This value in this field is set by the system board manufacturer, depending on whether the board has paged DRAMS or EDO DRAMS.
The choice: 70ns, 60ns.

SDRAM Cycle Length

This field allows you to set the SDRAM latency timer.
The choice: 2, 3.

DRAM Clock

This item set the DRAM Read/Write timings that the system uses.

Memory Hole

In order to improve performance, some space in memory can be reserved for ISA cards.

Read Around write

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.

Concurrent PCI/Host

This item disable CPU bus will be occupied during the entire PCI operation period.

System BIOS Cacheable

This item allows the user to set whether the system BIOS F000 ~ FFFF 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.

AGP Aperture Size (MB)

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

AGP-2X Mode

This item allows you to enable/disable AGP-2X function. See www.apgforum.org for AGP information.

On Chip USB

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB peripheral.

Auto Detect DIMM/PCI Clk

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.

(Listed items will show up when optional hardware monitor present)

CPU Host Clock (CPU/PCI)

This item allows the user to adjust CPU Host Bus Clock from BIOS.
The user may adjust CPU Host Clock from 66 MHz to 83 MHz when 66 MHz based PPGA Celeron processor is used, or from 100 MHz to 133 MHz when 100 MHz based PPGA Celeron processor is used.

CPU Clock Ratio

This item allows the user to adjust CPU Host Clock/Internal Clock ration.
The user may adjust CPU Clock Ratio from 2x to 5x.

CPU Speed

This item is show only. When CPU Host Clock and CPU Clock Ratio is set, the result will be display on this item.

CPU Warning Temperature (optional)

Since the mainboard support CPU temperature monitoring and overhear 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 (optional)

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

Current CPU1 Temperature (optional)

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

Current CPUFAN1/2/3 Speed (optional)

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

IN0(V) ~ IN2(V), +5V ~ -5V, +12V ~ -12V (optional)

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 (2A6LGHZA)
                      POWER MANAGEMENT SETUP
                       AWARD SOFTWARE, INC.

 Power Management    : User Define    Primary INTR        : ON
 PM Control by APM   : Yes            IRQ3   (COM 2)       : Primary
 Video Off After     : Suspend        IRQ4   (COM 1)       : Primary
 Video Off Method    : V/H SYNC+Blank IRQ5   (LPT 2)       : Primary
 MODEM Use IRQ       : 3              IRQ6   (Floppy Disk) : Primary
 Soft-Off by PWRBTN  : Instant-Off    IRQ7   (LPT 1)       : Primary
 CPU Fan In Suspend  : Off            IRQ8   (RTC Alarm)   : Disabled
 HDD Power Down      : Disable        IRQ9   (IRQ2 Redir)  : Secondary
 Doze Mode           : Disable        IRQ10  (Reserved)    : Secondary
 Suspend Mode        : Disable        IRQ11  (Reserved)    : Secondary
        ** PM Events **                IRQ12  (PS/2 Mouse)  : Primary
 VGA                 : OFF            IRQ13  (Coprocessor) : Primary
 LPT & COM           : LPT/COM        IRQ14  (Hard Disk)   : Primary
 HDD & FDD           : ON             IRQ15  (Reserved)    : Disabled
 DMA/master          : OFF
 Wake Up On LAN      : Disabled      ESC : Quit        ↑↓→← : Select Item
 Modem Ring Resume   : Disabled      F1  : Help         PU/PD/+/- : Modify
 RTC Alarm Resume    : Disabled      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 After

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

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.

Soft-Off by PWRBTN

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.

CPU FAN In Suspend

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

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*.

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.

Suspend Mode

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

** PM Events **

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything occurs to a device which is configured as *On*, even when the system is a power down mode.

VGA

When set to *On*, any event occurring at a VGA port will awaken a system which has been powered down.

LPT & COM

When set to *LPT/COM* (default), any event occurring at a COM (Serial)/LPT port will awaken a system which has been powered down.

HDD & FDD

When set to *On* (default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down.

DMA / master

When set to *On*, any event occurring to the DMA controller will awaken a system which has been powered down.

Wake Up 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.

Modem Ring Resume

When set to Enabled, any event occurring Modem Ring/activity of LAN will awaken a system which has been powered down.

RTC Alarm Resume

When set to Enabled RTC Alarm Resume, you could set the date (of month) and timer (hh:mm:ss), any event occurring at RTC will awaken system which has been powered down.

Primary INTR

When set to *On* (default), any event occurring at will awaken a system which has been powered down.

The following is a list of IRQ, Interrupt ReQuests, which can be exampled much as the COM ports and LPT port above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operation system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*.

When set On, activity will neither prevent the system from going into a power management mode nor awaken it.

- IRQ3 (COM2)	- IRQ4 (COM1)
- IRQ5 (LPT2)	- IRQ6 (Floppy Disk)
- IRQ7 (LPT1)	- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)	- IRQ10 (Reserved)
- IRQ11 (Reserved)	- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)	- IRQ14 (Hard Disk)
- IRQ15 (Reserved)	

PNP/PCI Configuration Setup

```
                         ROM PCI/ISA BIOS (2A6LGH2A)
                            PNP/PCI CONFIGURATION
                            AWARD SOFTWARE, INC.

 PNP OS Installed        : No       CPU to PCI Write Buffer: Enabled
 Resources Controlled By : Manual   PCI Dynamic Bursting   : Enabled
 Reset Configuration Data : Disabled PCI Master 0 WS Write  : Enabled
                                    PCI Delay Transaction  : Disabled
 IRQ-3  assigned to : PCI/ISA PnP   PCI#2 Access #1 Retry  : Disabled
 IRQ-4  assigned to : PCI/ISA PnP   AGP Master 1 WS Write  : Enabled
 IRQ-5  assigned to : PCI/ISA PnP   AGP Master 1 WS Read   : Disabled
 IRQ-7  assigned to : PCI/ISA PnP   PCI Latency Timer(CLK)   :  64
 IRQ-9  assigned to : PCI/ISA PnP   PCI IRQ Actived By  : Level
 IRQ-10 assigned to : PCI/ISA PnP   Assign IRQ For USB  : Enabled
 IRQ-11 assigned to : PCI/ISA PnP   Assign IRQ For VGA  : Enabled
 IRQ-12 assigned to : PCI/ISA PnP
 IRQ-14 assigned to : PCI/ISA PnP
 IRQ-15 assigned to : PCI/ISA PnP
 DMA-0  assigned to : PCI/ISA PnP
 DMA-1  assigned to : PCI/ISA PnP   ┌─────────────────────────────────┐
 DMA-3  assigned to : PCI/ISA PnP   │ ESC : Quit       ↑↓→← : Select Item
 DMA-5  assigned to : PCI/ISA PnP   │ F1  : Help       PU/PD/+/- : Modify
 DMA-6  assigned to : PCI/ISA PnP   │ F5  : Old Values  (Shift)F2 : Color
 DMA-7  assigned to : PCI/ISA PnP   │ F6  : Load BIOS  Defaults
                                    │ F7  : Load Setup Defaults
```

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 *Legarcy 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*.

CPU to PCI Write Buffer

When enabled, up to four Dwords of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the data.

PCI Dynamic Bursting

When Enabled, data transfers on the PCI bus, where possible, make use of the high-performance PCI burst protocol, in which greater amounts of data are transferred at a single command.

PCI Master 0 WS Write

When Enabled, writes to the PCI bus are command with zero wait states.
The choice: Enabled, Disabled.

PCI Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.
The choice: Enabled, Disabled.

PCI #2 Access #1 Retry

This item allows you enable/disable the PCI #2 Access #1 Retry.

AGP Master 1 WS Write

This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.
The choice: Enabled, Disabled.

AGP Master 1 WS Read

This implements a single delay when reading to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.
The choice: Enabled, Disabled.

PCI Latency Timer (CLK)

The number of clocks programed 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.

PCI IRQ Actived By

This item sets the method by which the PCI bus recognize that an IRQ service is being requested by a device. You should never change the default configuration unless advised otherwise by your System's manufacturer. Choices are *Level* (default) and *Edge*.

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.

Assign IRQ For VGA

This item allows the user to set VGA IRQ Routing table Enabled or Disabled.

Integrated Peripherals

```
                    ROM PCI/ISA BIOS (2A6LGH2A)
                      INTEGRATED PERIPHERALS
                       AWARD SOFTWARE, INC.

 OnChip IDE Channel0 : Enabled      UART Mode Select       : Standard
 OnChip IDE Channel1 : Enabled      RxD , TxD Active       : Hi,Lo
 IDE Prefetch Mode   : Enabled      IR Transmittiion delay: Enabled
 Primary Master   PIO: Auto         Onboard Parallel Port : 370/IRQ7
 Primary Slave    PIO: Auto         Parallel Port Mode    : SPP
 Secondary Master PIO: Auto         ECP Mode Use DMA      : 3
 Secondary Slave  PIO: Auto         EPP Mode Select       : EPP1.7
 Primary Master   UDMA: Auto
 Primary Slave    UDMA: Auto
 Secondary MasterUDMA: Auto
 Secondary Slave UDMA: Auto
 Init Display First  : PCI Slot

 POWER ON Function    : BUTTON ON
 KB Power ON Password : Enter
 Hot Key Power ON     : Ctrl-F1     ESC : Quit        ↑↓→← : Select Item
 KBC input clock      : 8 MHz       F1  : Help        PU/PD/+/- : Modify
 Onboard FDC Controller: Enabled    F5  : Old Values  (Shift)F2 : Color
 Onboard Serial Port 1 : Auto       F6  : Load BIOS  Defaults
 Onboard Serial Port 2 : Auto       F7  : Load Setup Defaults
```

OnChip IDE Channel0

This item is used to defined on chip Primary PCI IDE controller is Enable or Disable setting.

OnChip IDE Channel1

This item is used to defined on chip Secondary PCI IDE controller is Enable or Disable setting.

IDE Prefetch Mode

Enable prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does not appear when the Internal PCI/IDE field, above, is Disabled.
The choice: Enabled, Disabled.

Primary Master/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 Master/ Slave PIO timing.

Secondary Master/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 Master/Slave PIO timing.

Primary Master/Slave UDMA

On this mainboard, VIA Apollo Pro Plus improves IDE transfer rate using Bus Master/Slave 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.

Secondary Master/Slave UDMA

On this mainboard, VIA Apollo Pro Plus improves IDE transfer rate using Bus Master/Slave 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.

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.

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 (2A69KH2E)
                        CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.

     STANDARD CMOS SETUP              CPU SPEED SETTING

     BIOS FEATURES SETUP              INTEGRATED PERIPHERALS

     CHIPSET FEATURES SETUP           SUPERVISOR PASSWORD

     POWER MANAGEMENT SETUP           USER PASSWORD

     PNP/PCI CONFIGURATION            IDE HDD AUTO DETECTION

     LOAD BIOS DEFAULTS        Enter Password:          SETUP

     LOAD SETUP DEFAULTS                           EXIT WITHOUT SAVING

     Esc : Quit                      ↑ ↓ → ←   : Select Item
     F10 : Save & Exit Setup         (Shift)F2 : Change Color
```

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

T' TABLE OF CONTENTS

1 SPECFICATION

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 Complaince

+ 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.

2. As Windows95/98 starts up, it will automatically detect the audio controller and start the driver installation. Winows95/98 will detect the audio controller as "**PCI Multi media Audio Device**" The Wizard will guide you to begins the driver installation.

   Click "**Next**" to continue.

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

(For Win98 users only)

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

- 5 -

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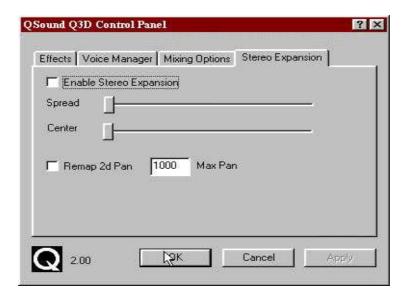
- The **Voice Manager** allows users to choose for the desired buffers.

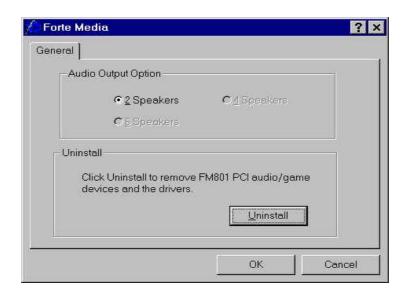- **Mixing Options** allows users to adjust the mixer and volume control.

- **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.
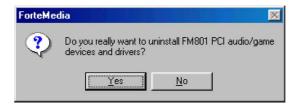
2.1.4 Driver un-installation

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**".
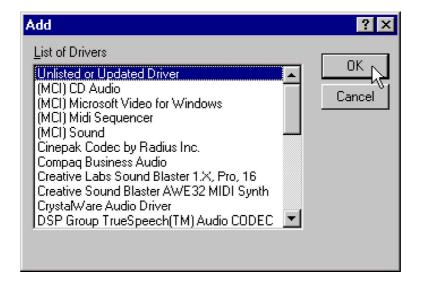3. Run "**Multimedia**" icon by double clicking the "**Multimedia**" icon

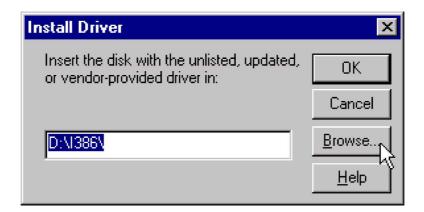4. To install FM801 Wave, Mixer, and FM-Syn driver, select " **Devices**" tab in Multimedia
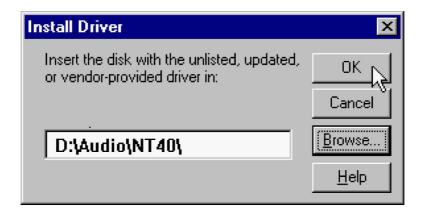   Properties Window.

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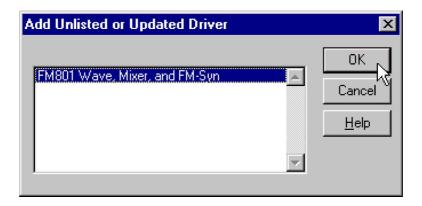
7. An "**Install Driver**" dialogue box is displayed. Insert the driver in the CD-ROM drive. Search the directory in which the driver locates using " **Browse**", then click the "**OK**" button.

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 finiah.

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

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**.
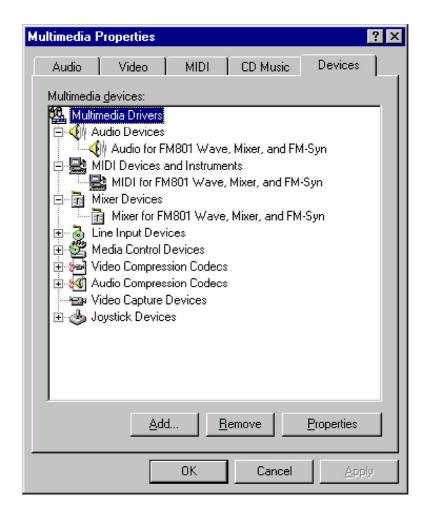

2. Double-click on the **Multimedia** icon.

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.
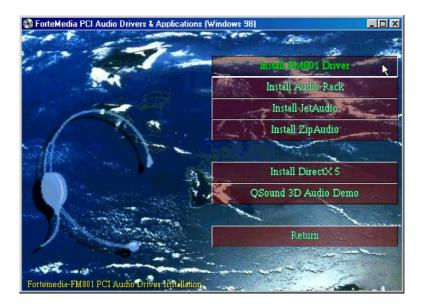
3.1 CD AutoRun Setup

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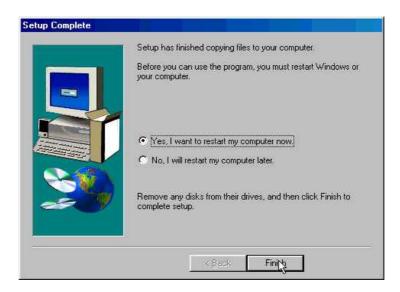
1. Select using your pointing device (e.g. mouse) on the "**Install Audio Device Software**" bar.

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.
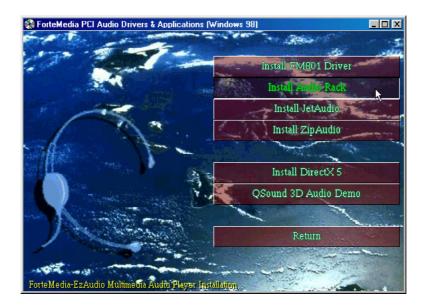
4.1 Installing EzAudio™

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.
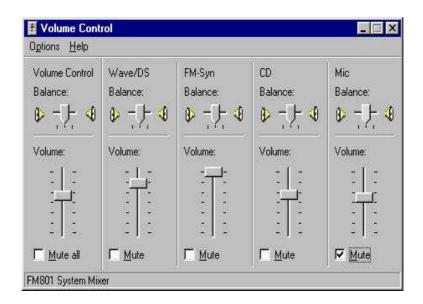
4.4 Playlist

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
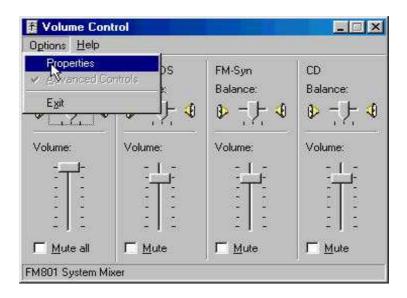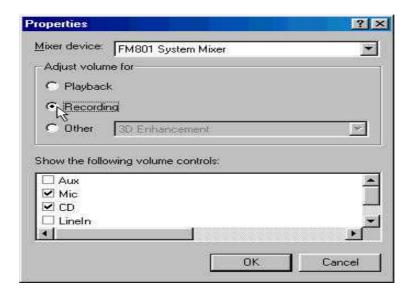
4.6 RECORD MIXER

- 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.