

Chapter 1

INTRODUCTION

The MS-6198 Micro ATX VA3 mainboard is a high-performance computer mainboard based on VIA® VT82C694X chipset. The MS-6198 is designed for the Intel® Celeron™ or Coppermine(FC-PGA) processor for inexpensive business/personal desktop markets.

The Apollo Pro133A (VT82C694X) is a Socket-370 system logic north bridge with the addition of 133 MHz capability for both the CPU and SDRAM interfaces. Apollo Pro133A may be used to implement both desktop and notebook personal computer systems from 66MHz to 133MHz based on Socket-370 (Intel Celeron processors). The primary features of the Apollo Pro133A-North Bridge are: Slot-1 or Socket-370 CPU (Front Side Bus) Interface (66 / 100 / 133MHz), SDRAM Memory Interface (66 / 100 / 133MHz), AGP Bus Interface (66MHz), PCI Bus Interface (33MHz), Mobile Power Management.

The VT82C686A PSIPC (PCI Super-I/O Integrated Peripheral Controller) is a high integration, high performance, power-efficient, and high compatibility device that supports Intel and non-Intel based processor to PCI bus bridge functionality to make a complete Microsoft PC99-compliant PCI/ISA system.

1.1 Mainboard Features

CPU

- Socket 370 for Intel® Celeron™/Coppermine™ processor.
- Supports 233MHz, 266MHz, 300MHz, 333MHz, 350MHz, 400MHz, 450MHz, 500MHz, 533MHz., 550MHz, 667MHz or faster processor.

Chipset

- VIA® 694X chipset. (510 BGA)
 - FSB @ 133MHz
 - AGP 4x and PCI plus Advanced ECC Memory Controller
 - Support PC100/133 SDRAM technology
- VIA® VT82C686A chipset. (352 BGA)
 - Advanced Power Management Features
 - Integrated Super I/O (FDC, LPT, COM 1/2, and IR)
 - DirectSound AC97 Audio
 - Dual bus Master IDE Ultra DMA33/66
 - ACPI

Clock Generator

- 66.6/100/133MHz and 133Mhz clocks are supported.

Main Memory

- Support four memory banks using two 168-pin unbuffered DIMM.
- Support a maximum memory size of 1GB.
- Support ECC(1-bit Error Code Correct) function.
- Support 3.3v SDRAM DIMM.

Slots

- One AGP(Accelerated Graphics Port) slot.
 - AGP specification compliant
 - AGP 66/133/266MHz 3.3v device support
- Three 32-bit Master PCI Bus slots and one 16-bit ISA slot(wherein one shared slot can be used as PCI or ISA).
- Supports 3.3v/5v PCI bus Interface.

On-Board IDE

- An IDE controller on the VIA® VT82C686A Chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 33/66 operation modes.
- Can connect up to four IDE devices.

On-Board Peripherals

- On-Board Peripherals include:
 - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
 - 2 serial ports (COMA + COMB)
 - 1 parallel port supports SPP/EPP/ECP mode
 - 2 USB ports (reserved 2 USB Front Pin Header)
 - 1 IrDA/HP connector for SIR.

Audio

- Chip Integrated
- Direct Sound AC97' Audio

BIOS

- The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface(DMI) function which records your mainboard specifications.

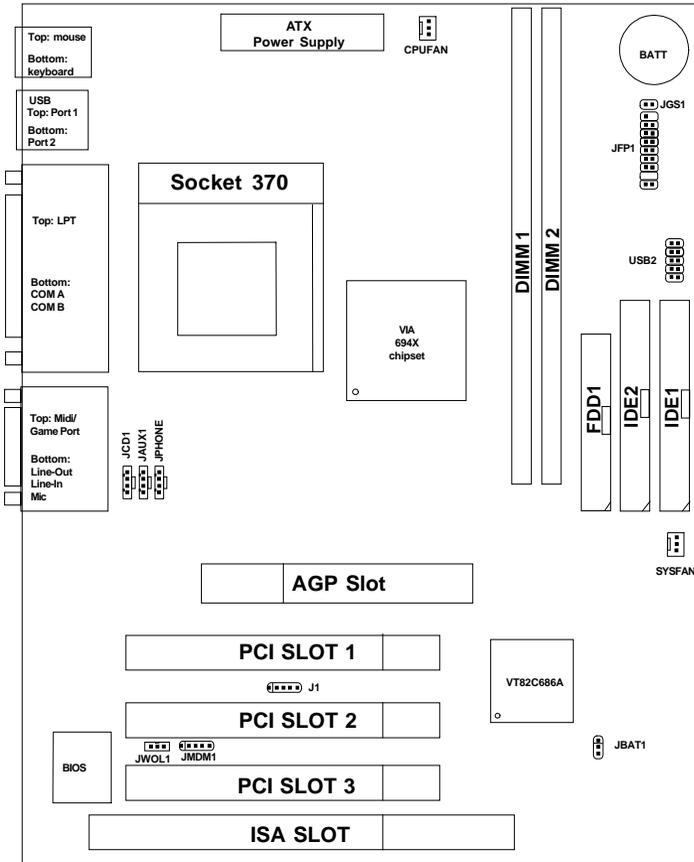
Dimension

- Micro-ATX Form Factor: 24.4cm (L) x 20cm (W)

Mounting

- 6 mounting holes.

1.2 Mainboard Layout



MS-6198 Micro ATX VA3 Mainboard

Hardware Installation**2**

This chapter provides you with the information about hardware setup procedures. During installation, be careful when handling the components and follow the installation procedures properly. For some components, installing it in a wrong orientation will cause it to become unstable.

Remember to use a grounded wrist strap before handling computer components. Static electricity may damage the components.

Chapter 2 contains the following topics:

| | |
|-------------------------------|------|
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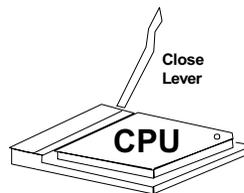
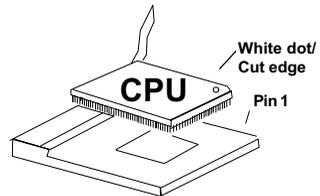
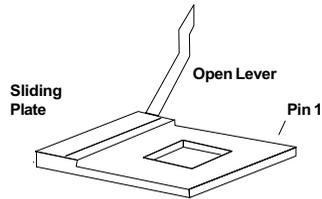
CHAPTER 2

Central Processing Unit: CPU

The mainboard operates with **Intel® Celeron™/Coppermine processor**. The mainboard uses a CPU socket called Socket 370 for easy CPU installation. The CPU should always have a Heat Sink and a cooling fan attached to prevent overheating.

• CPU Installation Procedures

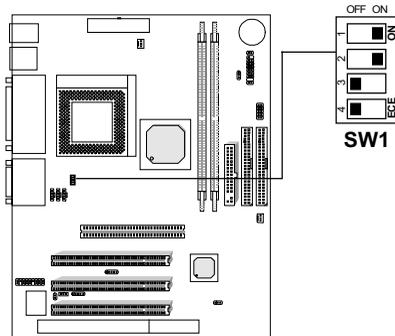
1. Pull the lever sideways away from the socket. Then, raise the lever up to a 90-degree angle.
2. Locate Pin 1 in the socket and look for the white dot or cut edge in the CPU. Match Pin 1 with the white dot/cut edge. Then, insert the CPU. It should insert easily.
3. Press the lever down to complete the installation.



HARDWARE INSTALLATION

- **CPU Speed Setting: SW1**

To set the proper speed and voltage of the CPU, you must know the specifications of your CPU (*always ask your reseller for CPU specifications*).



CHAPTER 2

• CPU Core Speed Derivation Procedure

If the CPU Core/Bus ratio is already fixed, adjusting the SW1 will not change the CPU Core/Bus ratio. If the Core/Bus ratio is not fixed by the CPU, then you can adjust the SW1 to change the Core/Bus ratio.

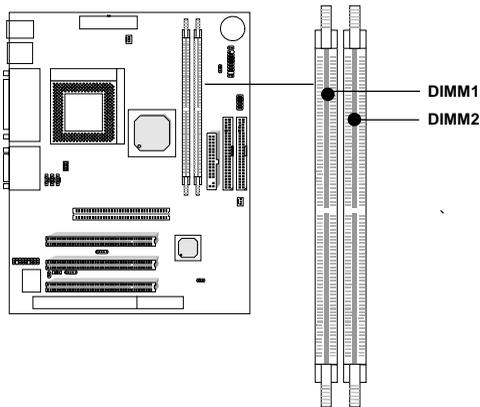
$$\begin{array}{llll} \text{If} & \text{CPUClock} & = & 66\text{MHz} \\ & \text{Core/Bus ratio} & = & 3.5 \\ \text{then} & \text{CPU core speed} & = & \text{Host Clock} \times \text{Core/Bus ratio} \\ & & = & 66\text{MHz} \times 3.5 \\ & & = & 233\text{MHz} \end{array}$$

| SW1 | | | | CPU |
|-----|-----|-----|-----|----------------|
| 4 | 3 | 2 | 1 | Core/Bus Ratio |
| ON | ON | OFF | ON | 3 |
| ON | OFF | OFF | ON | 3.5 |
| ON | ON | ON | OFF | 4 |
| ON | OFF | ON | OFF | 4.5 |
| ON | ON | OFF | OFF | 5 |
| ON | OFF | OFF | OFF | 5.5 |
| OFF | ON | ON | ON | 6 |
| OFF | OFF | ON | ON | 6.5 |
| OFF | ON | OFF | ON | 7 |
| OFF | OFF | OFF | ON | 7.5 |
| OFF | ON | ON | OFF | 8 |

Memory Installation

• Memory Bank Configuration

The mainboard supports a maximum memory size of 1GB (256-bit technology) for SDRAM: It provides two 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 512 Mbytes DIMM memory module.



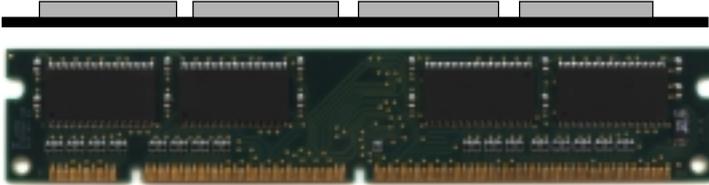
• Memory Population Rules

1. Supports only SDRAM DIMM.
2. To operate properly, at least one 168-pin DIMM module must be installed.
3. This mainboard supports Table Free memory, so memory can be installed on DIMM1 or DIMM 2 in any order.
4. Supports 3.3 volt DIMM.

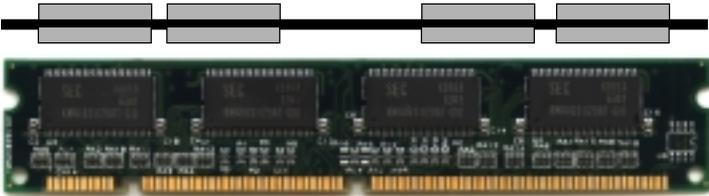
CHAPTER 2

• Memory Installation Procedures

How to install a DIMM Module

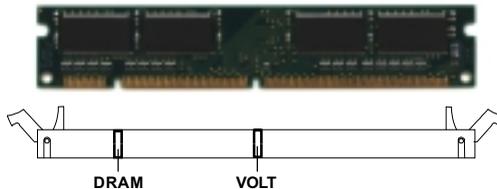


Single Sided DIMM



Double Sided DIMM

1. The DIMM slot has 2 Notch Keys “VOLT and DRAM”, so the DIMM memory module can only fit in one direction.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.



3. The plastic clip at the side of the DIMM slot will automatically close.

HARDWARE INSTALLATION

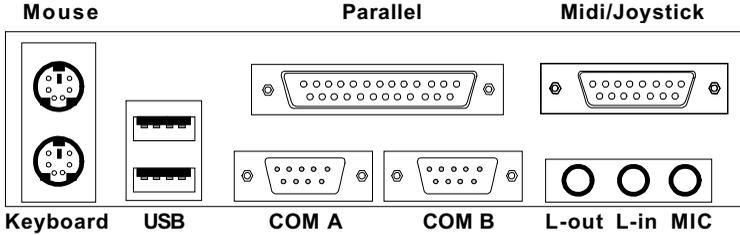
• SDRAM Memory Addressing

| DRAM Tech. | DRAM Density & Width | DRAM Addressing | Address Size | | MB/DIMM | |
|------------|----------------------|-----------------|--------------|--------|-------------------------|-------------------------|
| | | | Row | Column | Single no. Side(S) pcs. | Double no. Side(D) pcs. |
| 16M | 1Mx16 | ASYM | 11 | 8 | 8MBx4 | 16MBx8 |
| | 2Mx8 | ASYM | 11 | 9 | 16MBx8 | 32MBx16 |
| 64M | 2Mx32 | ASYM | 11 | 9 | 32MBx2 | 64MBx4 |
| | 2Mx32 | ASYM | 12 | 8 | 16MBx2 | 32MBx4 |
| | 4Mx16 | ASYM | 11 | 10 | 32MB | 64MB |
| | 4Mx16 | ASYM | 13 | 8 | 32MB | 64MB |
| | 8Mx8 | ASYM | 13 | 9 | 64MB | 128MB |
| 64M | 2Mx32 | ASYM | 11 | 8 | 16MB | 32MB |
| | 4Mx16 | ASYM | 12 | 8 | --- | --- |
| | 8Mx8 | ASYM | 12 | 9 | --- | --- |

CHAPTER 2

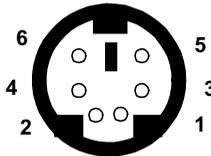
Back Panel

The mainboard provides the following back panel connectors:



Mouse Connector: JKBMS1

The mainboard provides a standard PS/2[®] mouse mini DIN connector for attaching a PS/2[®] mouse. You can plug a PS/2[®] mouse directly into this connector.



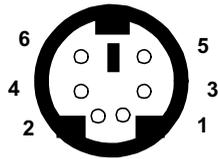
PS/2 Mouse (6-pin Female)

| PIN | SIGNAL | DESCRIPTION |
|-----|-------------|---------------|
| 1 | Mouse DATA | Mouse DATA |
| 2 | NC | No connection |
| 3 | GND | Ground |
| 4 | VCC | +5V |
| 5 | Mouse Clock | Mouse clock |

HARDWARE INSTALLATION

Keyboard Connector: JKBMS1

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.

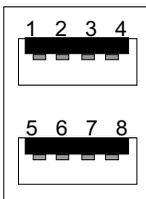


PS/2 Keyboard (6-pin Female)

| PIN | SIGNAL | DESCRIPTION |
|-----|----------------|----------------|
| 1 | Keyboard DATA | Keyboard DATA |
| 2 | NC | No connection |
| 3 | GND | Ground |
| 4 | VCC | +5V |
| 5 | Keyboard Clock | Keyboard clock |
| 6 | NC | No connection |

USB Connectors

The mainboard provides a **UHCI (Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



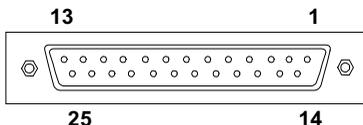
USB Ports

| PIN | SIGNAL | DESCRIPTION |
|-----|---------|-------------------------|
| 1 | VCC | +5V |
| 2 | -Data 0 | Negative Data Channel 0 |
| 3 | GND | Ground |
| 4 | +Data 0 | Positive Data Channel 0 |
| 5 | VCC | +5V |
| 6 | +Data 1 | Positive Data Channel 1 |
| 7 | -Data 1 | Negative Data Channel 1 |
| 8 | GND | Ground |

CHAPTER 2

Parallel Port Connector: LPT1

The mainboard provides a 25 pin female centronic connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port (EPP) and Extended capabilities Parallel Port (ECP). See connector and pin definition below:

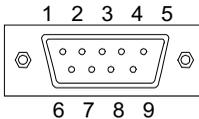


| PIN | SIGNAL | DESCRIPTION |
|-----|------------|--------------------|
| 1 | STROBE | Strobe |
| 2 | DATA0 | Data0 |
| 3 | DATA1 | Data1 |
| 4 | DATA2 | Data2 |
| 5 | DATA3 | Data3 |
| 6 | DATA4 | Data4 |
| 7 | DATA5 | Data5 |
| 8 | DATA6 | Data6 |
| 9 | DATA7 | Data7 |
| 10 | ACK# | Acknowledge |
| 11 | BUSY | Busy |
| 12 | FE | Paper End |
| 13 | SELECT | Select |
| 14 | AUTO FEED# | Automatic Feed |
| 15 | ERR# | Error |
| 16 | INIT# | Initialize Printer |
| 17 | SLIN# | Select In |
| 18 | GND | Ground |
| 19 | GND | Ground |
| 20 | GND | Ground |
| 21 | GND | Ground |
| 22 | GND | Ground |
| 23 | GND | Ground |
| 24 | GND | Ground |
| 25 | GND | Ground1 |

HARDWARE INSTALLATION

Serial Port Connectors: COM A and COM B

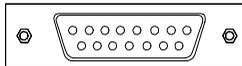
The mainboard provides two 9-pin male DIN connectors for serial port COM A & COM B. These port are 16550A high speed communication port that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into this connector.



| PIN | SIGNAL |
|-----|---|
| 1 | DCD (Data Carry Detect) |
| 2 | SIN (Serial In or Receive Data) |
| 3 | SOUT (Serial Out or Transmit Data) |
| 4 | DTR (Data Terminal Ready) |
| 5 | GND |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request To Send) |
| 8 | CTS (Clear To Send) |
| 9 | RI (Ring Indicate) |

Joystick/Midi Connectors

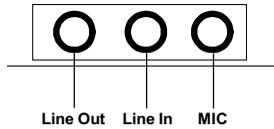
You can connect joystick or game pad to this connector.



CHAPTER 2

Audio Port Connectors

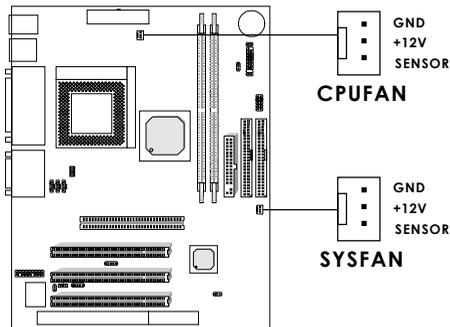
Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for the microphones.



Connectors

Fan Power Connectors: CPUFAN & SYSFAN

These connectors support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard has System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of this function.



CPUFAN: Processor Fan

SYSFAN: System Fan

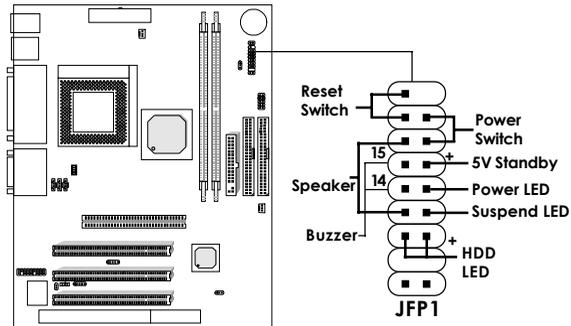
For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. System Hardware Monitor will count and report the fan rotation speed.

- Note:**
1. Always consult your reseller for proper CPU cooling fan.
 2. CPU FAN supports the FAN control. You can install PC Alert utility. This will automatically control the CPU FAN Speed according to the actual CPU temperature.

CHAPTER 2

Case Connector: JFP1

The Power Switch, Reset Switch, Power LED, Speaker, and HDD LED are all connected to the JFP1 connector block.



Power Switch

Connect to a 2-pin push button switch. This switch has the same feature with JRMS1.

Reset Switch

Reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin.

Power LED

Power LED will remain in Green mode when the system is power on.

| | |
|--------------|------------------------------------|
| Green mode: | System is in full on mode. |
| Blinking: | System is in Suspend 1 (POS) mode. |
| Yellow mode: | System is in Suspend 3 (STR) mode. |

Note: You can set the S1 or S3 type Suspend mode in the Power Management of the BIOS setup.

Speaker

The speaker from the system case is connected to this pin.

If on-board Buzzer is available:

| | |
|------------------|---------------------------|
| Short pin 14-15: | On-board Buzzer Enabled. |
| Open pin 14-15: | On-board Buzzer Disabled. |

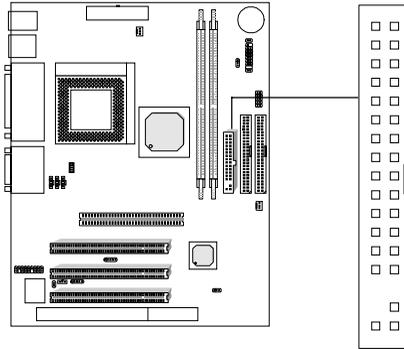
HDD LED

HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

HARDWARE INSTALLATION

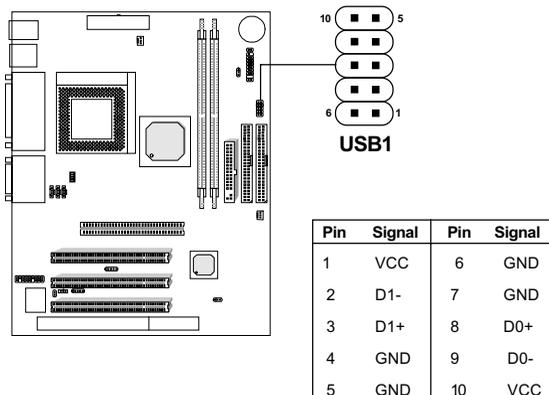
Floppy Disk Connector: FDD

The mainboard also provides a standard floppy disk connector FDD that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cables.



USB Front Connector: USB1

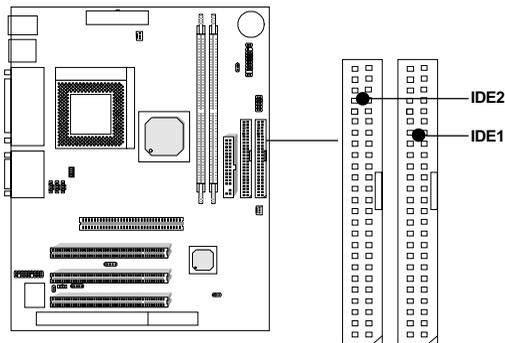
The mainboard provides a front Universal Serial Bus connector. This is an optional USB connector for Front Panel.



CHAPTER 2

Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA/66/100 Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33/66/100 function. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1 and IDE2. These connectors support the provided IDE hard disk cable.



IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

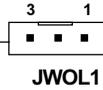
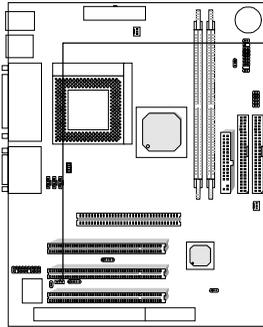
IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

HARDWARE INSTALLATION

Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is for use with LAN add-on cards that supports Wake Up on LAN function. To use this function, you need to set the “Wake-Up on LAN” to enable at the BIOS Power Management Setup.

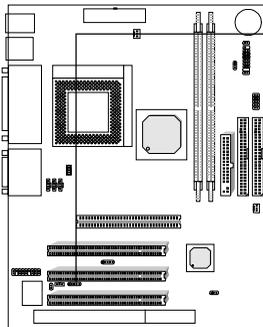


| PIN | SIGNAL |
|-----|-----------|
| 1 | 5VSB |
| 2 | GND |
| 3 | MP_WAKEUP |

Note: LAN wake-up signal is active “high”. To be able to use this function, you need a power supply that provide enough power for this feature. (Power supply with 750mA 5V Stand-by)

Modem Wake Up Connector: JMMD1

The JMMD1 connector is for use with Modem add-on card that supports the Modem Wake Up function.



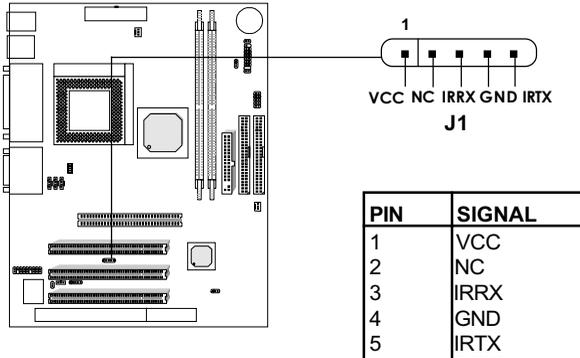
| PIN | SIGNAL |
|-----|------------|
| 1 | NC |
| 2 | GND |
| 3 | MDM_WAKEUP |
| 4 | NC |
| 5 | 5VSB |

Note: Modem wake-up signal is active “low”. To be able to use this function, you need a power supply that provide enough power for this feature. (Power supply with 750mA 5V Stand-by)

CHAPTER 2

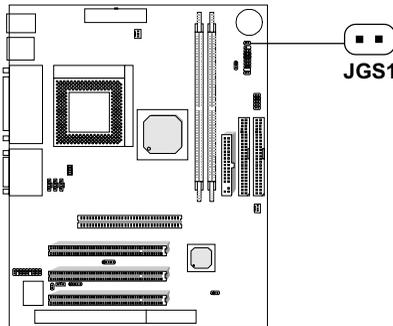
IrDA Infrared Module Connector: J1

The mainboard provides one infrared (J1) connector for IR modules. This connector is for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function.



Power Saving Switch Connector: JGS1

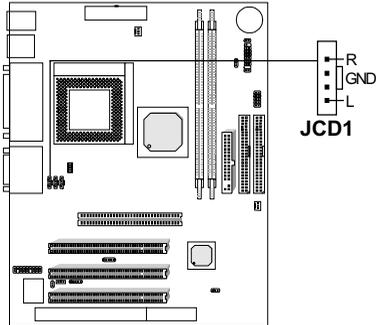
Attach a power saving switch to JGS1. When the switch is pressed the system immediately goes into suspend mode. Press any key and the system wakes up.



HARDWARE INSTALLATION

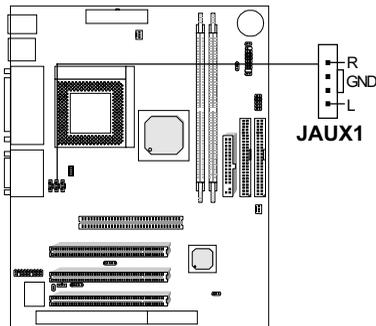
CD-In Connector: JCD1

This connector is for CD-ROM audio connector.



AUX Line In Connector: JAUX1

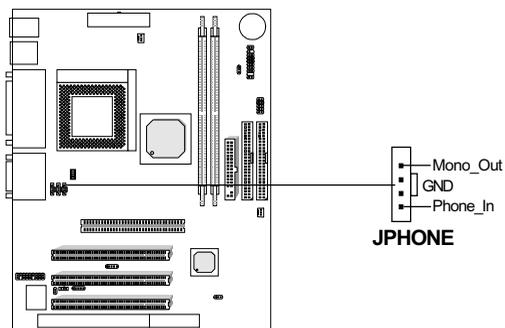
This connector is used for DVD Add on Card with Line In connector.



CHAPTER 2

Modem-In: JPHONE

The connector is for Modem with internal voice connector.

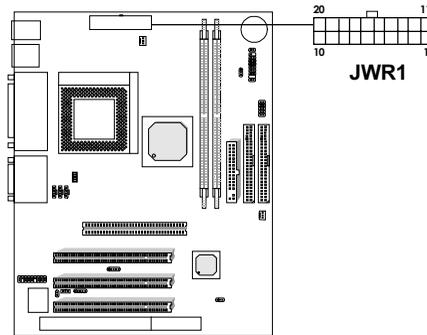


Mono_Out is connected to the Modem Speaker Out connector.
Phone_In is connected to the Modem Microphone In connector.

Power Supply

ATX 20-pin Power Connector: JWR1

This connector supports the power button on-board. Using the ATX power supply, functions such as Modem Ring Wake-Up and Soft Power Off are supported by this mainboard. This power connector supports instant power on function which means that system will boot up instantly when the power connector is inserted on the board.



| PIN | SIGNAL | PIN | SIGNAL |
|-----|--------|-----|--------|
| 1 | 3.3V | 11 | 3.3V |
| 2 | 3.3V | 12 | -12V |
| 3 | GND | 13 | GND |
| 4 | 5V | 14 | PS_ON |
| 5 | GND | 15 | GND |
| 6 | 5V | 16 | GND |
| 7 | GND | 17 | GND |
| 8 | PW_OK | 18 | -5V |
| 9 | 5V_SB | 19 | 5V |
| 10 | 12V | 20 | 5V |

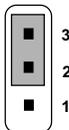
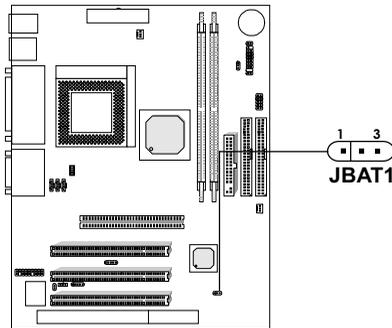
Warning: Since the mainboard has the instant power on function, make sure that all components are installed properly before inserting the power connector to ensure that no damage will be done.

CHAPTER 2

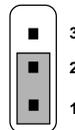
Jumpers

Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. Short 1-2 pins of JBAT1 to store the CMOS data.



Clear Data



Keep Data



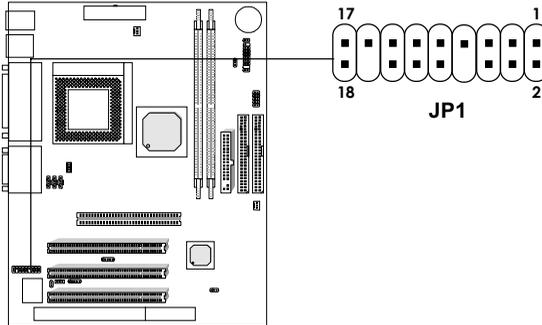
WARNING!

You can clear CMOS by shorting 2-3 pin, while the system is off. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on, it will damage the mainboard. Always unplug the power cord from the wall socket.

HARDWARE INSTALLATION

Front Panel Audio Header: JP1

You can connect an optional audio connector to the Front Panel Audio Header.



| Pin No. | Description | Pin No. | Description |
|---------|--------------------|---------|--------------------|
| 1 | Active LINE Out(R) | 2 | Active LINE Out(L) |
| 3 | GND (aLO) | 4 | GND (aLO) |
| 5 | GND (+12) | 6 | GND (+12) |
| 7 | +12V (1A) * | 8 | (Cut Away) |
| 9 | MIC | 10 | GND (MIC) |
| 11 | Front LINE Out(R) | 12 | LINE Next(R) |
| 13 | Front LINE Out(L) | 14 | LINE Next(L) |
| 15 | GND (fLO) | 16 | (Cut away) |
| 17 | Line In(R) ** | 18 | Line In(L) ** |

Note: For descriptions with asterisk (*) sign, please refer to page 2-25 for further details.

Caution!!!

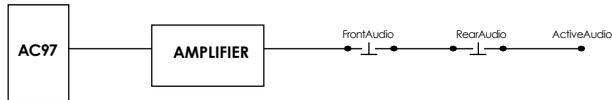
If you don't want to connect to the optional front audio, pins 11, 12, 13 and 14 have to be shorted by jumper caps in order to have signal output directly to the rear audio ports.

CHAPTER 2

- * The +12V power should support 1A current atleast.

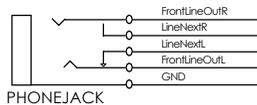
The audio interface includes three parts, one is the **FrontAudio** (For front audio jacks), another is the **RearAudio** (For rear audio jacks), the last is the **ActiveAudio** (For chassis speaker). Their priority level is a sequence. When the FrontAudio is available, the RearAudio and the ActiveAudio will be cut off. When the RearAudio is available, the ActiveAudio will be cut off. An onboard amplifier is needed for the case of earphonn plugged into.

The block diagram is as follows:



The ActiveAudio will be connected to incase active speaker whose power supply must be provided as +12V by motherboard. In this table, Pin 1 to Pin 8 will be connected to the incase active speaker.

The FrontAudio is optional, which is defined from Pin 9 to Pin 16. When the FrontAudio is in inexistence, Pin 11 and Pin 12, Pin 13 and Pin 14 must be short connected. When the FrontAudio is available, Pin 9 to Pin 16 will be connected to the FrontAudio board. The connection of the front earphone is as follows:



- ** Pin 17 and Pin 18 are reserved for some SI customers only.

Slots

AGP (Accelerated Graphics Port) Slot

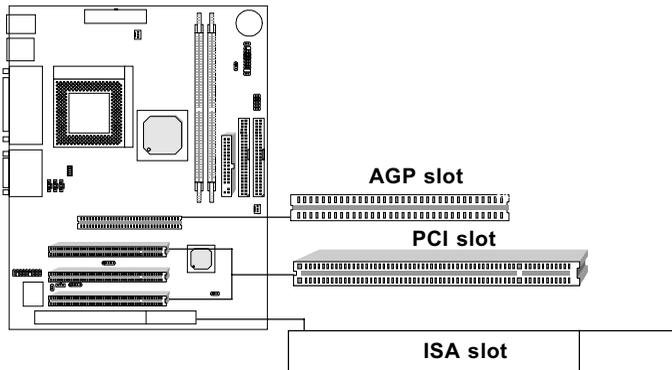
The mainboard provides an AGP slot which you can install the AGP card.

PCI (Peripheral Component Interconnect) Slots

The mainboard provides 3 PCI slots which you can insert the expansion cards according to your needs.

ISA (Industry Standard Architecture) Slot

The mainboard provides 1 16-bit ISA slot which are used to add expansion cards to the computer. The ISA slot is provided for slow communication only.



Chapter 3

AMI® BIOS USER'S GUIDE

The system configuration information and chipset register information is stored in the CMOS RAM. This information is retained by a battery when the power is off. Enter the BIOS setup (if needed) to modify this information.

The following pages will describe how to enter BIOS setup, and all about options.

3.1 Enter BIOS Setup

Enter the AMI® setup Program's Main Menu as follows:

1. Turn on or reboot the system. The following screen appears with a series of diagnostic check.

```
AMIBIOS (C) 1999 American Megatrends Inc.  
A6198 VXXX XXXXXX
```

```
Hit <DEL> if you want to run setup
```

```
(C) American Megatrends Inc.  
61-XXXX-001169-00111111-071592-i82440FX-H
```

2. When the "Hit " message appears, press key to enter the BIOS setup screen.
3. After pressing key, the BIOS setup screen will appear.

Note: *If you don't want to modify CMOS original setting, then don't press any key during the system boot.*

| AMIBIOS SIMPLE SETUP UTILITIES - VERSION 1.21a (C) 1999 American Megatrends, Inc. All Rights Reserved | |
|--|------------------------|
| Standard CMOS Setup | Integrated Peripherals |
| BIOS Features Setup | Hardware Monitor Setup |
| Chipset Features Setup | IDE HDD Auto Detection |
| Power Management Setup | Supervisor Password |
| PNP/PCI Configuration | User Password |
| Load BIOS Defaults | Save and Exit Setup |
| Load Setup Defaults | Exit Without Saving |
| Esc :Quit ↑↓→← : Select Item (Shift)F2: Change Color F5 :Old Values F7 :Load Setup Defaults F10 : Save & Exit | |
| Standard CMOS Setup for changing time, date , hard disk, etc. | |

4. Use the <Up> and <Down> key to move the highlight scroll up or down.
5. Use the <ENTER> key to select the option.
6. To exit, press <ESC>. To save and exit, press <F10>.
7. Section 3.2 to 3.7 will explain the option in more details.

3.2 Standard CMOS Setup

1. Press <ENTER> on “Standard CMOS Setup” of the main menu screen .

| AMIBIOS SETUP - STANDARD CMOS SETUP | | | | | | | | | | |
|---|-------|------------------|------|------|-------|------------------|------------------------|----------|----------|------------|
| (C)1999 American Megatrends, Inc. All Rights Reserved | | | | | | | | | | |
| Date (mm/dd/yyyy): | | Fri Oct 29, 1999 | | | | | | | | |
| Time (hh/mm/ss): | | 17:09:25 | | | | | | | | |
| | Type | Size | Cyln | Head | WPcom | Sec | LBA Mode | Blk Mode | PIO Mode | 32Bit Mode |
| Pri Master | :Auto | | | | | | ON | ON | AUTO | ON |
| Pri Slave | :Auto | | | | | | ON | ON | AUTO | ON |
| Sec Master | :Auto | | | | | | ON | ON | AUTO | ON |
| Sec Slave | :Auto | | | | | | ON | ON | AUTO | ON |
| Floppy Drive A: | | 1.44 MB 3 1/2 | | | | | | | | |
| Floppy Drive B: | | Not Installed | | | | | | | | |
| Boot Sector Virus Protection | | Disabled | | | | | | | | |
| | | | | | | | Base Memory : 0 Kb | | | |
| | | | | | | | Other Memory : 384 Kb | | | |
| | | | | | | | Extended Memory : 0 Mb | | | |
| | | | | | | | Total Memory : 1 Mb | | | |
| Available Options: | | | | | | ESC:Exit | | | | |
| Disabled | | | | | | ↑↓:select Item | | | | |
| Enabled | | | | | | FU/PD/+/-:Modify | | | | |
| | | | | | | (Shift)F2:Color | | | | |

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.
3. After you have finished with the Standard CMOS Setup, press <ESC> to go back to the main menu.

3.3 BIOS Features Setup

1. Press <ENTER> on “BIOS Features Setup” of the main menu screen.

| AMIBIOS SETUP - BIOS FEATURES SETUP | | | |
|--|------------|-------------------------|-------------------|
| (C) 1999 American Megatrends, Inc. All Rights Reserved | | | |
| Quick Boot | :Enabled | DC00, 16K Shadow | Disabled |
| 1st Boot Device | :Floppy | | |
| 2nd Boot Device | :CDROM | | |
| 3rd Boot Device | :IDE0 | | |
| S.M.A.R.T. For Hard Disk | :Enabled | | |
| BootUp Num-Lock | :On | | |
| Floppy Drive Swap | :Disabled | | |
| Floppy Drive Seek | :Enabled | | |
| Password Check | :Setup | | |
| Boot to OS/2 > 64M | :No | | |
| CPU Serial Number | :Enabled | | |
| L2 Cache | :WriteBack | | |
| Cache Bus ECC | :Disabled | | |
| System BIOS Cacheable | :Enabled | | |
| C000, 32k Shadow | :Enabled | ESC:Exit | ↑↓→← :Select Item |
| C800, 16K Shadow | :Disabled | F1 :Help | PU/PD/+/-:Modify |
| CC00, 16K Shadow | :Disabled | F5 :Old Values (Shift) | F2:Color |
| D000, 16K Shadow | :Disabled | F6 :Load BIOS Defaults | |
| D400, 16K Shadow | :Disabled | F7 :Load Setup Defaults | |
| D800, 16K Shadow | :Disabled | | |

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.
3. After you have finished with the BIOS Features Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:**Quick Boot**

Set this option to Enabled to permit AMI® BIOS to boot within 5 seconds. This option replaces the old ABOVE 1 MB Memory Test option. The Optimal default setting is Enabled. The Fail-Safe default setting is Disabled.

1st Boot Device/2nd Boot Device/3rd Boot Device

This option sets the sequence of boot drives.

The settings are:

| | |
|------------|--|
| IDE0 | The system will boot from the first HDD. |
| IDE1 | The system will boot from the Second HDD. |
| IDE2 | The system will boot from the Third HDD. |
| IDE3 | The system will boot from the Fourth HDD. |
| F(optical) | The system will boot from LS-120(120M Floppy). |
| SCSI | The system will boot from the SCSI. |
| Network | The system will boot from the Network drive. |
| CD-ROM | The system will boot from the CD-ROM. |
| Disable | Disable this sequence. |

S.M.A.R.T. for Hard Disks

This option sets the SMART Function for the hard disk. The hard disk need to have SMART function for this feature to work.

Boot up Num Lock

When this option is set to Off, AMI® BIOS turns off the Num Lock key when the system is powered on. The end user can then use the arrow keys on both the numeric keypad and the keyboard. The settings are On or Off. The optimal default and Fail-Safe default settings are On.

Floppy Drive Swap

Set this option to Enabled to specify that floppy drives A: and B: are swapped. The setting are Enabled and Disabled. The Optimal and Fail-Safe default settings are Disabled.

Floppy Drive Seek

When this option is set to Enabled, AMI® BIOS performs a Seek command on floppy drive A: before booting the system. The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Enabled.

Password Check

This option specifies the type of AMI® BIOS password protection that is implemented. The Optimal and Fail-Safe default settings are Setup.

Boot To OS/2® > 64MB

Set this option to Enabled to permit the BIOS to run properly, if OS/2® is to be used with > 64MB of DRAM. The settings are Enabled or Disabled. The Optimal and Fail-safe default settings are Disabled.

CPU Serial Number

This option is for Pentium III processor. During Enabled, this will check the CPU Serial number. Disabled this option if you don't want the system to know the Serial number.

L2 Cache ECC

This option enables the Level 2 Cache memory ECC(Error Check Correction).

System BIOS Cacheable

AMI® BIOS always copies the system BIOS from ROM to RAM for faster execution. Set this option to Enabled to permit the contents of the F0000h RAM memory segment to be written to and read from cache memory. The settings are Enabled or Disabled. The Optimal default setting is Disabled. The Fail-Safe default setting is Disabled.

C000, 32K Shadow

These options specify how the contents of the video ROM are handled. The settings are:

Disabled - the Video ROM is not copied to RAM.

Cached - the contents of the video ROM from C0000h - C7FFFh are not only copied from ROM to RAM; it can also be written to or read from cache memory.

Shadow - the Contents of the video ROM from C0000h - C7FFFh are copied(shadowed) from ROM to RAM for faster execution.

The Optimal and Fail-Safe default setting is Disabled.

C8000, 16k Shadow/CC00, 16k Shadow/D000, 16k Shadow/ D400, 16k Shadow/D800, 16k Shadow/DC00, 16k Shadow

These options specify how the contents of the adaptor ROM named in the option title are handled. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards. The settings are:

Disabled-The specified ROM is not copied to RAM.

Cache- The contents of the ROM area are not only copied from ROM to RAM for faster execution,it can also be written to or read from cache memory.

Shadow- The contents of the ROM area are copied from ROM to RAM for faster execution.

The Optional and Fail-Safe default settings are Disabled.

3.4 Chipset Features Setup

1. Press <ENTER> on “Chipset FeaturesSetup” of the main menu screen.

| AMIBIOS SETUP - CHIPSET FEATURES SETUP | |
|--|---------------|
| (C) 1999 American Megatrends, Inc. All Rights Reserved | |
| Set SDRAM Timing by SPD | :Disabled |
| DRAM Frequency | :100Mhz |
| SDRAM CAS# Latency | :3 |
| DRAM Integrity Mode | :Disabled |
| CPU In Order Queue | :4-Level |
| Memory Hole | :Disabled |
| AGP Mode | :Auto |
| AGP Comp. Driving | :Auto |
| Manual AGP Comp. Driving | :CB |
| AGP Aperture Size | :64MB |
| USB Controller | :USB Port 0&1 |
| USB KB/Mouse Legacy | :Disabled |
| ESC:Exit ↑↓→← :Select Item F1 :Help PU/PD/+/-:Modify F5 :Old Values (Shift)F2:Color F6 :Load BIOS Defaults F7 :Load Setup Defaults | |

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.
3. After you have finished with the Chipset Features Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:**Set SDRAM Timing By SPD**

Choose Enabled, will automatically configure the DRAM Timing depending on the “DRAM Speed” selection. Choose Disabled, to customize the setup.

SDRAM CAS# Latency

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: 2 and 3.

DRAM Integrity Mode

This item will automatically detect your DIMM for ECC. The default setting is Disabled.

Memory Hole

This option allows the end user to specify the location of a memory hole(15MB-16MB). The cycle matching the selected memory hole will be passed to the ISA bus.

AGP Aperture Size

This option determines the effective size of the graphics aperture used in the particular MCM configuration. The AGP aperture is memory - mapped, while graphics data structure can reside in a graphics aperture. The aperture range should be programmed as not cacheable in the processor cache, accesses with the aperture range are forwarded to the main memory, then MCM will translate the original issued address via a translation table that is maintained on the main memory. The option allows the selection of an aperture size of 4MB, 8MB, 16MB, 32MB, 64MB, 128MB and 256MB.

USB Function

Set this option to Enabled or Disabled the on-chip USB controller. The Optional and Fail-Safe default setting is Enabled.

USB KB/Mouse Legacy Support

Set this option to Enabled or Disabled USB Mouse & keyboard.
The Optional and Fail-Safe default setting is Disabled.

3.5 Power Management Setup

1. Press <ENTER> on “Power Management Setup” of the main menu screen.

| AMIBIOS SETUP - POWER MANAGEMENT SETUP | | | |
|--|-------------|--------------------------------|-------------------|
| (C) 1999 American Megatrends, Inc. All Rights Reserved | | | |
| Compliance With O/S | :Yes | System Thermal | :Ignore |
| ACPI Standby State | :S1/POS | Thermal Slow Clock Ratio | :50%-56.25% |
| Power Management/APM | :Enabled | Power Button Function | :On/Off |
| Green PC LED Status | :Dual Color | Restore on AC/Power Loss | :Last State |
| Video Power Down Mode | :Suspend | Resume On Ring/LAN | :Enabled |
| HDD Power Down Mode | :Stand-by | Resume On PME# | :Disabled |
| Standby Time Out (Minute) | :Disabled | Resume On RTC Alarm | :Disabled |
| Suspend Time Out (Minute) | :Disabled | RTC Alarm Date | :15 |
| Throttle Slow Clock Ratio | :50%-56.25% | RTC Alarm Hour | :12 |
| Display Activity | :Ignore | RTC Alarm Minute | :30 |
| IRQ3 | :Monitor | RTC Alarm Second | :30 |
| IRQ4 | :Monitor | | |
| IRQ5 | :Ignore | | |
| IRQ7 | :Monitor | | |
| IRQ9 | :Ignore | ESC:Exit | ↑↓→← :Select Item |
| IRQ10 | :Ignore | F1 :Help | PU/PD/+/-:Modify |
| IRQ11 | :Ignore | F5 :Old Values (Shift)F2:Color | |
| IRQ13 | :Ignore | F6 :Load BIOS Defaults | |
| IRQ14 | :Monitor | F7 :Load Setup Defaults | |
| IRQ15 | :Ignore | | |

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.
3. After you have finished with the Power Management Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:**Compliance With O/S**

Set this option to Yes the operating system is support ACPI. The setting is No, the operating system is support APM.

ACPI Standby State

This item will set which ACPI standby type will be used.

Power Management/APM

Set this option to enable the chipset's power management features and APM(Advanced Power Management). The settings are Enabled, Inst-On(instant-on) or Disabled. The Optimal default settings are Enabled. The Fail-Safe Default is Disabled

Green PC Monitor Power State

This option specifies the power state that the green PC-compliant video monitor enters when AMI® BIOS places it in a power savings state after the specified period of display inactivity has expired. The settings are Off, Standby, Suspend. The Optional and Fail-Safe default settings are Standby.

Video Power Down Mode

This option specifies the power conserving state that the VESA VGA video subsystem enters after the specified period of display inactivity has expired. The settings are Disabled, Standby or Suspend. The Optimal and Fail-Safe default settings are Standby.

Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The settings are Disabled, Standby or Suspend. The Optimal and Fail-Safe default settings are Suspend.

Standby TimeOut (Minute)

This option defines the continuous idle time before the system enters STANDBY mode. If any item defined in the options of “Power Down and Resume events” is enabled & active, STANDBY timer will be reloaded. When the system has entered Standby mode, any of the items that are enabled in “Wake Up Events of Doze and Standby” will trigger the system to wake up. The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

Suspend Time Out (Minute)

This option specifies the length of a period of system inactivity while in Suspend state. When this length of time expires, the computer enters Suspend power state. The settings are Disabled, 1 min, 2 min, 4 min, 8 min, 10 min, 20 min, 30 min, 40 min, 50 min or 60 min. The Optimal and Fail-Safe default settings are Disabled.

Throttle Slow Clock Ratio

This option specifies the speed at which the system clock runs in power saving states. The settings are expressed as ration between the normal CPU clock speed and the CPU clock speed when the computer is in the power-conserving state.

Display Activity/IRQ 3/IRQ 4/IRQ 5/IRQ 7/IRQ 9/IRQ1 0/ IRQ 11/IRQ 13/IRQ 14/IRQ 15/System Thermal

When set to Monitor, these options enable event monitoring on the specified hardware interrupt request line. If set to Monitor and the computer is in a power saving state, AMI® BIOS watches for activity on the specified IRQ line. The computer enters the full on power state if any activity occurs.

AMI® BIOS reloads the Standby and Suspend timeout timers if activity occurs on the specified IRQ line.

Thermal Slow Clock Ratio

When set to Monitor, then you can choose the throttle ratio. This option is connected with the **CPU Critical Temperature** Option.

Power Button Function

During Suspend, if you push the switch once, the system goes into suspend mode and if you push it more than 4 seconds, the system will be turned off. During On/Off, the system will turn off once you push the switch.

Restore on AC/Power Loss

The settings are power on, power off or last state. During power on, after every AC power loss, the system will be turned on. During last status, after every AC power loss, whatever the system status, it will be the same when the AC power returns.

Resume On Ring/LAN

During Disabled, the system will ignore any incoming call from the modem/LAN network card. During Enabled, the system will boot up if there's an incoming call from the modem/LAN network card.

Note: If you have change the setting, you must let the system boot up until it goes to the operating system. Then, power off the system. This function will work the next time you power on.

Resume On PME#

During Disabled, the system will ignore any event on PME (Power Management Event). During Enabled, the system will boot up if there's an event on PME. The default setting is Disabled.

Resume by Alarm

This function is for setting the Date, Hour, Minute, and Second for your computer to boot up. During Disabled, you cannot use this function. During Enabled, Choose the Date, Hour, Minute, and Second:

- RTC Alarm Date** Choose which day the system will boot up.
- RTC Alarm Hour** Choose which hour the system will boot up.
- RTC Alarm Minute** Choose which minute the system will boot up.
- RTC Alarm Second** Choose which second the system will boot up.

Note: If you have change the setting, you must let the system boot up until it goes to the operating system. Then, power off the system. This function will work the next time you power on.

3.6 PNP/PCI Configuration

1. Press <ENTER> on “PNP/PCI Configuration” of the main menu screen.

| AMIBIOS SETUP - PNP/PCI CONFIGURATION | | |
|--|-----------|---------------------------------|
| (C) 1999 American Megatrends, Inc. All Rights Reserved | | |
| PnP Aware O/S | :No | |
| Clear NVRAM | :No | |
| PCI Latency Timer | :64 | |
| Primary Graphics Adapter | :PCI | |
| PCI VGA Palette Snoop | :Disabled | |
| DMA Channel 0 | :FnP | |
| DMA Channel 1 | :FnP | |
| DMA Channel 3 | :FnP | |
| DMA Channel 5 | :FnP | |
| DMA Channel 6 | :FnP | |
| DMA Channel 7 | :FnP | |
| IRQ3 | :PCI/FnP | |
| IRQ4 | :PCI/FnP | |
| IRQ5 | :PCI/FnP | |
| IRQ7 | :PCI/FnP | ESC:Exit ↑↓→← :Select Item |
| IRQ9 | :PCI/FnP | F1 :Help PU/PD/+-:Modify |
| IRQ10 | :PCI/FnP | F5 :Old Values (Shift)F2:Color |
| IRQ11 | :PCI/FnP | F6 :Load BIOS Defaults |
| IRQ14 | PCI/FnP | F7 :Load Setup Defaults |
| IRQ15 | PCI/FnP | |

2. Use <Up> and <Down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.
3. After you have finished with the PNP/PCI Configuration, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Plug and Play Aware O/S

Set this option to Yes if the operating system in this computer is aware of and follows the Plug and Play specification. Currently, only Windows® 95 is PnP-aware. The settings are Yes or No. The Optimal and Fail-Safe default settings No.

Clear NVRAM

During Yes, this will clear NVRAM data on every boot.

PCI Latency Timer

This option specifies the latency timings (in PCI clocks) for all PCI devices on the PCI bus. The settings are 32, 64, 96, 128, 160, 192, 224 or 248. The Optimal and Fail-Safe default settings are 64.

Primary Graphics Adapter

This option is for selecting which VGA card is to be your primary display graphics adapter.

PCI VGA Palette Snoop

When this option is set to Enabled, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and ISA) and the Bit settings are:

Disabled - Data read and written by the CPU is only directed to the PCI VGA device's palette registers.

Enabled - Data read and written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA device palette registers, permitting the palette registers of both devices to be identical.

This option must be set to Enabled if an ISA adapter card requires VGA palette snooping. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

DMA Channel 0/1/3/5/6/7

These options specify the bus that the specified DMA channel is used. These options allow you to reserve DMAs for legacy ISA adapter cards.

These options determine if AMI® BIOS should remove a DMA from the available DMAs passed to devices that are configurable by the system BIOS. The available DMA pool is determined by reading the ESCD NVRAM. If more DMAs must be removed from the pool, the end user can use these options to reserve the DMA by assigning an ISA/EISA setting to it.

IRQ3/IRQ4/IRQ5/RQ7/IRQ9/IRQ10/IRQ11/IRQ14/IRQ15

These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards.

These options determine if AMI® BIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMI® BIOS. All IRQs used by onboard I/O are configured as PCI/PnP. If all IRQs are set to ISA/EISA and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices, because at least one IRQ must be available for PCI and PnP devices. The settings are ISA/EISA or PCI/PnP. The Optimal and Fail-Safe default settings are PCI/PnP.

3.7 Integrated Peripherals

1. Press <ENTER> on “Integrated Peripherals” of the main menu screen.

| AMIBIOS SETUP - INTEGRATED PERIPHERALS | |
|---|----------|
| (C) 1999 American Megatrends, Inc. All Rights Reserved | |
| Onboard IDE | :Both |
| Onboard FDC | :Auto |
| Onboard Serial Port 1 | :Auto |
| Onboard Serial Port 2 | :Auto |
| Serial Port 2 Mode | :Normal |
| Duplex Mode | :N/A |
| Onboard Parallel Port | :Auto |
| Parallel Port Mode | :ECP |
| EPP Version | :N/A |
| Parallel Port DMA | :Auto |
| Parallel Port IRQ | :Auto |
| Onboard AC'97 Audio | :Enabled |
| Codec Variable Rate | :Enabled |
| ESC:Exit ↑↓→← :Select Item F1 :Help PU/PD/+/-:Modify F5 :Old Values (Shift)F2:Color F6 :Load BIOS Defaults F7 :Load Setup Defaults | |

2. Use <up> and <down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.
3. After you have finished with the Integrated Peripherals, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Onboard FDC

Choose Auto, for the BIOS to automatically detect the device

| If the ISA add-on card has | Onboard FDC to be set at |
|----------------------------|--------------------------|
| FDC exist | Disabled |
| none FDC exist | Enabled |

Choose Enabled, Enabling onboard FDC.

Choose Disabled, Disabling onboard FDC.

The Optimal and Fail-Safe default settings are Auto.

Onboard Serial Port 1/Onboard Serial Port 2

Choose 3F8, for the BIOS to automatically detect the device.

| If the ISA add-on card has | | | | Onboard Serial port to be set at | | | |
|----------------------------|--------------------|--------------------|--------------------|----------------------------------|-----------------|----------|-----------------|
| COM1 (I/O:3F8H) | COM2 (I/O:3F8H) | COM3 (I/O:3E8H) | COM4 (I/O:2E8H) | PORT1 | IRQ ASSIGNED | PORT2 | IRQ ASSIGNED |
| ✓ | ✓ | ✓ | ✓ | DISABLED | X | DISABLED | X |
| ✓ | ✓ | X | X | COM3 | 4 | COM4 | 3 |
| X | X | ✓ | ✓ | COM1 | 4 | COM2 | 3 |
| ✓ | X | X | ✓ | COM2 | 3 | COM3 | 4 |
| X | ✓ | ✓ | X | COM1 | 4 | COM4 | 3 |
| ✓ | ✓ | ✓ | X | COM4 | 3 | DISABLED | X |
| ✓ | ✓ | X | ✓ | COM3 | 4 | DISABLED | X |
| ✓ | X | ✓ | ✓ | COM2 | 3 | DISABLED | X |
| X | ✓ | ✓ | ✓ | COM1 | 4 | DISABLED | X |
| X | X | X | X | COM1 | 4 | COM2 | 3 |
| ✓ | X | X | X | COM2 | 3 | COM3 | 4 |
| X | ✓ | X | X | COM1 | 4 | COM3 | 4 |
| X | X | ✓ | X | COM1 | 4 | COM2 | 3 |
| X | X | X | ✓ | COM1 | 4 | COM2 | 3 |

Note: *If the onboard serial port interrupt and ISA add-on card interrupt are in conflict, the serial port will not work properly. Please disable one of the devices.*

Serial Port2 Mode

This items allows the user to determine which InfraRed (IR) function of the onboard I/O chip.

IR Duplex Mode

Can be set as either Half or Full duplex.

Onboard Parallel Port

Choose Auto, the BIOS automatically assigned onboard parallel port to the available parallel port or disabled.

| If the ISA add-on card has | | | Onboard parallel port to be set as | |
|----------------------------|------------------|------------------|------------------------------------|-----------------|
| LPT1 I/O:378H | LPT2 I/O:278H | LPT3 I/O:3BCH | PORT ASSIGNED | IRQ ASSIGNED |
| ✓ | ✓ | ✓ | Disabled | X |
| ✓ | ✓ | X | LPT3 | 5 |
| ✓ | X | ✓ | LPT2 | 5 |
| X | ✓ | ✓ | LPT1 | 7 |
| ✓ | X | X | LPT2 | 5 |
| X | ✓ | X | LPT1 | 7 |
| X | X | ✓ | LPT1 | 7 |
| X | X | X | LPT1 | 7 |

Note: *If the onboard parallel port interrupt and ISA add-on card interrupt are in conflict, the parallel port will not work properly. Please disable one of the devices.*

Parallel Port Mode

This option allows user to choose the operating mode of the onbaord parallel port. The settings are Normal, SPP/EPP or ECP mode.

EPP Version

This option is for setting which EPP version will be used. The settings are 1.7 and 1.9.

Parallel Port DMA

This option allows user to choose DMA channel 1 to 3 for the onboard parallel port on ECP mode.

Parallel Port IRQ

If the onboard parallel mode is not on auto mode, the user can select the interrupt line for onboard parallel port. We suggest that the user select the interrupt for the onboard parallel port as shown below:

| Onboard parallel port set at | Parallel Port IRQ |
|-------------------------------------|--------------------------|
| LPT1(378H) | 7 |
| LPT2(278H) | 5 |
| LPT3(3BCH) | 5 |

Onboard AC'97 Modem

This item allows you to decide to enable/disable the Intel 810 chipset family to support AC97 Modem. The settings are Enabled, Disabled.

3.8 Hardware Monitor Setup

1. Press <ENTER> on “Hardware Monitor Setup” of the main menu screen.

```

      AMIBIOS SETUP - Hardware Monitor Setup
      (C) 1999 American Megatrends, Inc. All Rights Reserved
-----
ClkGen Spread Spectrum      :Enabled                               5.028V
  -= System Monitor -=
  Current CPU Temperature
  Current System Temperature
  Current CPU Fan Speed
  Current Chassis Fan Speed
  Vcore
  +2.500V
  +3.300V
  +5.000V
  +12.000V

ESC:Exit      ↑↓→← :Select Item
F1 :Help      PU/PD/+/-:Modify
F5 :Old Values (Shift)F2:Color
F6 :Load BIOS Defaults
F7 :Load Setup Defaults

```

2. Use <up> and <down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.
3. After you have finished with the Peripheral Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:**Clk Spread Spectrum**

This item allows you to select the clock generator Spread Spectrum function. When overclocking the processor, always set this item to Disabled. The default setting is Enabled.

3.9 IDE HDD Auto Detection

You can use this utility to automatically detect the characteristics of most hard drives.

| AMIBIOS SETUP - STANDARD CMOS SETUP | | | | | | | | | | |
|---|-------|------------------|------|------|------------------|-----|----------|----------|----------|------------|
| (C)1999 American Megatrends, Inc. All Rights Reserved | | | | | | | | | | |
| Date (mm/dd/yyyy): | | Fri Oct 29, 1999 | | | | | | | | |
| Time (hh/mm/ss): | | 17:09:25 | | | | | | | | |
| | Type | Size | Cyln | Head | WPcom | Sec | LBA Mode | Blk Mode | PIO Mode | 32Bit Mode |
| Pri Master | :Auto | | | | | | ON | ON | AUTO | ON |
| Pri Slave | :Auto | | | | | | ON | ON | AUTO | ON |
| Sec Master | :Auto | | | | | | ON | ON | AUTO | ON |
| Sec Slave | :Auto | | | | | | ON | ON | AUTO | ON |
| Floppy Drive A: | | 1.44 MB 3 1/2 | | | | | | | | |
| Floppy Drive B: | | Not Installed | | | | | | | | |
| Boot Sector Virus Protection | | | | | Disabled | | | | | |
| Base Memory : | | | | | 0 Kb | | | | | |
| Other Memory : | | | | | 384 Kb | | | | | |
| Extended Memory : | | | | | 0 Mb | | | | | |
| Total Memory : | | | | | 1 Mb | | | | | |
| Available Options: | | | | | ESC:Exit | | | | | |
| Disabled | | | | | ↑↓:Select Item | | | | | |
| Enabled | | | | | PU/PD/+/-:Modify | | | | | |
| | | | | | (Shift)F2:Color | | | | | |

3.10 Supervisor/User Password

This Main Menu item lets you configure the system so that a password is required each time the system boots or an attempt is made to enter the Setup program. Supervisor Password allows you to change all CMOS settings but the User Password setting doesn't have this function. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose "Supervisor/User Password" in the Main Menu and press <Enter>. The following message appears:

"Enter New Supervisor/User Password:"

2. The first time you run this option, enter your password up to 6 characters only and press <Enter>. The screen will not display the entered characters. For no password, just press <Enter>.
3. After you enter the password, the following message appears prompting you to confirm the password:

"Retype New Supervisor/User Password:"

4. Enter exactly the same password you just typed in to confirm the password and press <Enter>.
 5. Move the cursor to Save and Exit Setup to save the password.
 6. If you need to delete the password you entered before, choose the Supervisor/User Password and press <Enter>. It will delete the password that you had before.
 7. Move the cursor to Save and Exit Setup to save the option you did. Otherwise, the old password will still be there when you turn on your machine next time.
-

Chapter 4

VIA CHIPSET DRIVER

1. Overview

The MS-6198 is paired with the VIA VT82C686A south bridge. Highly advanced, the south bridge combines an integrated 2D/3D engine with DVD hardware acceleration, AC-97 audio support for SoundBlaster Pro and FM synthesis legacy audio.

1.1 Audio Features

- AC'97 audio support for SoundBlaster Pro
- FM synthesis legacy audio

1.2 System Requirements

This section describes system requirements for the VGA Driver installation and Usage.

| | |
|-------------------------|--|
| Computer Monitor | Intel® Celeron™/Coppermine FC-PGA VGA Support, minimum 640x480 resolution |
| Operating system | DOS 5.0 or higher, Windows® 95/98, Windows® NT 3.51 or 4.0, or OS/2® |
| CD-ROM Chipset | Double Speed or Higher VIA® 694X/VT82C686A chipset |

2. Driver Setup & Usage Procedures for Windows® 98

Insert the CD-title into your CD-ROM drive. The CD will auto-run and will display the four icons in the monitor “VIA Chipset Drivers”, “VIA AC97 PCI Sound Drivers” and “Download VIA Drivers”. In order to install the drivers correctly, you must install the “Via Chipset Drivers” first, and then install the “VIA AC97 PCI Sound Drivers”.

2.1 VIA Chipset Drivers installation procedure:

- Step 1:** Insert the provided CD_ROM disk into the CD-ROM drive.
- Step 2:** Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.
- Step 3:** Click on “Via Chipset Drivers” icon and the screen will show “VIA Service Pack 4.19”.
- Step 4:** Click “Next” and the screen will show four drivers “VIA Atapi Vendor Support Driver”, “AGP VxD Driver”, “VIA Chipset Function’s Registry” and “IRQ Routing Miniport Driver”. Select all four drivers and click on “Next”.
- Step 5:** The setup program will request you to choose “Install VIA Atapi Vendor Support Driver”. Please select “Install” and click “Next” to continue.
- Step 6:** Click on enabled DMA Mode, Please select “Install” and click “Next” to continue.
- Step 7:** The setup program will request you to choose “Install VIA AGP VxD in turbo mode”, “Install VIA AGP VxD in normal mode” or “Uninstall VIA AGP VxD”. Please select “Install VIA AGP VxD in turbo mode” and click on “Next”.

- Step 8:** The setup program will let you choose between “Install VIA Chipset Functions Registry” or “Uninstall VIA Chipset Functions Registry”. Please select “Install VIA Chipset Functions Registry” and then click “Next”.
- Step 9:** The setup program will let you choose between “Install VIA IRQ Routing Miniport Driver” or “Uninstall VIA IRQ Routing Miniport Driver”. Please select “Install VIA IRQ Routing Miniport Driver”.
- Step 10:** The setup program will request you to choose whether to restart the computer or not. Please select “Yes, I want to restart my computer now” and click Finish. The computer will restart and finish the VIA Chipset Drivers installation.

2.2 VIA AC97 PCI Sound Drivers installation procedure:

- Step 1:** Insert the provided CD_ROM disk into the CD-ROM drive.
- Step 2:** Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.
- Step 3:** Click on “VIA AC97 PCI Sound Drivers” icon and the screen will show “VIA AC97 PCI Sound Drivers”.
- Step 4:** Click “Next” to proceed and the screen will show “Install”, or “Remove”. Select “Install” and then click on “Next”.
- Step 5:** The setup program will request you to choose whether to restart the computer or not. Please select “Yes, I want to restart my computer now” and click Finish. The computer will restart and finish the AC97 Audio Drivers Installation.

3. Windows® NT 4.0

Install Windows® NT 4.0 Service Pack 3 or the latest version before installing the VIA drivers.

Insert the CD-title in the CD-ROM drive. The CD will auto-run and will display four icons on the screen “VIA Chipset Drivers”, “VIA AC97 PCI Sound Drivers” and “Download VIA Drivers”. In order to install the drivers properly, install the “VIA Chip Drivers” first and then install the “VIA AC97 PCI Sound Drivers”.

3.1 VIA Chipset Drivers Installation Procedure:

- Step 1:** Insert the provided CD_ROM disk into the CD-ROM drive.
- Step 2:** Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.
- Step 3:** Click on “VIA Chipset Drivers” icon and the screen will show “VIA Service Pack 4.19”.
- Step 4:** Click “Next” to proceed and the screen will show “Install”, “Uninstall” or “Enable/Disable Ultra DMA for IDE Driver”. Select “Install” and then click on “Next”.
- Step 5:** Please click on “Yes, I want to restart my computer”.

3.2 VIA AC97 PCI Sound Drivers Installation Procedure:

- Step 1:** Insert the provided CD_ROM disk into the CD-ROM drive.
- Step 2:** Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.
- Step 3:** Click on “VIA AC97 PCI Sound Drivers” icon and the screen will show the “VIA PCI Audio Drivers” setup screen. Click “Next” to continue
- Step 4:** The setup program will show “Install” or “Remove” in the screen. Select “Install” and click “Next”
- Step 5:** The setup program will show the following on the screen:

Please choose “Add” from the next window
and add the following device:
VIA AC97 PCI Audio Device
VIA MIDI External Port

Then click “OK”.

- Step 6:** Follow the steps shown in **Step 5** to finish the VIA AC97 PCI Audio Drivers Installation.