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❑ Reorient or relocate the receiving antenna.
❑ Increase the separation between the equipment and the receiver.
❑ Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
❑ Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and shielded AC power cable must be employed with this equipment to insure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity
This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

❑ This device may not cause harmful interference, and
❑ This device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

Table of Contents

Chapter 1

Introduction

This mainboard provides very high performance as it supports all of Intel's Slot-1 processors including the **Pentium-III**, the **Pentium-II**, and the **SEPP (Single Edge Processor Package) Celeron**. Pentium-III processors run at clock rates of 450 and 500. Pentium-II processors run from 233 MHz through to 450 MHz, and the SEPP Celerons run from 266 up to 433 MHz. The mainboard also has a **Socket-370** for the new **PPGA (Plastic Pin Grid Array) Celeron processor.**

The mainboard is highly integrated and includes a built-in **PCI 3D Sound System**. In addition, the mainboard has a full set of **ATX I/O Ports** including two serial ports, two PS/2 ports, a parallel port and two USB ports.

The mainboard supports **CPU Plug & Play** through firmware. The board adheres to the **ATX Form Factor** and it can be installed in an ATX. The board is installed with a full set of expansion slots including an **AGP slot** for an AGP graphics adapter, **four 32-bit PCI slots**, **and two 8/16-bit legacy ISA slots**.

Key Features

This key features of this mainboard include:

Slot-1 Processor Support
♦ **Pentium-III** support for 450 MHz and 500 MHz clock rates
♦ **Pentium-II** support for 233 MHz to 450 MHz clock rates
♦ **SEPP Celeron** support for 266 MHz to 433 MHz clock rates
♦ Support for 66 MHz and 100 MHz FSB (Front Side Bus)
♦ All processors configured by **CPU Plug & Play**

Socket-370 Processor Support
♦ Supports the new **PPGA Celeron** processor
♦ Supports the PPGA Celeron 66 MHz bus
♦ All processors configured by **CPU Plug and Play**

Memory Support
♦ Three DIMM slots for 3V **SDRAM** 168-pin memory modules
♦ Support for 66 MHz and 100 MHz memory bus
♦ Supports 1-bit ECC (Error Correction Code)
♦ Maximum installed memory can be 3 x 256 MB = 768 MB

Expansion Slots
♦ Four **32-bit PCI slots**
♦ One **AGP slot** for an AGP graphics adapter
♦ Two **8/16-bit ISA** slots
♦ One PCI slot and one ISA slot are shared, meaning that only one of the slots can be used at one time.

Onboard IDE channels
♦ Primary and Secondary PCI IDE channels
♦ Support for PIO (programmable input/output) modes
♦ Support for Bus mastering and UltraDMA 33/66 modes

Power Supply and Power Management
- ♦ Provides ATX power connector
- ♦ Support for Power button/Suspend Switch, and **Keyboard Power On/Off** (needs Win98 keyboard)
- ♦ Supports Wake on Modem, Wake on LAN and Wake on Alarm

Sound System
- ♦ Meets PC98 audio specification
- ♦ Full duplex playback and recording with built-in 16-bit CODEC
- ♦ HRTF 3D professional audio supports both Direct Sound 3D® and A3D® interfaces compatible plus support for **4-channel speakers**
- ♦ Drivers support Windows 3.1/95/98/NT 4.0
- ♦ Built-in 32 ohm earphone buffer and 3D surround
- ♦ Provides MPU-401 Game/MIDI port and legacy Sound Blaster 16 support
- ♦ Downloadable Wave-table Synthesizer supports Direct Music®
- ♦ Digital Audio Interface with **24-bit stereo**, 44KHz sampling rate and measured **120dB** audio quality
- ♦ Stereo Mixer supports analog mixing from CD-Audio, Line-In, and digital mixing from voice, FM/Wave-table and digital CD-Audio

Onboard I/O Ports
- ♦ Provides **PC99 Color Connector** for easy identification of peripheral devices
- ♦ Floppy disk drive port with 1Mb/s transfer rate
- ♦ Two serial port with 16550-compatible fast UART
- ♦ One parallel port with support for ECP and EPP
- ♦ Two USB ports & two PS/2 ports
- ♦ One optional infrared port

Hardware Monitoring
♦ Built-in hardware monitoring for CPU temperature and fan speeds
♦ Supports Intel's LANDesk Client Manager (LDCM)

Onboard Flash ROM
♦ Provides plug and play function for automatic CPU and board configuration
♦ Supports plug and play configuration of peripheral devices and expansion cards
♦ Built-in virus protection using Trend's **ChipAway Virus** which ensures that the entire boot process is virus protected.

Bundled Software
♦ **PC-Cillin** provides automatic virus protection under Windows 95/98

Dimensions
♦ ATX form factor (30.5cm x 22cm)

Package Contents

Your mainboard package ships with the following items:

❑ Mainboard
❑ Slot-1 cartridge holder
❑ This User's guide
❑ IDE cable
❑ Floppy diskette drive cable
❑ Support software CD-ROM

Optional Accessories
You can purchase the following optional accessories for this mainboard.

❑ Digital Audio extension bracket
❑ Infrared port extension bracket

Static Electricity Precautions

1. Components on this mainboard can be damaged by static electricity. Take the following precautions when unpacking the mainboard and installing it in a system.
2. Keep the mainboard, and other components, in their original static-proof packaging until you are ready to install them.
3. During an installation, wear a grounded wrist strap if possible. If you don't have a wrist strap, frequently discharge any static electricity by touching the bare metal of the system chassis.
4. Handle the mainboard carefully by the edges. Avoid touching the components unless it is absolutely necessary. During the installation lay the mainboard on top of the static-proof packaging with the component side facing upwards.
5. Inspect the mainboard for any damage caused during transit. Ensure that all the components that are plugged into sockets are correctly seated.
6. If you suspect that the mainboard has been damaged, do not apply power to the system. Contact your mainboard vendor and report the damage.

Chapter 2

Mainboard Installation

To install this mainboard into your system, follow the procedures in this chapter:

- ❑ Identify the mainboard components
- ❑ Install the correct processor
- ❑ Install one or more memory modules
- ❑ Verify that any jumpers or switches are at the correct setting
- ❑ Install the mainboard in the system chassis
- ❑ Install any other devices and make the appropriate connections to the mainboard headers.

Note: Before installing the mainboard, you must ensure that jumper JP1 is set to the Normal setting. See this chapter for information on locating JP1 and changing the jumper setting.

Mainboard Components

Use the diagram below to identify the major components on your mainboard.
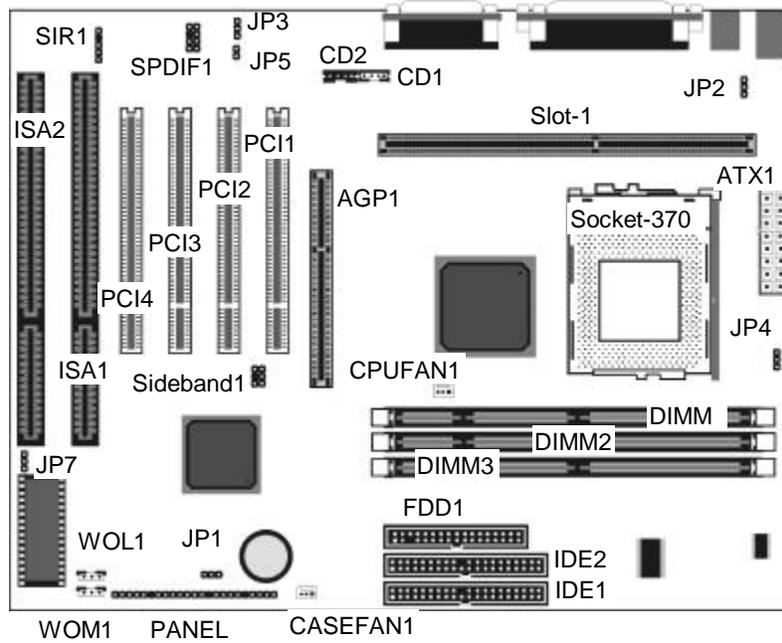
I/O Ports

The illustration below shows a side view of the I/O ports installed on the mainboard.
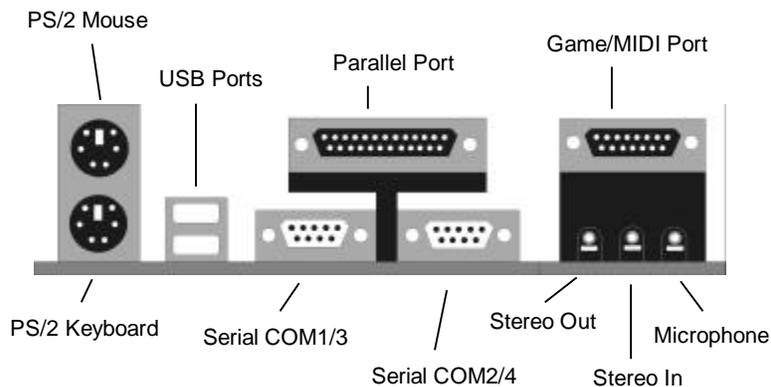
Install the Processor

This mainboard has a Slot-1 which can be installed with any Slot-1 processor cartridge including the Pentium-III, the Pentium-II, and the SEPP Celeron. It also has a Socket-370 which can be installed with the new Celeron processor which is shipped in a PPGA (Plastic Pin Grid Array) package. **To ensure reliability, make sure that your PPGA Celeron processor is fitted with a heatsink/cooling fan assembly.**

You can install a Slot-1 processor or a PPGA Celeron. You cannot install a PPGA and a Slot-1 processor cartridge together. Take care that you do not try to install a Socket-7 processor into the Socket-370. A Socket-7 processor such as the Pentium-MMX, or the AMD K5/K6 does not fit in the socket-370.

The following table lists all the processors that are currently supported by the two processor sockets. New processors may be a released after this manual is printed.

Processor Cartridge	Clock Rate MHz	Processor Socket	System Bus MHz
Pentium-III	500	Slot-1	100
Pentium-III	450	Slot-1	100
Pentium-II	450	Slot-1	100
Pentium-II	400	Slot-1	100
Pentium-II	350	Slot-1	100
Pentium-II	333	Slot-1	66
Pentium-II	300	Slot-1	66
Pentium-II	266	Slot-1	66
Pentium-II	233	Slot-1	66
SEPP Celeron	433	Slot-1	66
SEPP Celeron	400	Slot-1	66
SEPP Celeron	366	Slot-1	66
SEPP Celeron	333	Slot-1	66
SEPP Celeron	300A	Slot-1	66
SEPP Celeron	300	Slot-1	66
SEPP Celeron	266	Slot-1	66
PPGA Celeron	433	Socket-370	66
PPGA Celeron	400	Socket-370	66
PPGA Celeron	366	Socket-370	66
PPGA Celeron	333	Socket-370	66
PPGA Celeron	300	Socket-370	66

Installing a Slot-1 Processor Cartridge

1. Locate Slot-1 and CPUFAN1on the mainboard.

Slot-1 with pre-installed cartridge holder. The upright arms are folded down for shipping.

CPUFAN1
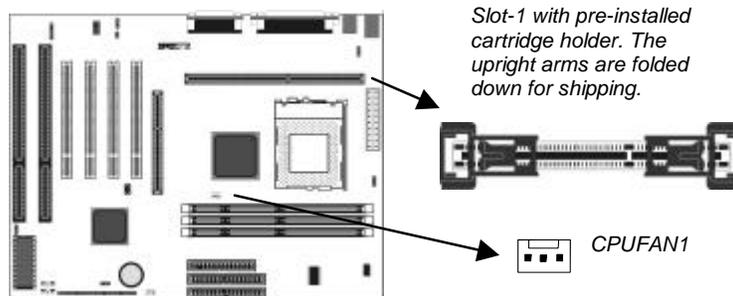
2. The Slot-1 is installed with a cartridge holder. The upright struts of the cartridge holder are folded down for shipping. Pull the struts upwards so that they are in the upright position.

9
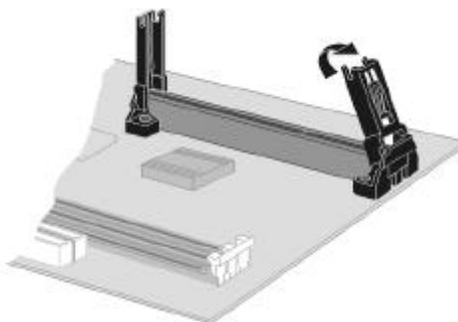
3. Insert the processor cartridge into the cartridge holder. Follow the instructions given with your processor cartridge. The edge connector on the cartridge has a notch so that it only fits into the Slot-1 in the correct way.
4. Locate the cooling fan power supply CPUFAN1. Connect the cable from the processor cartridge cooling fan to FAN1.
5. On this mainboard, you can configure the processor by entering the correct settings in the BIOS setup utility.

Installing a Socket-370 Processor

The Celeron processor installs into the ZIF (Zero Insertion Force) Socket-370 on the mainboard.

1. Locate the Socket-370 and CPUFAN1. Pull the locking lever out from the socket and swing it to the upright position.
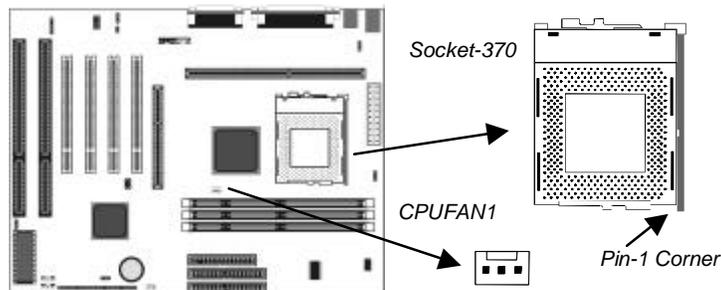
2. On the Celeron processor, identify the pin-1 corner by noting that it has a slight bevel.
3. On the Socket-370, identify the pin-1 corner. The pin-1 corner is on the same side as the locking lever, closest to the top of the lever when it is in the locked position.
4. Match the pin-1 corners and insert the Celeron processor into the socket. No force is required and the processor should drop into place freely.
5. Swing the locking lever down and hook it under the catch on the side of the socket. This locks the Celeron processor in the socket.

If the Celeron processor is installed with a cooling fan assembly, connect the cable from the fan to the CPU fan power connector CPUFAN1.

Install Memory

The mainboard has three DIMM slots which can be installed with memory modules. You must install at least one memory module in order to use the mainboard. You can install the memory into any of the DIMM slots.
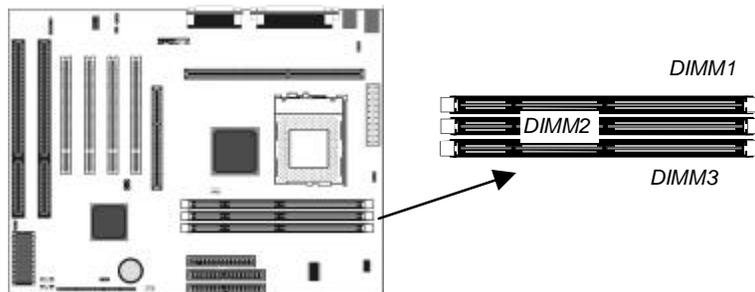
For this mainboard, you must use 168-pin, 3.3V memory modules installed with SDRAM memory chips. If you are using a processor cartridge that runs on a 100 MHz system bus, you must use memory that operates on a 100 MHz memory bus (PC-100 memory). If you are using a processor cartridge that runs on a 66 MHz system bus, you can use memory that operates on a 66 MHz memory bus.

You can install any size of memory module from 16 MB up to 256 MB, so the maximum memory size is 3 x 256 MB = 768 MB.

The edge connectors on the memory modules have cut outs, which coincide with struts in the DIMM slots, so the memory modules can only be installed in the correct way.

On the DIMM slot, pull the locking latches at either end of the slots outwards. Position the memory module correctly and insert it into the DIMM slot. Press the module down into the slot so that the locking latches lever inwards and lock the module in place.

Set the Jumpers

Jumpers are sets of pins which can be connected together with jumper caps. The jumper caps change the way the mainboard operates by changing the electronic circuits on the mainboard. If a jumper cap connects two pins, we say the pins are SHORT. If a jumper cap is removed from two pins, the pins are OPEN.
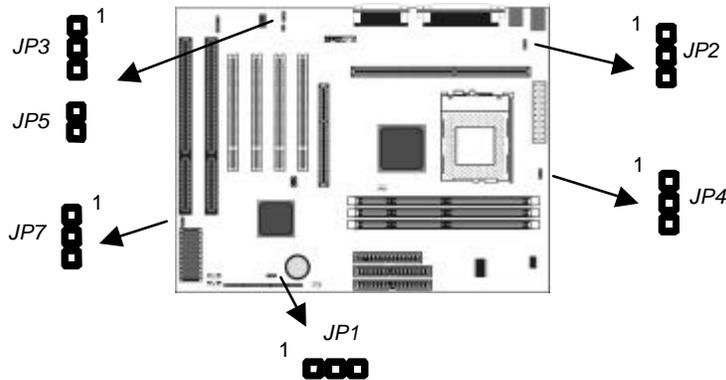
Jumper JP1: Clear CMOS Memory

Use this jumper to clear the contents of the CMOS memory. You may need to clear the CMOS memory if the settings in the setup utility are incorrect and prevent your mainboard from operating. To clear the CMOS memory, disconnect all the power cables from the mainboard and then move the jumper cap into the CLEAR setting for a few seconds.

Function	Jumper Setting
Normal Operation	Short Pins 1-2
Clear CMOS memory	Short Pins 2-3

Jumper JP2: Keyboard Power On Selector

If you enable the keyboard power on feature, you can use hot keys on your keyboard as a power on/off switch for the system

Note: Make sure that the system can provide 1A on +5VSB (+5V Standby) signal before using the Keyboard Power On function.

Function	Jumper Setting
Disable Keyboard Power On	Short Pins 1-2
Enable Keyboard Power On	Short Pins 2-3

Jumper JP3: Audio System Enable/disable

Use this jumper to enable or disable the audio system integrated on this mainboard. Disable the built-in audioif you plan on using another audio system on an expansion card.

Function	Jumper Setting
Enable Audio	Short Pins 1-2
Disable Audio	Short Pins 2-3

Jumper JP4: Select System Bus Frequency

If you set this jumper to Normal, the system will auto-detect if the installed processor requires a system bus speed of 66 MHz or 100 MHz. If you set this jumper to Force 100 MHz, the system will always use a 100 MHz bus, even for processors that are rated to run on a 66 MHz system bus frequency.

13

Jumper JP5: Set SPDIF Output Voltage

Use this jumper to select the output voltage of the digital audio SPDIF connector on this mainboard. Select either 0.5 volts or 5 volts according to the devices that you have connected to the SPDIF connector.

Function	Jumper Setting
5V SPDIF Output	Short Pins 1-2
0.5V SPDIF Output	Open Pins 1-2

Jumper JP7: Flash BIOS Enable/disable

The mainboard BIOS is stored on an EPROM (Erasable Programmable Read Only Memory) chip. You can erase an old BIOS and write an upgrade BIOS to the chip by using the Flash BIOS utility. Before flashing a new BIOS, you must set this jumper to Enable.

Function	Jumper Setting
Enable flash BIOS	Short Pins 1-2
Disable flash BIOS	Short Pins 2-3

14

Install the Mainboard

Install the mainboard into the system chassis. This mainboard uses the ATX format with a twin-tier of I/O ports. Ensure that your case has an I/O template that can be used by this mainboard.

Install the mainboard into the unit case. Follow the instructions provided by the case manufacturer using the screws and mounting points provided in the chassis.
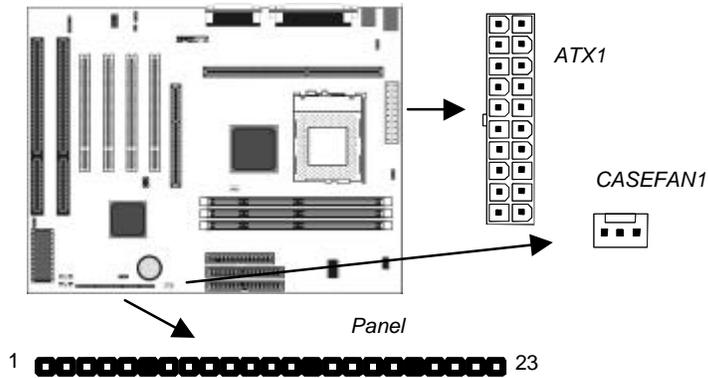
Connect the power cable from the power supply unit to the power connector ATX1 on the mainboard. If the system chassis is installed with a cooling fan, connect the cable from the cooling fan to the chassis fan power connector on the mainboard CASEFAN2.

Connect the case switches and indicator LEDs to the bank of switch and LED connectors PANEL. See the illustration below for a guide to the pin functions of the PANEL connector.

15
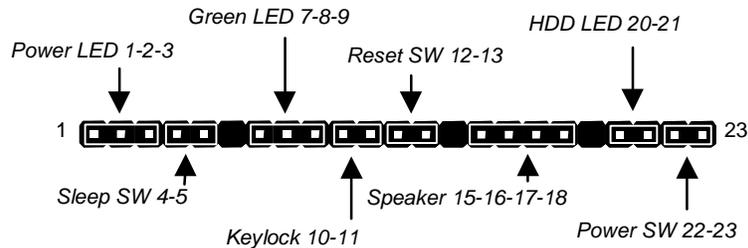
Install the Extension Brackets/Options

This mainboard does not ship with any extension brackets. You can install an optional SPDIF extension bracket and an optional infrared port.

The extension brackets are used to transmit features on the mainboard to external connectors that can be fixed to the system chassis. Follow the steps below to install the extension brackets.

Note: All the ribbon cables used on the extension brackets carry a red stripe on the pin-1 side of the cable.

Digital Audio Extension Bracket
This bracket has two RCA jacks for digital audio in and digital audio out, and an auxiliary jack for a Stereo Line-in device.
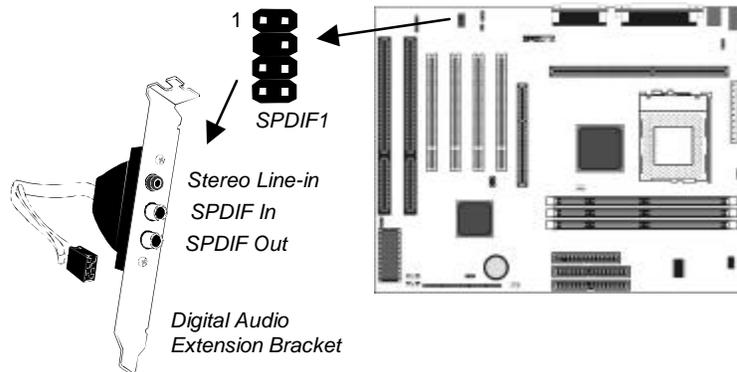
1. On the mainboard, locate the SPDIF1 header for this bracket.
2. Plug the cable from the bracket into the SPDIF1 header.
3. In the system chassis, remove a blanking plate from one of the expansion slots and install the extension bracket in the slot. Use the screw that held the blanking plate in place to secure the extension bracket.

16

Optional Infrared Port

The mainboard has an infrared header SIR1 so that you can install an optional serial infrared port.
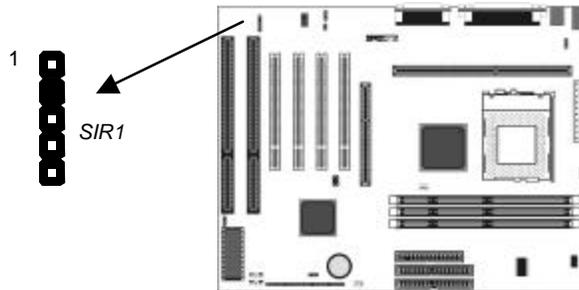
1. On the mainboard locate the infrared port header SIR1.
2. Connect the ribbon cable from the port to the header SIR1 and then secure the port to an appropriate place in your system chassis.

17

Install Other Devices

Install and connect any other devices in the system following the steps below.
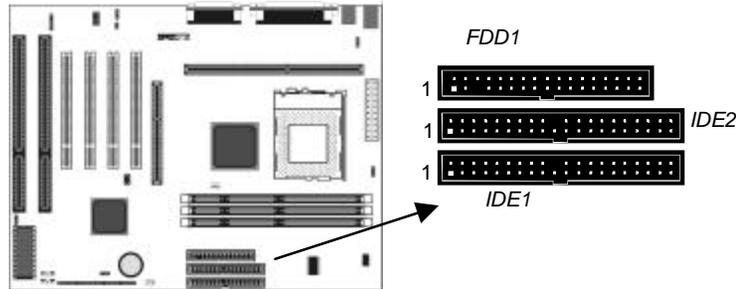
Floppy Disk Drive
The mainboard ships with a floppy disk drive cable that can support one or two drives. Drives can be 3.5" or 5.25" wide, with capacities of 360K, 720K, 1.2MB, 1.44MB, or 2.88MB.

Install your drives and supply power from the system power unit. Use the cable provided to connect the drives to the floppy disk drive header FDD1.

IDE Devices
IDE devices include hard disk drives, high-density diskette drives, and CD-ROM/DVD drives.

The mainboard ships with an IDE cable that can support one or two IDE devices. If you connect two devices to a single cable, you must configure one of the drives as Master and one of the drives as Slave. The documentation of the IDE device will tell you how to configure for Master or Slave.

Install the device(s) and supply power from the system power unit. Use the cable provided to connect the device(s) to the Primary IDE channel connector IDE1 on the mainboard.

18

If you want to install more IDE devices, you can purchase a second IDE cable and connect one or two devices to the Secondary IDE channel connector IDE on the mainboard. If you have two devices on the cable, one must be Master and one must be Slave.

Internal Sound Connections
If you have installed a CD-ROM drive or a DVD drive, you can connect the sound output of the drive to the built-in sound system.

On the mainboard, locate the two 4-pin connectors for CD1 and CD2. There are two kinds of connector because different brands of CD-ROM drive have different kinds of cable connectors on their audio output cable. Connect the cable to the appropriate connector.

19
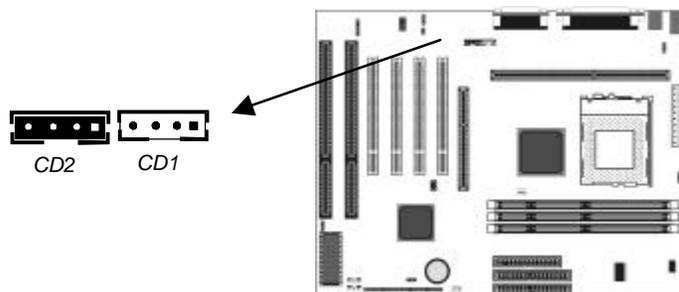
Expansion Slots

This mainboard has one AGP slot, four PCI 32-bit expansion slots and two 8/16-bit ISA slots. The PCI slot PCI4 is shared with the ISA slot ISA1. This means that you can use either of these slots but not both at the same time.
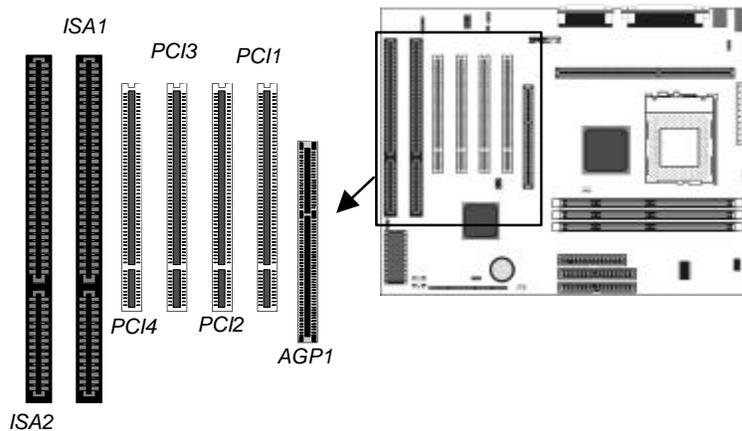
Use the AGP1 slot to install an AGP graphics adapter. Use the PCI slots to install 32-bit PCI expansion cards. Use the ISA slots to install legacy 8/16-bit expansion cards.

Installing an Expansion Card

1. Locate the AGP, PCI or ISA slot on the mainboard.
2. Remove the blanking plate from the appropriate expansion slot on the system chassis.
3. Install the edge connector of the expansion card into the slot and press it quite firmly down so that it is seated correctly.
4. Secure the bracket of the expansion card into the expansion slot in the system chassis using the screw that held the blanking plate in place.

Wake Up Connectors and Sideband1

You can use these connectors if you have installed a fax/modem expansion card, a network adapter card, or a PCI Sound Blaster audio expansion card.
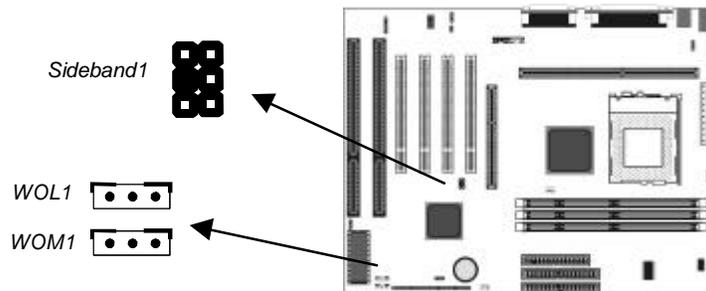
Wake On LAN

If you have installed a network adapter card, connect the adapter to the wake on LAN connector WOL1. You can then use the setup utility to program your computer to resume from a power saving mode whenever there is traffic through the network.

Wake On Modem

If you have installed a fax/modem card, connect the fax/modem to the wake on modem connector WOM1. You can then use the setup utility to program your computer to resume from a power saving mode whenever there is an incoming call to the fax/modem.

SB-Link

If you have installed a PCI Sound Blaster audio card, connect the card to the SB-Link connector SIDEBAND1. The SB-Link connector solves some problems that can occur if you try to play some DOS real mode games using a PCI Sound Blaster card.

21

Chapter 3

BIOS Setup

Introduction

The BIOS setup utility stores information about your computer such as the date and time, the kind of hardware you have installed, and so on. Your computer uses this information to initialize all the components at boot-up time, and make sure that everything runs smoothly.

If the information in the setup utility is incorrect, it may cause your system to malfunction. It can even stop your computer from booting properly. If this happens, you can use the clear CMOS jumper to clear the CMOS memory area that is used to store the setup information.

You can run the setup utility and manually make changes to the setup utility. You might need to do this to configure some of the hardware that you add to the mainboard, such as the CPU, the memory, disk drives, etc.

Running the Setup Utility

Each time your computer starts, before the operating system is booted, a message appears on the screen that prompts "*Press DEL to run SETUP*". When you see this message, press the **Delete** key and the Main Menu page of the setup utility appears on your monitor.

```
              ROM PCI/ISA BIOS (MS7192S)
                  CMOS SETUP UTILITY
                AWARD SOFTWARE, INC.
+-------------------------------------------------------------+
|                                                             |
|   STANDARD CMOS SETUP          INTEGRATED PERIPHERALS        |
|                                                             |
|   BIOS & CPU 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 OPTIMUM SETTINGS                                      |
|                                                             |
+-------------------------------------------------------------+
| Esc : Quit                     ↑ ↓ → ←  : Select Item        |
| F10 : Save & Exit Setup        (Shift)F2 : Change Color      |
+-------------------------------------------------------------+
```

You can use the cursor arrow keys to highlight any of the options on the Main Menu page. Press **Enter** to select the highlighted option. To leave the setup utility, press the **Escape** key. Hold down the **Shift** key and press **F2** to cycle through the optional color schemes of the setup utility.

Some of the options on the Main Menu page lead to tables of items with installed values. In these pages, use the cursor arrow keys to highlight the items, and then use the **PgUp** and **PgDn** keys to cycle through the alternate values for each of the items. Other options on the Main Menu page lead to dialog boxes which require you to answer Yes or No by hitting the **Y** or **N** keys.

If you have already made changes to the setup utility, press **F10** to save those changes and exit the utility. Press **F5** to reset the changes to the original values. Press **F6** to install the setup utility

23

with a set of default values. Press **F7** to install the setup utility with a set of high-performance values.

Standard CMOS Setup Page

Use this page to set basic information such as the date and time, the IDE devices, and the diskette drives.

```
                        ROM PCI/ISA BIOS (MS7192S)
                           STANDARD CMOS SETUP
                           AWARD SOFTWARE, INC.

    Date (mm:dd:yy) : Thu, Apr  1 1999
    Time (hh:mm:ss) :  9 : 28 : 36

    HARD DISKS          TYPE    SIZE    CYLS HEAD PRECOMP LANDZ SECTOR  MODE

    Primary Master   :   0       0       0    0      0     0      0 NORMAL
    Primary Slave    :   0       0       0    0      0     0      0 NORMAL
    Secondary Master :   0       0       0    0      0     0      0 NORMAL
    Secondary Slave  :   0       0       0    0      0     0      0 NORMAL

    Drive A : None
    Drive B : None
    Floppy 3 Mode Support : Disabled

    Video  : EGA/VGA
    Halt On : All Errors

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

Date & Time	Use these items to install your system with the correct date and time
Primary Master **Primary Slave** **Secondary Master** **Secondary Slave**	These items show the characteristics of any hard disk drives on the four available IDE channels. (Note that SCSI hard disk drives do not appear here.) You can automatically install most modern hard disks using the IDE HDD Auto Detect Option from the main menu. However, if you find that a drive cannot be automatically detected, you can use these items to manually enter the characteristics of the drive. The documentation provided with your drive provides the data you need to fill in the values for CYLS (cylinders), HEAD (read/write heads), and so on.
Floppy Drive A **Floppy Drive B**	Use these items to set the size and capacity of the floppy diskette drive(s) installed in the system.

Floppy 3 Mode Support	Floppy 3 Mode refers to a 3.5" diskette with a capacity of 1.2 MB. This diskette is sometimes used in Japan
Video	This item defines the video mode of your system. Set it to EGA/VGA.
Halt On	This item determines what kind of errors are sufficient to halt the system.

BIOS & CPU Features Setup Page

Use this page to set more advanced information about your system. Take some care with this page. Making changes can affect the operation of your computer.

```
                      ROM PCI/ISA BIOS (MS7192S)
                       BIOS & CPU FEATURES SETUP
                         AWARD SOFTWARE, INC.

   CPU Internal Core Speed    : 350MHz    Video  BIOS Shadow  : Enabled
   CPU Host Bus Frequency     : 100 MHz   C8000-CBFFF Shadow  : Disabled
   CPU Core:Bus Freq.Multiple : 3.5x      CC000-CFFFF Shadow  : Disabled
   Anti-Virus Protection      : Enabled   D0000-D3FFF Shadow  : Disabled
   CPU Internal Cache         : Enabled   D4000-D7FFF Shadow  : Disabled
   CPU L2 Cache ECC Checking  : Enabled   D8000-DBFFF Shadow  : Disabled
   Processor Number Feature   : Enabled   DC000-DFFFF Shadow  : Disabled
   Quick Power On Self Test   : Enabled
   Boot From LAN First        : Enabled
   Boot Sequence              : A,C,SCSI
   Swap Floppy Drive          : Disabled
   Boot Up NumLock Status     : On
   IDE HDD Block Mode         : Enabled
   Gate A20 Option            : Fast
   Memory Parity/ECC Check    : Enabled
   Security Option            : Setup     ESC : Quit        ↑↓→← : Select Item
   PCI/VGA Palette Snoop      : Disabled  F1  : Help        PU/PD/+/- : Modify
   OS Select For DRAM > 64MB  : Non-OS2   F5  : Old Values  (Shift)F2 : Color
   HDD S.M.A.R.T. capability  : Disabled  F6  : Load BIOS  Defaults
   Report No FDD For WIN 95   : Yes       F7  : Load Setup Defaults
```

CPU Internal Core Speed	Use this item to set the clock rate for your processor. When you set a clock rate, the following two items *CPU Host Bus Frequency* and *CPU Core:Bus Freq. Multiple* are automatically set.
CPU Host Bus Frequency CPU Core:Bus Freq. Multiple	If you set the item above, *CPU Internal Core Speed,* to Manual, you can use these two items to set the system bus speed and the CPU clock rate. After you set the CPU Host Bus Frequency (system bus), set a multiple in the CPU Core: Bus so that **Bus Freq. Multiple X Host Bus Frequency = Processor Clock Rate.**

Anti-Virus protection	Enable this item so that your system is protected from some viruses that attack the partition table of your hard disk. Disable this item if you are installing a new OS.
CPU Internal Cache	All the processors supported by this system have internal level-1 cache so leave this item enabled.
CPU L2 Cache ECC Checking	If you enable this item, the system will carry out error checking an any level 2 (external) cache memory that is supplied with the CPU.
Processor Number Feature	Pentium-III processor cartridges are installed with a unique serial number which can be read by processes and transactions carried out over the internet/network. If you disable this item, the serial number will not be available.
Quick Power On Self Test	If you enable this item, the power on testing will be shortened so that the system boots faster.
Boot From LAN First	Enable this item if you want your system to remote boot an OS from a network server.
Boot Sequence	This item determines the order and sequence of the drives that the system will search to boot an operating system.
Swap Floppy Drive	If you have two floppy diskette drives installed , you can use this item to change the drive letter assignments so that drive B becomes drive A.
Boot Up NumLock Status	This item determines if your system starts up with the Num Lock key active or not active.
Typematic Rate Setting	If this item is enabled, you can use the following two items to change the operation of your keyboard.
IDE HDD Block Mode	Enable this item if your IDE hard disk drive supports block mode data transfers.
Gate A20 Option	This item determines how the system runs legacy software written for early X86 processors. Leave this item at the default value.
Memory Parity/ECC Check	Enable this item if you want the system to carry out error checking on the main memory installed in your system.
Security Option	If you have installed password protection, use this item to determine if the password is required at start-up or on entry to the setup utility.

26

PCI/VGA Pallete Snoop	This item might be required to overcome some problems with non-standard VGA cards.
OS Select For DRAM > 64 MB	Enable this item if you are running OS/2 and you have installed more than 64 MB memory.
HDD S.M.A.R.T. capability	SMART is an industry acronym for Self-monitoring, Analysis and Reporting Technology. If the documentation of your hard disk states that SMART is supported, you can enable this item.
Report No FDD for Windows 95	If you are running a system with no floppy drive and using the WIN95 OS, select yes for this item to ensure compatibility with the Windows 95 logo certification.
Video BIOS Shadow	This item allows the video BIOS to be copied to system memory for faster execution.
XXXXX-XXXXX Shadow	These items allow the BIOS of other devices to be copied to system memory for faster execution.

Chipset Features Setup Page

This page sets some of the timing parameters for your system. Before making changes to this page, you must ensure that your hardware supports the new values.

```
              ROM PCI/ISA BIOS (MS7192S)
                 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 CPU Temperature  :         │
│ Bank 4/5 DRAM Timing : SDRAM 10ns│ Current System Temp.     :         │
│ SDRAM  Cycle Length  : 3         │ Current CPU FAN Speed    :         │
│ DRAM Clock           : Host CLK  │ Current Chassis FAN Speed:         │
│ Memory Hole          : Disabled  │ Current Vdd(V)           :         │
│ Read Around write    : Disabled  │ Current Vin1(V)          :         │
│ Concurrent PCI/Host  : Disabled  │ Current Vin2(V)          :         │
│ System BIOS Cacheable: Disabled  │ Current Vin3(V)          :         │
│ Video RAM Cacheable  : Disabled  │ Shutdown Temperature     : 60°C/140°F│
│ AGP Aperture Size    : 64M       │ Current CPU FAN Alarm    : Disabled│
│ AGP-2X Mode          : Enabled   │ Current Vdd(V) Alarm     : Disabled│
│                                  │ Current Vin(V) Alarm     : Disabled│
│                                  │                                    │
│                                  │                                    │
│                                  │ ESC : Quit        ↑↓→← : Select Item│
│                                  │ F1  : Help        PU/PD/+/- : Modify│
│                                  │ F5  : Old Values  (Shift)F2 : Color │
│                                  │ F6  : Load BIOS  Defaults          │
│                                  │ F7  : Load Setup Defaults          │
└─────────────────────────────────┴──────────────────────────────────┘
```

27

Bank 0/1 DRAM Timing	This item sets the timing for a memory module installed in the first DIMM socket. Leave this item at the default value.
Bank 2/3 DRAM Timing	This item sets the timing for a memory module installed in the second DIMM socket. Leave this item at the default value.
Bank 0/1 DRAM Timing	This item sets the timing for a memory module installed in the third DIMM socket. Leave this item at the default value.
SDRAM Cycle Length	This item install timing parameters for the installed SDRAM memory. We recommend that you leave this item at the default value.
DRAM Clock	This item install timing parameters for the installed SDRAM memory. We recommend that you leave this item at the default value.
Memory Hole	This item can be used to reserve memory space for some ISA expansion cards that require it.
Read Around write	This item determines the operation of the system's read and write operations. Leave this item at the default value.
Concurrent PCI/Host	This item allows concurrent operation for the system PCI bus. We recommend that you leave this item at the default value.
System BIOS Cacheable Video BIOS Cacheable	These items allow the video and/or system to be cached in memory for faster execution. Wee recommend that you leave these items at the default value.
AGP Aperture Size	This item defines an aperture size for an AGP graphics adapter. It defines the section of the PCI memory address space reserved for graphics.
AGP-2X Mode	This item allows the speed of the AGP graphics bus to be doubled. Leave this item at the default value.
CPU Warning Temperature Current CPU Temperature, etc.	Use the items on the right side of the screen to install the parameters for the system hardware monitoring feature. When the system begins to operate outside the parameters that you select, a warning will be given.

28

Power Management Setup Page

This page sets some of the parameters for the system power management operation.

```
                    ROM PCI/ISA BIOS (MS7192S)
                      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   : DPMS Support   │ IRQ5  (LPT 2)       : Primary    │
 │ MODEM Use IRQ      : 3              │ IRQ6  (Floppy Disk): Primary     │
 │ Soft-Off by PWRBTN : Instant-Off    │ IRQ7  (LPT 1)       : Primary    │
 │       ** PM Timers **               │ 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	Use this item to enable or disable power management. If you set to *Max Saving*, the system powerdown timeouts are short. If you set to *Min Saving*, the powerdown timeouts are longer. If you set to *User Define*, you can set the powerdown timeouts manually using the items below.
PM Control by APM	If you enable this item, it allows an operating system with APM (Advanced Power Management) such as WIN 95/98 to operate power management routines on your system.
Video Off After	This item defines which power-saving mode is required to power down the video.
Video Off Method	This item defines how the video is powered down.
Modem Use IRQ	Set this item with the IRQ used by an optional Modem so that the system can resume from a soft powerdown when an incoming call is received.

Soft-Off by PWRBTN	This system supports a software power down. The system can be resumed from a software power down by an alarm, or by traffic on a network or fax/modem. Use this item to determine how the power button can be used to cause a software power down.
HDD Power Down	Use this item to set a powerdown timeout for the hard disk drive. If the time passes with no activity, the hard disk powers down.
Doze Mode	Use this item to set a powerdown timeout for the power saving doze mode. If the time passes with no activity, the system enters doze mode.
Suspend Mode	Use this item to set a powerdown timeout for the power saving suspend mode. If the time passes with no activity, the system enters suspend mode.
VGA	If this item is enabled, any video activity will resume the system from a power saving mode or a software power down.
LPT & COM	If this item is enabled, any activity through the serial ports or the parallel port will resume the system from a power saving mode or a software power down.
HDD & FDD	If this item is enabled, any activity on the hard disk drive or the floppy diskette drive will resume the system from a power saving mode or a software power down.
DMA/master	If this item is enabled, any activity through the DMA channels will resume the system from a power saving mode or a software power down.
Wake Up On LAN	If this item is enabled, the system can be resumed from a power-saving mode or a software power down by incoming traffic to a LAN adapter.
Modem Ring Resume	If this item is enabled, the system can be resumed from a power-saving mode or a software power down by incoming calls to a fax/modem.

RTC Alarm Resume	If this item is enabled, the system can be resumed from a power-saving mode or a software power down by an alarm programmed on the system's RTC (Realtime Clock). Use the items which appear below this item to set the time and date of the alarm.
Primary INTR	If this item is enabled, then all of the system interrupts (listed below) can be used to generate power management routines.
IRQ3 to IRQ15	These items are a list of the system interrupts and a description of the devices which use them. If you disable the interrupt, it has no effect on the system power management. If you set an item to Secondary, any activity on that interrupt resets the powerdown timeout counters. If you set an item to Primary, any activity on that interrupt resets the powerdown timeout counters and/or resumes the system from a power saving mode or software power down.

PCI / Plug and Play Setup Page

This page sets some of the parameters for devices installed on the system PCI bus, and devices that use the system plug and play capability.

```
                    ROM PCI/ISA BIOS (MS7192S)
                      PNP/PCI CONFIGURATION
                      AWARD SOFTWARE, INC.
┌──────────────────────────────────┬─────────────────────────────────┐
│ PNP OS Installed       : No       │ Assign IRQ For VGA  : Enabled   │
│ Resources Controlled By  : Auto   │                                 │
│ Reset Configuration Data : Enabled│                                 │
│                                   │                                 │
│                                   │                                 │
│                                   │                                 │
│                                   │                                 │
│                                   │                                 │
│                                   │                                 │
│                                   │                                 │
│                                   │                                 │
│                                   │                                 │
│                                   │ ESC : Quit        ↑↓→← : Select Item │
│                                   │ F1  : Help        PU/PD/+/- : Modify │
│                                   │ F5  : Old Values  (Shift)F2 : Color  │
│                                   │ F6  : Load BIOS  Defaults       │
│                                   │ F7  : Load Setup Defaults       │
└──────────────────────────────────┴─────────────────────────────────┘
```

31

PNP OS Installed	Enable this item if you are using an O/S that supports Plug and Play such as Windows 95 or 98.
Resources Controlled By	This item lets you select for Automatic or Manual configuration of devices. If you set it to manual, new items appear. You can use these items to reserve an interrupt request line (IRQ) and a DMA channel for the device by setting the value to Legacy ISA.
Reset Configuration Data	Your system stores information on the configuration of Plug and Play devices. If you enable this item, the system will delete the current data and create new data at the next system start up.
Assign IRQ for VGA	If this item is enabled, an IRQ will be assigned to the PCI VGA graphics system.

Load BIOS Defaults

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the setup utility is loaded with a set of BIOS default values. The BIOS default values are not very demanding and they should allow your system to function with most kinds of hardware and memory chips.

Load Optimum Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the setup utility is loaded with a set of setup default values. The setup default values are quite demanding and your system might not function properly if you are using slower memory chips or other kinds of low-performance components.

Integrated Peripherals Setup Page

This page sets some of the parameters for peripheral devices installed on the system.

```
              ROM PCI/ISA BIOS (MS7192S)
                  INTEGRATED PERIPHERALS
                  AWARD SOFTWARE, INC.

OnChip IDE Channel0 : Enabled     UART Mode Select       : IrDA
OnChip IDE Channel1 : Enabled     RxD , TxD Active       : Hi,Lo
 IDE Prefetch Mode   : Enabled    IR Transmittiion delay: Enabled
Primary Master   PIO: Auto        Onboard Parallel Port : 378/IRQ7
Primary Slave    PIO: Auto        Parallel Port Mode     : ECP
Secondary Master PIO: Auto        ECP Mode Use DMA       : 3
Secondary Slave  PIO: Auto        EPP Mode Select        : EPP1.7
Primary Master  UDMA: Auto        USB Controller         : Enabled
Primary Slave   UDMA: Auto        USB Keyboard Support   : Disabled
Secondary MasterUDMA: Auto
Secondary Slave UDMA: Auto
 Init Display First  : PCI Slot
 POWER ON Function   : Hot Key
 KB Power ON Password  : Enter
 Hot Key Power ON    : Ctrl-F12
 KBC input clock      : 8 MHz      ESC : Quit        ↑↓→← : Select Item
Onboard FDC Controller: Enabled    F1  : Help        PU/PD/+/- : Modify
Onboard Serial Port 1 : 3F8/IRQ4   F5  : Old Values  (Shift)F2 : Color
Onboard Serial Port 2 : 2F8/IRQ3   F6  : Load BIOS  Defaults
                                   F7  : Load Setup Defaults
```

OnChip IDE Channel0	Use this item to enable or disable the onboard primary IDE channel.
OnChip IDE Channel1	Use this item to enable or disable the onboard secondary IDE channel.
IDE Prefetch Mode	This item speeds performance be allowing prefetching of data from an IDE device.
IDE Primary / Secondary Master / Slave PIO	The primary and secondary IDE channels can each support a Master and Slave device. Use these items to enable a Programmable Input/Output mode for each of the devices.
IDE Primary / Secondary Master / Slave UDMA	The primary and secondary IDE channels can each support a Master and Slave device. Use these items to enable an UltraDMA mode for each of the devices.
Init Display First	Use this item to define if your graphics adapter is installed in one of the PCI slots, or if you have installed an AGP graphics adapter into the AGP slot.

33

POWER On Function KB Power On Password Hot Key Power On	The Power On Function item allows you to power on the system by pressing hot-keys, or typing a password. If you choose Password, you can use the item KB Power On Password to install a power on password. If you set it to Hot Key, you can then use the item Hot Key Power On to choose which hot keys are installed.
KBC input clock	This item set the timing for the keyboard controller input clock. Leave this item at the default value.
Onboard FDC Controller	Use this item to enable or disable the onboard floppy disk drive controller.
Onboard Serial Port1	Use this item to enable or disable the onboard serial port COM1, and to assign a port address.
Onboard Serial Port2	Use this item to enable or disable the onboard serial port COM2, and to assign a port address.
UART Mode Select	This item defines the operation of serial port 2. In the Normal setting, serial port 2 is assigned to the external COM2 connector. If you have installed an optional infrared port, you must change the setting of this item to one of the Infrared settings (usually IrDA or FIR). These settings will disable the external COM2 serial port connector and assign the resources to the infrared device. If you have selected an IR mode, two items appear, RxD, TxD Active and IR Transmission delay, which let you set the duplex and transmission parameters for the Infrared port. See the documentation of your infrared port for help on these items.
Onboard Parallel Port	Use this item to enable or disable the onboard parallel port LPT1, and to assign a port address.
Parallel Port Mode	Use this item to determine the parallel port mode. You can select Normal, ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or ECP + EPP.
ECP Mode Use DMA	If you have installed the parallel port with ECP mode, use this item to assign a DMA channel to the port.

USB Controller	Use this item to enable or disable the onboard USB ports.
USB Keyboard Support	Use this item to enable or disable support for a USB keyboard.

Password Settings

If you highlight this item and press **Enter**, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press **Enter** after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press **Enter** after you have retyped it correctly. The password is required at boot time, or when the user enters the setup utility.

Change or Remove the Password
Highlight this item and type in the current password. At the next dialog box, type in the new password, or just press Enter to disable password protection.

IDE HDD Auto Detection

This item automatically detects and installs any hard disk drives installed on the primary and secondary IDE channel. Most modern drives can be detected. If you are using a very old drive that can't be detected, you can install it manually.

Setup will check for two devices on the primary IDE channel and then two devices on the secondary IDE channel. At each device, the system will flash an N in the dialog box. Press **Enter** to skip the device and proceed to the next device. Press **Y**, then **Enter** to tell the system to auto-detect the device.

Save and Exit Setup

Highlight this item and press **Enter** to exit the Setup utility without saving any changes that you have made.
save the changes that you have made in the setup utility and exit the setup program. When the Save and Exit dialog box appears,

35

press **Y** to save and exit, or press **N** to return to the setup main menu.

Exit Without Saving Option

Highlight this item and press **Enter** to discard any changes that you have made in the setup utility and exit the setup program. When the Exit Without Saving dialog box appears, press **Y** to discard changes and exit, or press **N** to return to the setup main menu.

Chapter 4

Software & Applications

Introduction

The support software CD-ROM that is included in the mainboard package contains all the drivers and utility programs needed to properly run our products. Please check all the README files for the latest information on installing and using the software.

Using the PCI Sound Application

1. Before you install the PCI Sound drivers, make sure your Operating System has been installed, otherwise the PCI Sound might be detected as "Other device" by the device manager of your OS.

2. After the drivers are properly installed, choose the MULTIMEDIA icon in the CONTROL PANEL when you need to use the Software Wave-Table drivers as a MIDI output device. Select the MIDI page and click on "C-media SoftMidi Synthesis (Win98) / Driver (Win95)", then click "OK" to confirm.

3. A Windows application named Audio Rack is provided with the PCI Sound drivers, which gives you control over all the audio functions through a user interface that is as simple to use as a home stereo system. We recommend that you use the System Mixer in the Audio Rack software to control your computer's audio volume, recording device and the recording gain.

4. If the devices that you are using require the MIDI port as the control interface, you need to select the MULTIMEDIA icon

in the CONTROL PANEL. Select the MIDI page and click on "CM8338 MPU-401" (Win98) or "CM8338/C3DX PCI Audio External MIDI Port" (Win95), and then click "OK" to confirm.

5. For more information, refer to the PCI Sound manual in the CD which ships with this mainboard.

The Four Speakers System

The onboard Sound audio system supports 2 wave channels (front/rear) known as the 4 speaker system. If you are running applications which use the DirectSound® 3D or A3D® audio interface, your system can simulate realistic 3D sound through a 4 speaker setup. Follow the steps below to install a 4-speaker setup.

Speaker Installation
Connect the front two speakers to the Line-out jack on the sound ports extension bracket. Connect the rear two speakers to the Line-in/Rear jack on the sound ports extension bracket. The original Line-in can be moved to Aux.

Speaker Position
Set up your speakers similar to the following figure to get the best audio result.
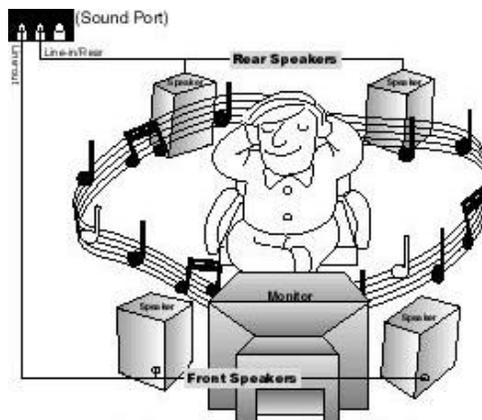
A picture on the 4 speakers application.

Mixer Setup

There is a 4-speakers option in the Volume Control of the Mixer when you are setting up the PCI Audio Application. Click on the 4 SPK icon to enable this option. This means that the output to the rear speakers is sent through the Line-in/Rear jack. In order to avoid hardware conflicts, **DO NOT** enable this option when the Line-in/Rear jack is connected with a line-in device. While the 4 speakers mode is enabled, turn on/off the output of the front speakers and adjust the volume of the speakers so that the front/rear speakers have the same volume.

Demo

Execute the "Helicopter" demo in the C3D HRTF Positional Audio Demos of the PCI Audio Application. When you hear the helicopter flying behind you, it means that the rear speakers are working properly.