Chapter 1

INTRODUCTION

The 815 PRO (MS-6326) ATX S2 mainboard is a high-performance computer mainboard based on Intel® 815 chipset. The 815 PRO is optimized to support the Intel® Pentium® III (FC-PGA) processor for high-end business/personal desktop markets.

The Intel® 815 chipset integrates a Display Cache SDRAM controller that supports a 32-bit 133MHz SDRAM array for enhanced integrated 3D graphics performance. It is a highly-flexible chipset which is designed to extend the basic graphics/multimedia PC platform up to the mainstream performance desktop platform.

The Intel® 815 chipset implements the host address, control, and data bus interfaces within a single device. It takes advantage of the pipelined addressing capability of the processor to improve the overall system performance. In addition, the chipset also integrates a system memory controller that supports a 64-bit 100/133 MHz SDRAM array.

The Intel® 82801AA (ICH) chipset is a highly integrated multifunctional I/O Controller Hub that provides the interface to the PCI Bus and integrates many of the functions needed in today's PC platforms. It communicates with the host controller over a dedicated hub interface and provides added flexibility in designing cost-effective system solutions.

1.1 Mainboard Features

CPU
- Support Socket370 for Intel® Celeron™/Pentium® III(FC-PGA) processor.
- Support 500MHz, 550MHz, 600MHz, 633MHz, 667MHz and up to 1GHz.

Chipset
- Intel® 815 chipset. (544 BGA)
  - AGP 4x/2x universal slot
  - Support 66/100/133MHz FSB
- Intel® ICH chipset. (241 BGA)
  - AC'97 Controller Integrated
  - 2 full IDE channels, up to ATA66
  - Low pin count interface for SIO

Main Memory
- Support three 168-pin DIMM sockets.
- Support a 32 to 512MB using 16/64/128/256Mbit technology.

Slots
- One AMR(Audio Modem Riser).
- One AGP(Accelerated Graphics Port) 2x/4x slot.
- Five PCI 2.2 32-bit Master PCI Bus slots.
- Support 3.3v/5v PCI bus Interface.

On-Board IDE
- An IDE controller on the ICH chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 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.
  - 1 serial port (COMA)
  - 1 parallel port supports SPP/EPP/ECP mode
  - 4 USB ports (Rear * 2 / Front * 2)
  - 1 VGA port

Video
- GMCH chip integrated
- 2D/3D Graphics
- Intel® D.V.M Technology
- Flexible AGP In-Line Memory Module(AIMM) (optional)
- One AGP Slot for external AGP card

Audio
- ICH chip integrated

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.
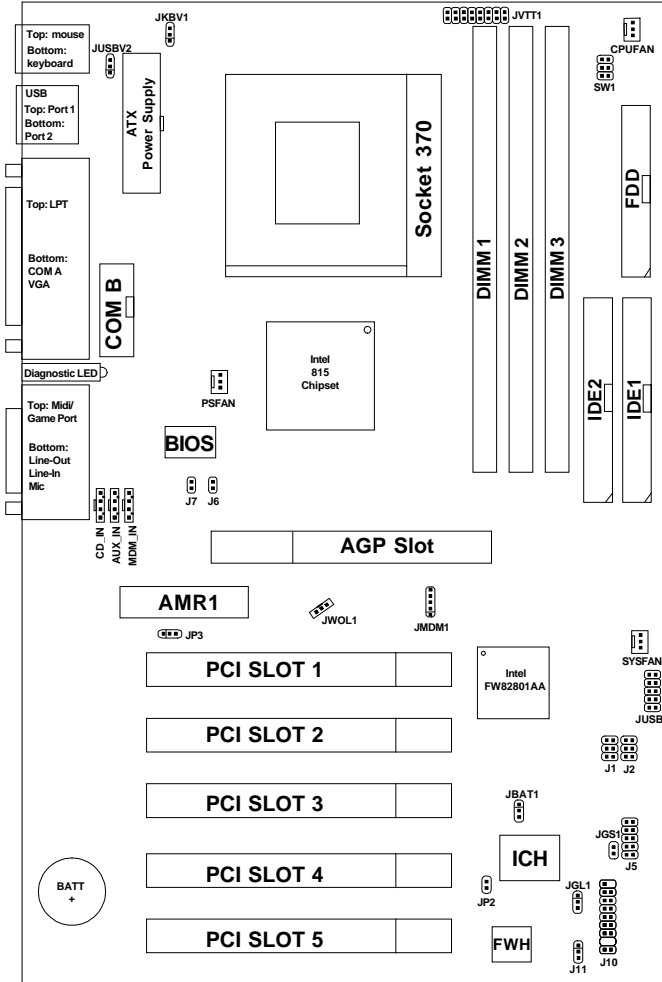
Dimension
- ATX Form Factor

Mounting
- 6 mounting holes.

1.2 Mainboard Layout
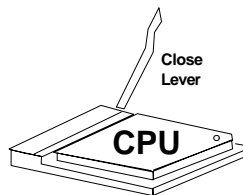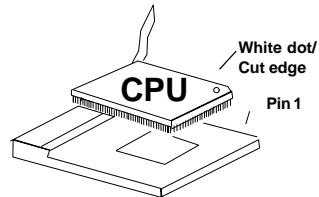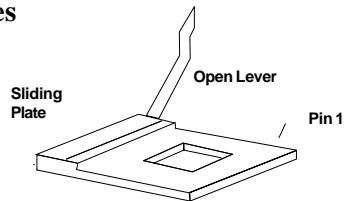

815 PRO (MS-6326) ATX S2 Mainboard

Chapter 2

HARDWARE INSTALLATION

2.1 Central Processing Unit: CPU

The mainboard operates with **Intel® Celeron™/Pentium® III (FC-PGA) 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.

2.1-1 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.

2.1-2 CPU Core Speed Derivation Procedure

The mainboard CPU Bus Frequency can be set through BIOS setup.

If	CPU Clock	= 100MHz
	Core/Bus ratio	= 7
then	CPU core speed	= Host Clock x Core/Bus ratio
		= 700MHz

2.1-3 Overclocking Jumper: SW1

Overclocking is operating a CPU/Processor beyond its specified frequency. SW1 jumper is used for overclocking.

SW1
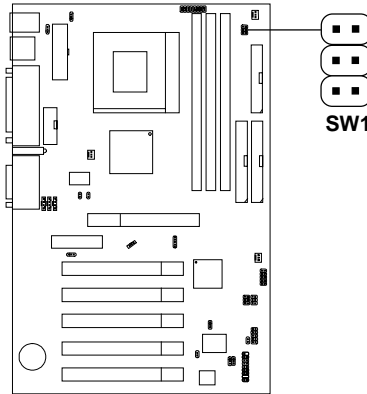
SW1	Function
1 ■ ■ 4 2 ■ ■ 5 3 ■ ■ 6	**Auto detect/Default**
1 ■ ■ 4 2 ■ ■ 5 3 ■ ■ 6	**Set from 133MHz to 160MHz through BIOS (DRAM: PC133)** **Set from 133MHz to 167MHz through BIOS (DRAM: PC100)**
6 ■ ■ 3 5 ■ ■ 2 4 ■ ■ 1	**Set from 100MHz to 150MHz through BIOS**
1 ■ ■ 4 2 ■ ■ 5 3 ■ ■ 6	**Set from 66MHz to 100MHz through BIOS**

Note: If you used this jumper for overclocking, you also need to modify the CPU Bus ratio through BIOS.

2.1-4 Fan Power Connectors: CPUFAN, SYSFAN & PSFAN

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 onboard, you must use a specially designed fan with speed sensor to take advantage of this function.
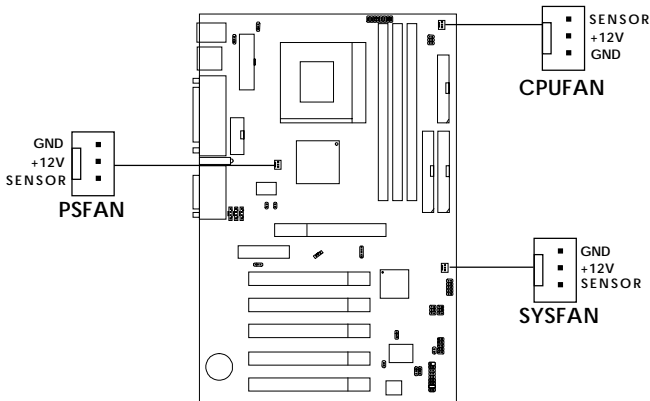
CPUFAN: Processor Fan
SYSFAN: System Fan
PSFAN: Power Supply Fan

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 vendor 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.
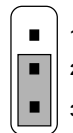
2.2 Clear CMOS Jumper: JBAT1

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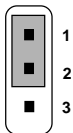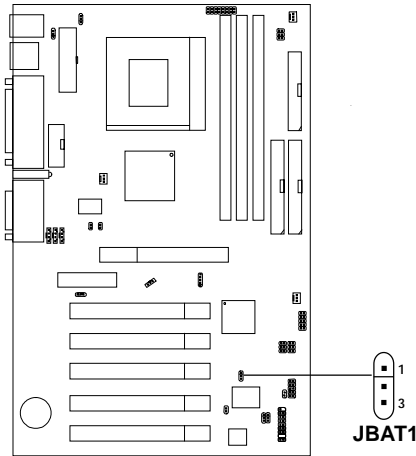

Keep Data   **Clear Data**

Note: 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.
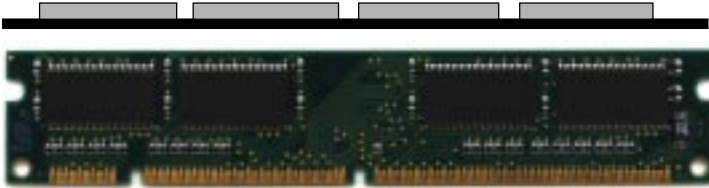
2.3 Memory Installation

2.3-1   Memory Bank Configuration

The mainboard supports a maximum memory size of 512MB: It provides
three 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets.
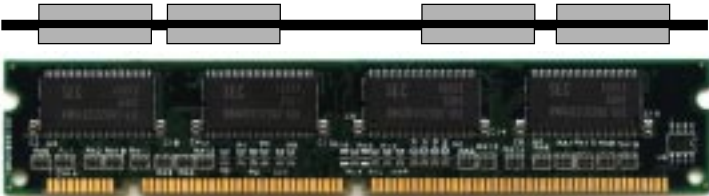It supports 32MB to 512MB DIMM memory module.
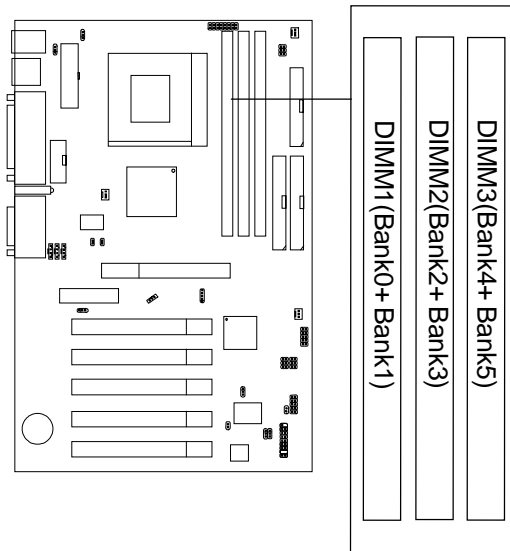
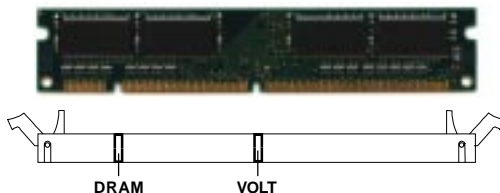## 2.3-2 Memory Installation Procedures

A. 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.

DRAM   VOLT

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

2.3-3   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, DIMM2 or DIMM3 in any order.

4. Supports 3.3 volt DIMM.

5. The DRAM addressing and the size supported by the mainboard is shown at the next page.

Table 2.3-1 SDRAM Memory Addressing

DIMM Capacity	# of Devices/ DIMM	# of Sides	Dram Tech.	Front Side Population		Back Side Population		Row	Bank	Column
				Count	Config	Count	Config			
0		N/A		Empty		Empty		N/A	N/A	N/A
32MB	16	DS	16Mb	8-	2Mb x8	8-	2Mb x8	11	1	9
32MB	4	SS	64Mb	4-	4Mb x16			12	2	8
48MB	12	DS	64/16Mb	4-	4Mb x16	8-	2Mb x8	12	2/1	8
64MB	8	DS	64Mb	4-	4Mb x16	4-	4Mb x16	12	2	8
64MB	8	SS	64Mb	8-	8Mb x8			12	2	9
64MB	4	SS	128Mb	4-	8Mb x16			12	2	9
96MB	12	DS	64Mb	8-	8Mb x16	4-	4Mb x16	12	2	9/8
96MB	8	DS	128/64Mb	4-	8Mb x16	4-	4Mb x16	12	2	9/8
128MB	16	DS	64Mb	8-	8Mb x8	8-	8Mb x8	12	2	9
128MB	8	DS	128Mb	4-	8Mb x16	4-	8Mb x16	12	2	9
128MB	8	SS	128Mb	8-	16Mb x8			12	2	10
128MB	4	SS	256Mb	4-	16Mb x16			13	2	9
192MB	12	DS	128Mb	8-	16Mb x8	4-	8Mb x16	12	2	10/9
192MB	16	DS	128/64Mb	8-	16Mb x8	8-	8Mb x8	12	2	10/9
256MB	16	DS	128Mb	8-	16Mb x8	8-	16Mb x8	12	2	10
256MB	8	DS	256Mb	4-	16Mb x16	4-	16Mb x16	13	2	9
256MB	8	SS	256Mb	8-	32Mb x8			13	2	10
512MB	16	DS	256Mb	8-	32Mb x8	8-	32Mb x8	13	2	10

2.4 Case Connector: J10

The Keylock, Power Switch, Reset Switch, Power LED, Speaker, and HDD
LED are all connected to the JFP1 connector block.
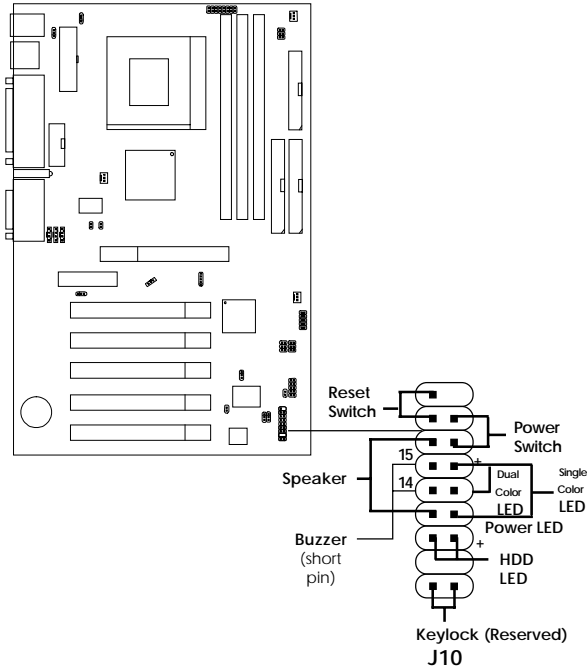
2.4-1 Power Switch

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

2.4-2 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.

2.4-3 Power LED

The Power LED is lit while the system power is on. Connect the Power LED from the system case to this pin. There are two types of LED that you can use: 3-pin single color LED or 2-pin dual color LED(ACPI request).

        a. 3 pin single color LED connect to pin 4, 5, & 6. This LED will lit when the system is on.

        b. 2 pin dual color LED connect to pin 5 & 6.

           GREEN Color: Indicate the system is in full on mode.

           ORANGE Color: Indicate the system is in suspend mode.

2.4-4 Speaker

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.

2.4-5 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.

2.4-6 Keylock

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin.

2.5 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.
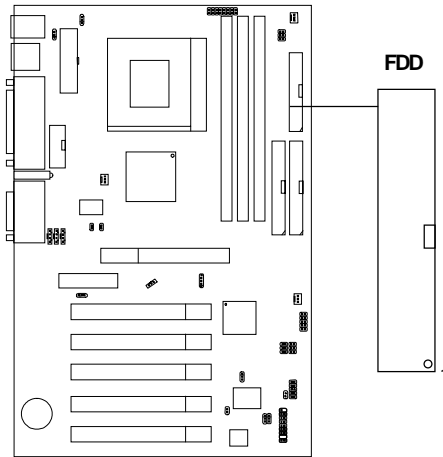
2.6 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66 Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33/66 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.
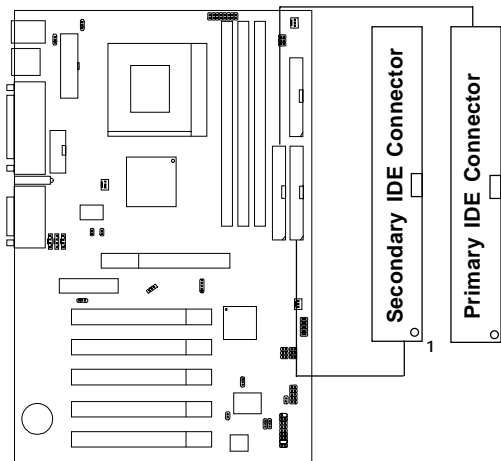
IDE1 (Primary IDE Connector)

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.

2.7 Power Supply

2.7-1 ATX 20-pin Power Connector: JWR

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.


**ATX
Power Connector**
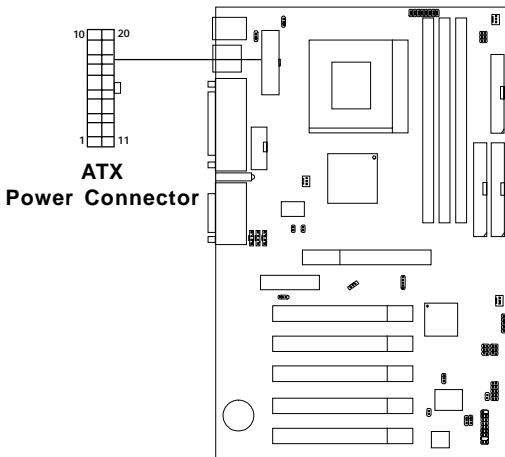
PIN DEFINITION

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.

2.8 IrDA Infrared Module Connector: J5

The mainboard provides one infrared (J5) 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.

J5
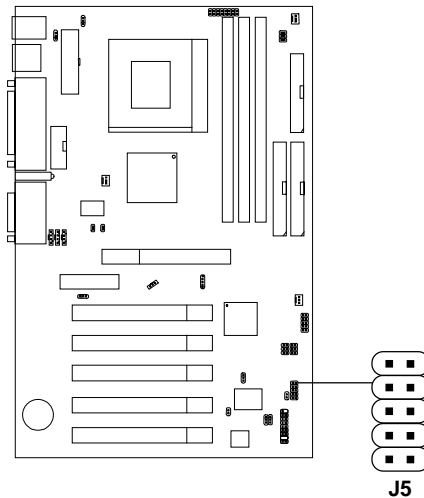
2.9 Serial Port Connectors: COM A and COM B

The mainboard has a 9-pin male DIN connector for serial port COM A. This port is a 16550A high speed communication port that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into this connector.
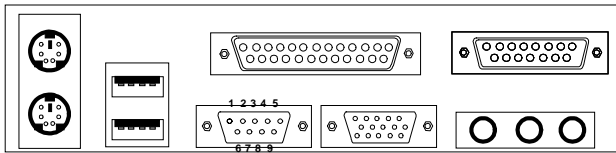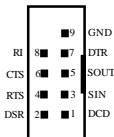

COM A

Serial Port (9-pin Male)

PIN DEFINITION

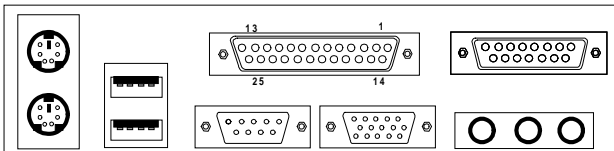| PIN	SIGNAL
1	**DCD**(Data Carry Detect)
2	**SIN**(Serial In or Receive Data)
3	**SOUT**(Serial Out or Transmit Data)
4	**DTR**(Data Terminal Ready)
5	**GND**
6	**DSR**(Data Set Ready)
7	**RTS**(Request To Send)
8	**CTS**(Clear To Send)
9	**RI**(Ring Indicate)

Note:

COM B

There's another serial port connector (COM B), which is located on the mainboard. Connect a serial port 9 pin male port into this connector.

2.10 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:

Parallel Port (25-pin Female)

LPT 1

PIN DEFINITION

PIN	SIGNAL	PIN	SIGNAL
1	STROBE	14	AUTO FEED#
2	DATA0	15	ERR#
3	DATA1	16	INIT#
4	DATA2	17	SLIN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT		

2.11 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. The connector location and pin definition are shown below:
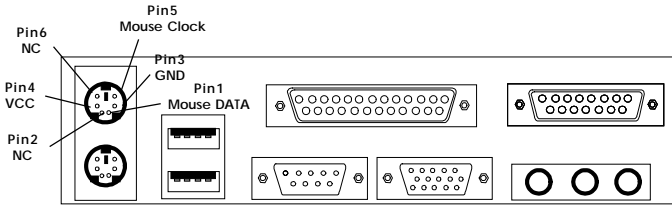
PS/2 Mouse (6-pin Female)

2.12 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.
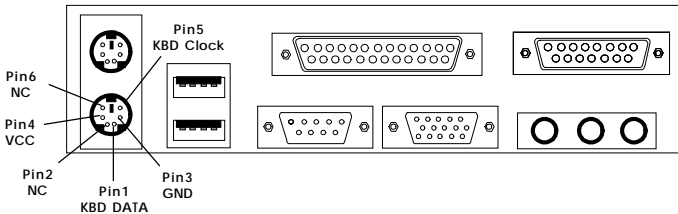
PS/2 Keyboard (6-pin Female)

2.13 Joystick/Midi Connectors

You can connect joystick or game pad to this connector.

Joystick/MIDI
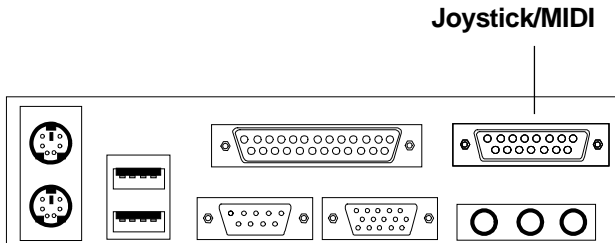
2.14 Audio Port Connectors

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.

Line Out   Line In   Mic
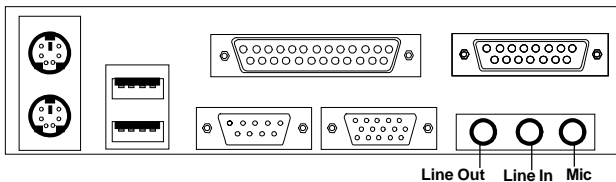
1/8" Stereo Audio Connectors

Note: If you choose to enable the Audio Multi-Channel, this will change the **Line In** to 3, 4 channel output and **MIC** to 5, 6 channel output (optional). To use this function, set the Audio Multi-Channel to enable located at the BIOS Integrated Peripherals or install the driver provided with this mainboard.

2.15 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 Port 1

1 2 |3 4

USB Port 2
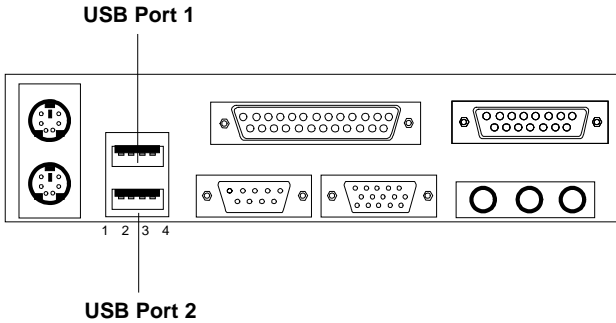
PIN	SIGNAL
1	VCC
2	-Data
3	+Data
4	GND

2.16 VGA DB 15 Pin Connector

The mainboard provides a DB 15-pin connector to connect to a VGA monitor.

VGA
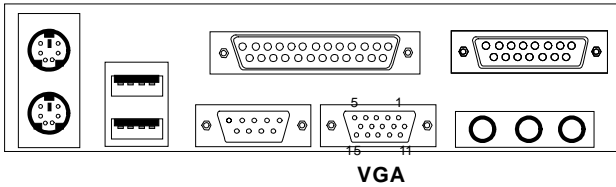
Analog Video Display Connector(DB15-S)	
Pin	**Signal Description**
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

2.17   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.

JGS1
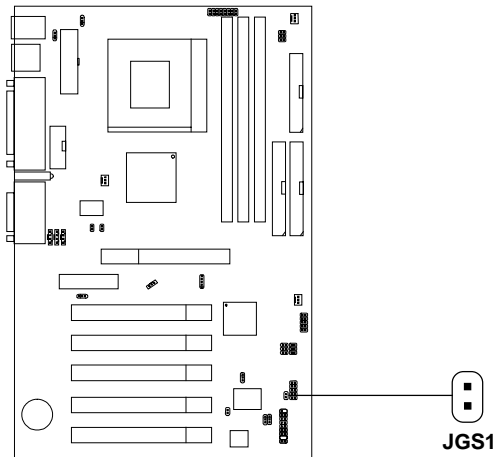
2.18 Power Saving LED Connector: JGL1(Reserved)

JGL1 can be connected with an LED. There are two types of LED that you can use: 3-pin LED or 2-pin LED(ACPI request). When the 2-pin LED is connected to JGL1, the light will turn green, when system is On. During sleep mode, the 2-pin LED will change color from Green to Orange. For 3-pin LED, when LED is connected to JGL1, this will light when the system is On and blinks when it is in suspend/sleep mode. See page 3-20 (Power status LED) for further instruction.
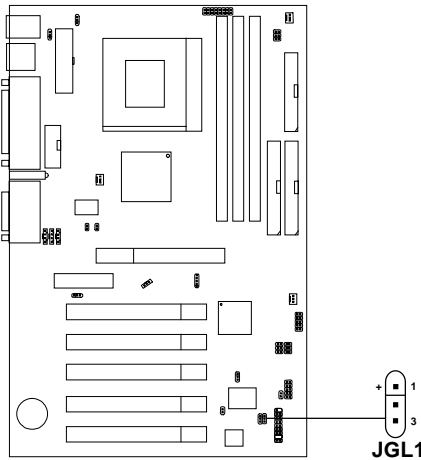
3-pin LED	2-pin LED
Green Color / Orange Color	Green Color / Orange Color
1-2 Single Color 1-3 Blink	1-2 Dual Color

2.19 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.
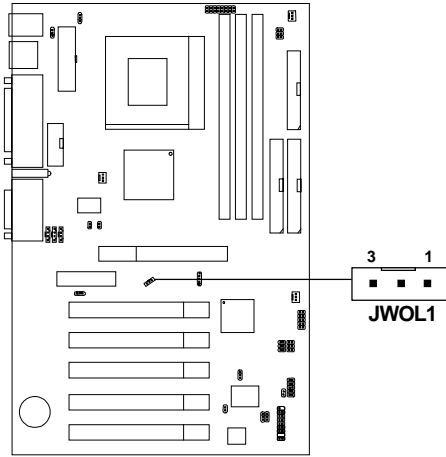
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

Note: LAN wake-up signal is active "high".

Note: 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)

2.20 Modem Wake Up Connector: JMDM1

The JMDM1 connector is for use with Modem add-on card that supports the Modem Wake Up function. To use this function, you need to set the "Power On by Ring" to enable at the BIOS Power Management Setup.

JMDM1
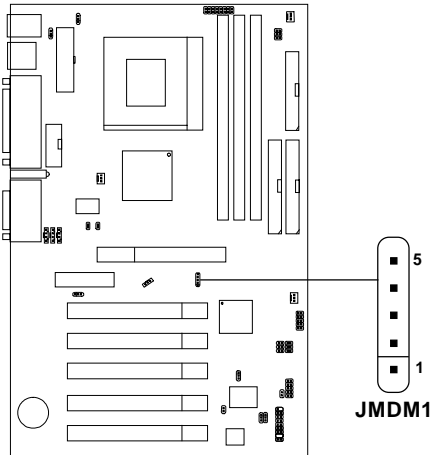
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

Note: Modem wake-up signal is active "low".

Note: 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)

2.21   Modem-In: MDM_IN

The connector is for Modem with internal voice connector.
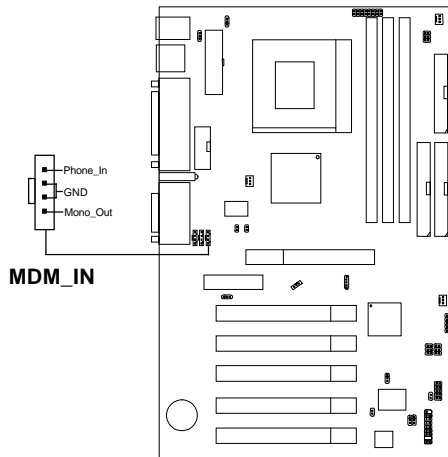
Mono_Out is connected to the Modem Speaker Out connector.
Phone_In is connected to the Modem Microphone In connector.

2.22 AUX Line In Connector: AUX_IN

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

AUX_IN
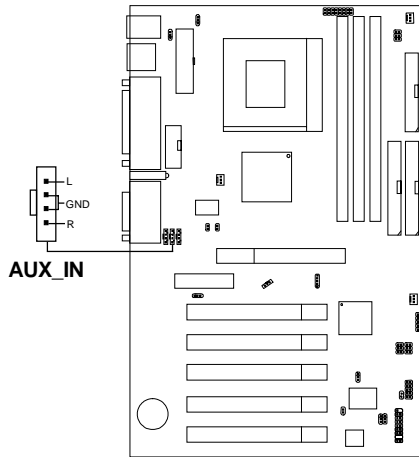
2.23 CD-In Connector: CD_IN

This connector is for CD-ROM audio connector.

CD_IN
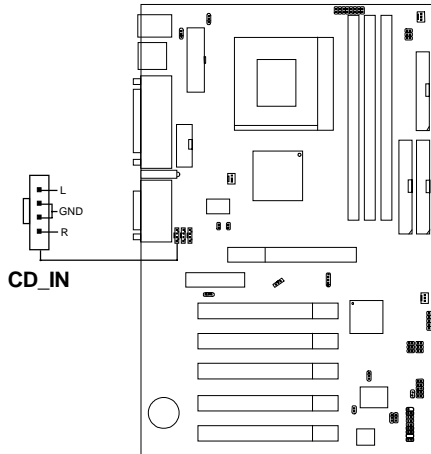
2.24 TOP TECH. III: J6

This is used to check the AGP card or any chipset temperature. The J6 is a 2-pin connector which can be inserted with a 20cm length thermistor. It is located near the chipset heatsink that monitors the chipset temperature. The BIOS setup for "TOP TECH III" should be set to enabled.

20CM length Thermistor

J6
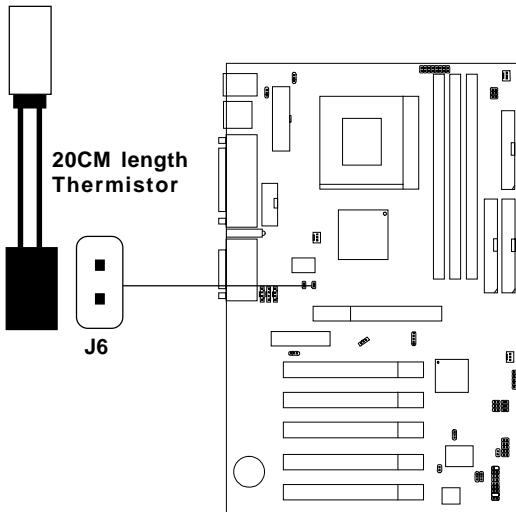
2.25 USB Rear Port and Front Pin Header: J1 & J2

The mainboard supports 2 USB Rear Port and 2 USB Front Header (shared).
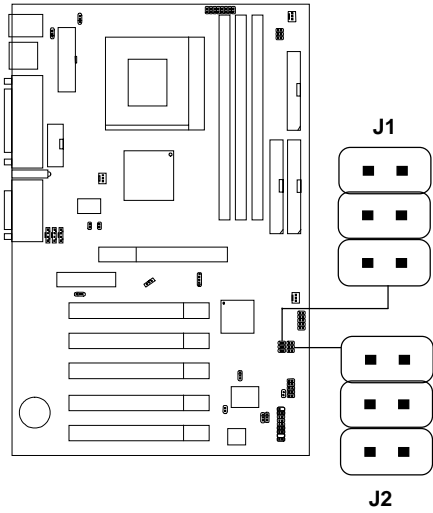
J1	J2	Function
		Enables the 2 Rear port and Disables the USB Front header
		Supports 1 Rear port and 1 USB Front header
		Enables the 2 USB Front header and Disables the USB Rear port

2.26 Keyboard Power: JKBV1

The JKBV1 jumper is for setting keyboard power. This function is provided by keyboard and PS/2 mouse Wake-up function.

JKBV1
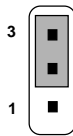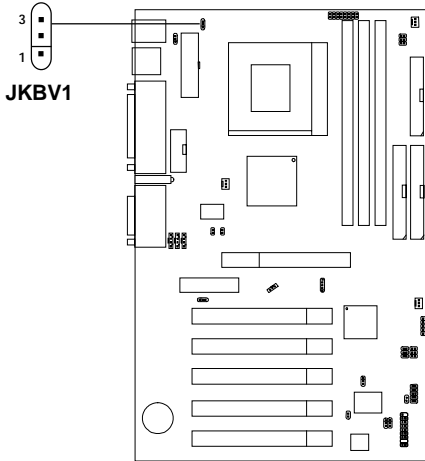
5V Standby
Enable keyboard
power on function
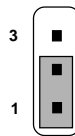
5V (default)
Disable keyboard
power on function

Note: To be able to use this function, you need a power supply that provide enough power for this feature. (750 mA power supply with 5V Stand-by)

2.27 Chassis Intrusion Switch Case: J7

This connector is connected to 2-pin connector chassis switch. If the Chassis is open, the switch will be short. The system will record this status. To clear the warning, you must enter the BIOS settting and clear the status.

J7
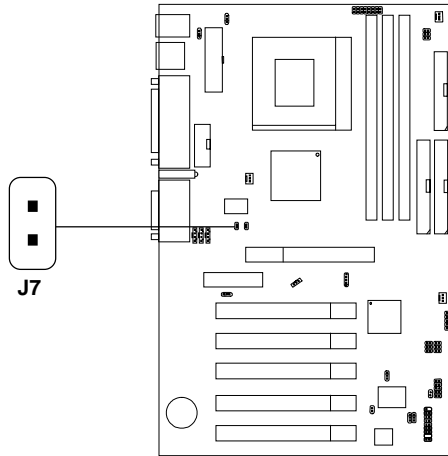
2.28   USB Device Power Jumper: JUSBV2

This jumper provides Vcc or 5V standby setting for USB Device Power.
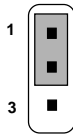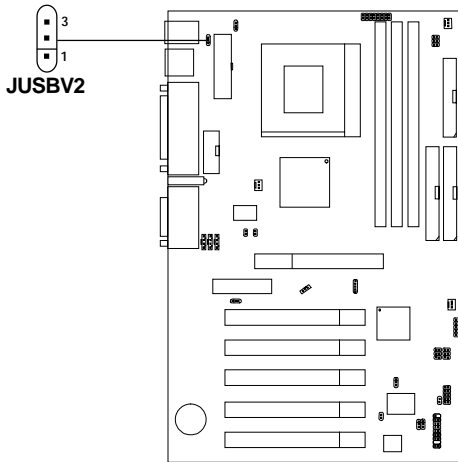
JUSBV2

5V Standby
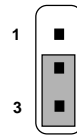
5V (default)

Note: If your OS supports S3 function and you are using USB
            device, the JUSBV2 must be set to 1-2 and the USB
            device must be inserted on USB Port 1. Otherwise, the
            system will not be able to enter S3 mode.

2.29 BIOS Flash Jumper: JP2

This jumper is used to locked/unlocked BIOS Flash. This Jumper should be unlock when flashing/programming the BIOS.

JP2
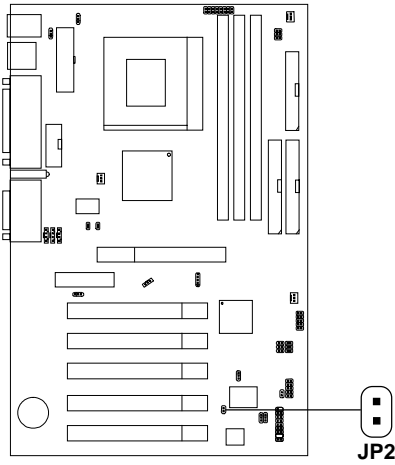
**BIOS Flash
Locked**

**BIOS Flash
Unlocked**

2.30 Speaker Output Select Jumper: J11

This jumper will enable the case speaker/buzzer to be transferred to the Audio speaker.

J11
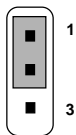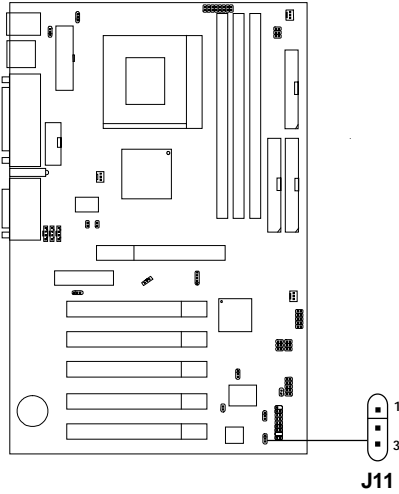
**Output to
Audio Chip**
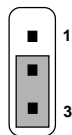
**Output to
Onboard Buzzer
(default)**

2.31 Onboard Software Audio Jumper:
JP3 (reserved)

This jumper is used to enabled/disabled Onboard Software audio, for enabling AMC97 on AMR slot. Note: This jumper will only exist if there's no Hardware audio onboard.
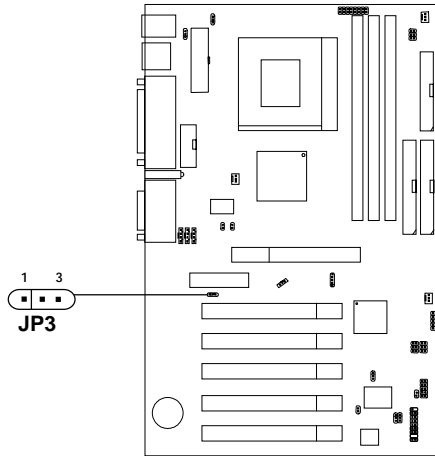
JP4	Function
▪▪▪	**Enabled Onboard Audio**
▪▪▪	**Enabled AMC97 on AMR(Audio Modem Riser) Card**

Note: Short pin 2-3 on JP4, to be able to use AMR card.

2.32   CPU Termination Voltage Jumper: JVTT1 (reserved)

The JVTT1 is a reserved function for future Coppermine CPU.
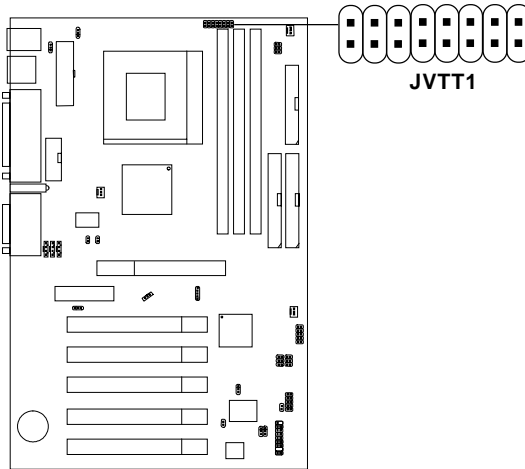
JVTT1

JVTT1	Function
	For Celeron
	For Coppermine

2.33 USB Front Connector: JUSB1

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

JUSB1
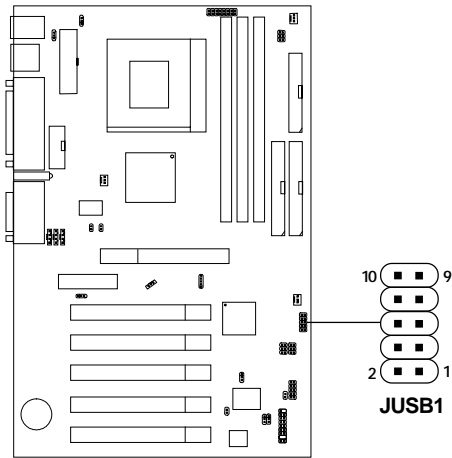
Pin	Description	Pin	Description
1	VCC	2	GND
3	USB2-	4	GND
5	USB2+	6	USB3+
7	GND	8	USB3-
9	GND	10	VCC

2.34 Diagnostic LED

The mainboard provides a Special Diagnostic LED for users to be aware of their mainboard conditions. The LED helps user determine the problem of the mainboard.
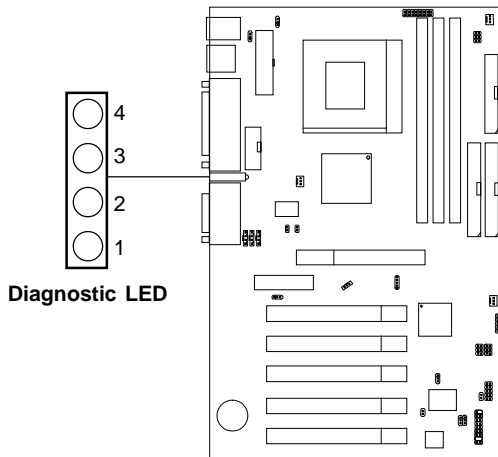
Diagnostic LED

Diagnostic LED Function

Diagnostic LED 4 3 2 1	Description	Possible Problem/ Solution
0 0 0 0	System Power ON. This will start BIOS Initialization	System D-LED will hang here The Processor might be damage or not installed properly Damage/Discharge Lithium Battery
0 0 0 1	Early Chipset Initialization	***
0 0 1 0	Memory Detection Test Testing Onboard memory size	System D-LED will hang here The Memory module might be damage or not installed properly.
0 0 1 1	Decompressing BIOS image to RAM for fast booting.	***
0 1 0 0	Initializing Keyboard Controller	***
0 1 0 1	Testing VGA BIOS This will start writing VGA sign-on messages to the screen.	System D-LED will produce Beep sound The VGA card might be damage or not inserted properly.
0 1 1 0	Processor Initialization This will show information regarding the processor (like brand name, system bus, etc...)	***
0 1 1 1	Testing RTC (Real Time Clock)	Low Lithium Battery
1 0 0 0	Initializing Video Interface This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter	***
1 0 0 1	BIOS Sign On This will start showing information about Logo, processor brand name, etc.....	***
1 0 1 0	Testing Base and Extended Memory Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.	***
1 0 1 1	Assign Resource to all ISA	***
1 1 0 0	Initializing Hard Drive Controller This will initialize IDE drive and controller	Check IDE cable for proper installation
1 1 0 1	Initializing Floppy Drive Controller This will initialize Floppy Drive and controller	System D-LED will hang here The Floppy Drive Cable might not be installed properly
1 1 1 0	Boot Attempt This will set low stack and boot via INT19h.	***
1 1 1 1	Operating System Booting.	***

1 = GREEN 0 = RED   *** Check local Vendor for possible internal mainboard problem.

2.35 AMR1 (Audio Modem Riser)

The Audio/Modem Riser specification is an open industry-standard specification that defines a hardware scalable Original Equipment Manufacturer (OEM) mainboard riser board and interface, which supports both audio and modem.

AMR1
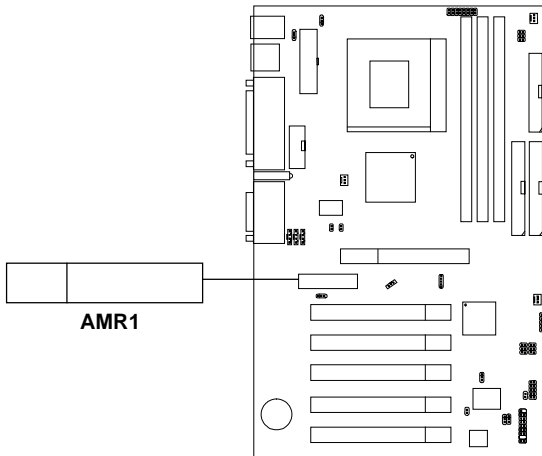
Chapter 3

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.
AGIOMS  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 <DEL>" message appears, press <DEL> key to
   enter the BIOS setup screen.

3. After pressing <DEL> 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  HIFLEX  SETUP  UTILITIES - VERSION 1.21 │
│    (C) 1999 American Megatrends, Inc. All Rights  │
│                    Reserved                        │
├──────────────────────────┬──────────────────────┤
│                          │                       │
│  STANDARD  CMOS  Feature │  Integrated  Peripherals │
│                          │                       │
│  BIOS  Features  Setup   │  Hardware  Monitor  Setup │
│                          │                       │
│  Chipset  Features  Setup│  Supervision  Password │
│                          │                       │
│  Power  Management  Setup│  User  Password       │
│                          │                       │
│  PnP/PCI  Configuration  │  IDE  HDD  Auto  Detection │
│                          │                       │
│  Load  BIOS  Defaults    │  Save  &  Exit  Setup │
│                          │                       │
│  Load  Setup  Defaults   │  Exit  Without  Saving │
│                          │                       │
├──────────────────────────┴──────────────────────┤
│ Esc: Quit  ↑↓←→: Select Item (Shift)F2: Change Color F5: Old Values │
│ F6: Save & Exit Setup  F7: Load Setup Defaults  F10: Save & Exit │
├─────────────────────────────────────────────────┤
│              Time, Date, Hard Disk Type, ...      │
└─────────────────────────────────────────────────┘
```

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>.

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 Jul 21, 2000
Time (hh/mm/ss):   01:01:34

             TYPE       SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE
             --------------------------------------------------------

Pri Master : Auto
Pri Slave  : Auto
Sec Master : Auto
Sec Slave  : Auto
                                      Base Memory : 0 KB
                                      Other Memory: 384 Kb
Floppy Drive A:    1.44MB 3 1/2       Extended Memory : 0 Mb
Floppy Drive B:    Not Installed      Total Memory : 1 Mb

Boot Sector Virus Protection Disabled

Detecting drive parameters:          ESC:Exit
Press ESC to Abort                   ↑↓:Select Item
                                     PU/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   System BIOS Cacheable  :Disabled
Ist Boot Device         :Floppy    C000, 16k Shadow       :Enabled
2nd Boot Device         :IDE-O     C400, 16K Shadow       :Enabled
3rd Boot Device         :CD-ROM    C800, 16K Shadow       :Disabled
Try Other Boot Devices  :Yes       CC00, 16K Shadow       :Disabled
Initial Display Mode    :Silent    D000, 16K Shadow       :Disabled
Floppy Access Control   :Read-Write D400, 16K Shadow      :Disabled
BootUp Num-Lock         :On        D800, 16K Shadow       :Disabled
Floppy Drive Swap       :Disabled  DC00, 16K Shadow       :Disabled
Floppy Drive Seek       :Disabled
PS/2 Mouse Support      :Enabled
Primary Display         :Absent
Password Check          :Setup
Boot to OS/2 > 64M      :No
L1 Cache                :WriteBack
L2 Cache                :WriteBack



                                   ESC:Quit        ↑↓←→: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 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.

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.

Try other Boot Devices

This option sets the device boot, if all the Four Boot Devices failed.

Initial Display Mode

This option sets to display the Micro-Star International (MSI) logo.

Floppy Access Control

This option sets the Floppy to Read-only or Read-Write.

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 Disabled.

PS/2® Mouse Support

When this option is set to Enabled, AMI® BIOS supports a PS/2® mouse. The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Enabled.

Primary Display

This option configures the primary display subsytem in the computer.

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.

L1 Cache

Choose Write Back or Write Through or Disabled the level 1 cache memory.

L2 Cache

Choose Write Back or Write Through or Disabled the level 2 cache memory.

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 Enabled. The Fail-Safe default setting is Disabled.

C000, 16K Shadow/C400, 16K Shadow/C800, 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 for faster execution, it can also be written to or read from the cache memory.
Enabled	The contents of the ROM area are copied from ROM to RAM for faster execution.

3.4 Chipset Features Setup

1. Press <ENTER> on "Chipset Features Setup" of the main menu screen.

```
         AMIBIOS  SETUP  -  CHIPSET  FEATURES  SETUP
         (C) 1999 American Megatrends, Inc. All Rights Reserved

USB Function            :Enabled   RAS-to-CAS            :Default
 Keyboard Legacy Support :Disabled CAS Latency          :Slow
CPU Latency Timer       :Enabled   RAS Timing           :Slow
ICH Delayed Transaction :Disabled  RAS Precharge Timing :Slow
DMA Collection Buffer   :Disabled
Memory Hole             :Disabled
DRAM Cycle time (SCLKs) :6/8
CAS# Latency (SCLKs)    :3
RAS to CAS delay (SCLKs) :3
SDRAM RAS# Precharge    :3
Primary Graphics Adapter :Auto
Display Cache Window Size :64MB
AGP Aperture Window     :64MB
Local memory Frequency  :100MHz
Initialize Display Cache :Enabled
 Paging Mode Control     :Closed

                                   ESC:Quit        ↑↓ ←→: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:

USB Function

Set this option to Enabled or Disabled the on-chip USB controller.

Keyboard Legacy Support

Set this option to Enabled or Disabled USB keyboard.

CPU Latency Timer

During Enabled, A deferrable CPU cycle will only be Deferred after it has been in a Snoop Stall for 31 clocks and another ADS# has arrived. During Disabled, A deferrable CPU cycle will be Deferred immediately after the GMCH receives another ADS#.

ICH Delayed Transaction

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

Memory Hole

This option allows the end user to specify the location of a memory hole. The cycle matching the selected memory hole will be passed to the ISA bus. If Enabled, the selected hole is not remapped.

DRAM Cycle Time (SCLKs)

This option controls the number of SCLKs for an access cycle.

CAS# Latency (SCLKs)

This option determines the CAS latency time parameter of SDRAM. The settings are 2 clks or 3 clks. Under 66MHz CPU bus, set this option to either 2 or 3 but for 100MHz CPU, it is recommended that this be set to 3.

RAS# to CAS# Delay (SCLKs)

This operation decide the delay in assertion of CAS#(SCAS#) from assertion of RAS#(SRAS#) in 66MHz. Under 66MHz CPU bus, set this option to either 2 or 3 but for 100MHz CPU, it is recommended that this be set to 3.

SDRAM RAS# Precharge

This option defines the RAS# precharge requirements for the SDRAM memory type in 66MHz clocks. Under 66MHz CPU bus, set this option to either 2 or 3 but for 100MHz CPU, it is recommended that this be set to 3.

Primary Graphics Adapter

This option is used to auto-detect the primary graphics adapter.

Internal Graphics Mode

This option is used to Enable/Disable the internal graphics device and select the amount of system memory that is used to support the internal graphics device.

Display Cache Window Size

This option determines the display cache window size. The settings are 64MB or 32MB.

AGP Aperture Window Size

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated fpr graphics memory address space. Host cycled that hit the aperture range are forwarded to the AGP without any translation.

Local Memory Frequency

       This option determines the local memory frequency. The settings are 100MHz or 133MHz.

Initialize Display Cache Memory

       This option allows you to insert an AIMM display cache memory to AGP slot.

Paging Mode Control

       This option decide if the GMCH memory controller will leave pages open or closed.

RAS-to-CAS

       This option determine the display cache RAS#-toCAS# delay.

CAS# Latency

       This option decide the display cache CAS latency.

RAS# Timing

       This option controls RAS# active to precharge, and refresh to RAS# active delay.

RAS# Precharge Timing

       This option controls RAS# precharge clocks.

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

ACPI Aware O/S           :Yes    Power Button Function     :On/Off
ACPI Standby State       :S1/POS Restore on AC/Power Loss  :LastState
USB KB Wakeup From S3    :Disabled Resume On Ring          :Enabled
Power Management/APM     :Enabled LAN Resume From Soft Off :Disabled
Green PC LED Status      :DualColor PME Function Support    :Enabled
Video Power Down Mode    :Suspend Resume On RTC Alarm      :Disabled
Hard Disk Power Down Mode:Standby RTC Alarm Date           :15
Standby Time Out (Minute):Disabled RTC Alarm Hour         :12
Suspend Time Out (Minute):Disabled RTC Alarm Minute       :30
Throttle Slow Clock Ratio:50%    RTC Alarm Second          :30
FDC/LPT/COM Ports        :Monitor
Primary Master IDE       :Monitor
Primary Slave IDE        :Ignore
Secondary Master IDE     :Monitor
Secondary Slave IDE      :Ignore




                                 ESC:Quit         ↑↓ ←→: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 Power Management Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

ACPI Aware O/S

This option sets the ACPI Power Management to be active or not. The settings are yes or no.

ACPI Standby State

This option sets the ACPI Power Management Standby State.

USB KB Wake-Up From S3

This option is used to Enabled/Disabled USB keyboard wake up with suspend to RAM.

Power Management/APM

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

Green PC LED Status

This item determines which state the Power LED will use. The settings are Blinking, Dual and Single. During blinking, the power LED will blink when the system enters the suspend mode. When the mode is in Dual, the power LED will change its color. Choose the single and the power LED will always remain lit.

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.

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.

Standby Time Out (Minute)

This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. 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.

Suspend Time Out (Minute)

This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. 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.

Throttle Slow Clock Ratio

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

FDC/LPT/COM Ports / Primary Master IDE / Primary Slave IDE / Secondary Master IDE / Secondary Slave IDE

When set to Monitor, these options enabled 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.

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 or last status. 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.

Note: If you set this option to last status, the Power Button Function must be set to On/Off, or this function will not work.

Resume On Ring

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

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.

LAN Resume from Soft-Off

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

PME Function Support

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.

Resume on RTC Alarm

This function is for setting the Date, Hour, Minute, and Second for your computer to boot up.

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

Clear  NVRAM              :No
PCI  Latency  Timer       :64
PCI  VGA  Palette  Snoop  :Disabled
DMA  Channel  0           :PnP
DMA  Channel  1           :PnP
DMA  Channel  3           :PnP
DMA  Channel  5           :PnP
DMA  Channel  6           :PnP
DMA  Channel  7           :PnP
IRQ3                      :PCI/PnP
IRQ4                      :PCI/PnP
IRQ5                      :PCI/PnP
IRQ7                      :PCI/PnP
IRQ9                      :PCI/PnP
IRQ10                     :PCI/PnP
IRQ11                     :PCI/PnP
IRQ14                     :PCI/PnP
IRQ15                     :PCI/PnP
                                      ESC:Quit        ↑↓←→: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 PNP/PCI Configuration, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Clear NVRAM

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

PCI Latency Timer (PCI Clocks)

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.

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 IRQ3 through 7 are ISA/EISA. The Optimal and Fail-Safe default settings PCI/PnP.

3.7 Integrated Peripherals

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

```
        AMIBIOS  SETUP  -  INTEGRATED  PERIPHERALS
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AC97 Audio Controller   :Enabled    OnBoard IDE              :Both
AC97 Modem Controller   :Disabled
OnBoard FDC             :Auto
OnBoard Serial PortA    :Auto
OnBoard Serial PortB    :Auto
 Serial PortB Mode      :Normal
  IR Duplex Mode        :Full Duplex
  IR Pin Select         :IRRX/IRTX
OnBoard CIR Port        :Disabled
 CIR IRQ Select         :10
OnBoard Parallel Port   :Auto
 Parallel Port Mode     :ECP
 EPP Version            :N/A
 IRQ                    :Auto
 DMA Channel            :Auto
OnBoard Midi Port       :290
 Midi IRQ Select        :9
OnBoard Game Port       :200
Keyboard PowerOn Function:Disabled
Specific Key for PowerOn :N/A         ESC:Quit        ↑↓←→:Select Item
Mouse PowerOn Function  :Disabled     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:

AC97 Audio Controller
AC97 Modem Controller

This item allows you to decide to enable/disable the 815 chipset family to support AC97 Audio/Modem. The settings are Enabled, Disabled.

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 to enable the onboard FDC.
Choose Disabled to disable the onboard FDC.

Onboard Serial Port A/Onboard Serial Port B

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 PortB Mode

Choosing Normal will set the Serial Port B for normal use, not for IR device. Choosing IrDA or Ask IR will set it for use with IR device using these protocols.

IR Duplex Mode

Can be set as either Half or Full duplex.

IR Pin Select

Set this option to IRRX/IRTX when using an internal IR device which is connected to IR1 connector.

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.

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

DMA Channel

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

OnBoard MIDI Port

Choose 290H, 292H, 300H, 330H to support MIDI devices.

MIDI IRQ Select

Choose 5, 7, 9, 10 to support MIDI device interrupt.

OnBoard Game Port

Choose 200H, 208H to support Joystick device.

Note: If Hardware Audio is onboard, the three items above in the peripheral setup will not be shown.

Keyboard PowerOn Function
        This function allows you to Enabled or Disabled the Keyboard
PowerOn.

Mouse PowerOn Function
        This function allows you to Disabled, Left-button or Right-button
the Mouse PowerOn. The default setting is Disabled.

OnBoard IDE
        Set this option to Enabled or Disabled the OnBoard IDE controller.

3.8 Hardware Monitor Setup

The Hardware Monitor Setup is used to set the CPU speed and monitor the current CPU Temperature, CPU Fan speed, Chassis Fan Speed, Power fan speed, Vcore, etc. This is only available if there is Hardware Monitor onboard.

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

```
          AMIBIOS  SETUP - HARDWARE  MONITOR  SETUP
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CPU Ratio Selection      2.0x(Safe)  -5.000V
ClkGen Spread Spectrum   Disabled    Battery
CPU Clock (MHz)          133         +5V SB
System memory Frequency  100MHz      Display H/W Monitor Info. Yes
CPU Voltage Adjust       No
 CPU Vcore               1.65V
Chassis  Intrusion       Disabled
 CPU Temperature         80°C/176°F
 System Temperature      39°C/102°F
 Top Tech. III           80°C/176°F
 CPU Fan Speed
 Chassis Fan Speed
 Power Fan Speed
 CPU VID                 1.65V
 Vcore
 Vtt
 Vio
 + 5.000V
 +12.000V
 -12.000V
                                     ESC:Quit        ↑↓ ←→: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 Hardware Monitor Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

CPU Ratio Selection
This option is use to set the CPU ratio. If your CPU ratio setting is locked, then this option will be shown as "Locked".

ClkGen Spread Spectrum
This item allows you to select the clock generator Spread Spectrum function. When overclocking the processor, always set this item to Disabled.

CPU Clock (MHz)
Check your processor and set this function accordingly. If you set this to Manual, you can set the CPU Clock accordingly.

System Memory Frequency
This is use to set the system memory frequency. Check your processor and set this function accordingly.

CPU Voltage Adjust
This is use to set/adjust the CPU system voltage.

CPU Vcore
This item shows the current CPU system voltage.

Chassis Intrusion
Set this option to Enabled, Reset, or Disabled the chassis intrusion detector. During Enabled, any intrusion on the system chassis will be recorded. The next time you turn on the system, it will show a warning message. To be able to clear those warning, choose reset. After clearing the message it will go back to Enabled.

3.9 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.

3.10 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 Jul 21, 2000
Time (hh/mm/ss):   01:01:34

            TYPE      SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE
            ----------------------------------------------------------

Pri Master :
Pri Slave  :
Sec Master :
Sec Slave  :
                                    Base Memory : 0 KB
Floppy Drive A:    Not  Installed   Other Memory: 384 Kb
Floppy Drive B:    Not  Installed   Extended Memory : 0 Mb
                                    Total Memory : 1 Mb
Boot  Sector  Virus  Protection Disabled

Detecting  drive  parameters:          ESC:Exit
Press ESC to Abort                     ↑↓:Select Item
                                       PU/PD/+/- : Modify
                                       (Shift) F2: Color
```

Chapter 4

INTEL® 815 INTEGRATED GRAPHICS CONTROLLER

1. Overview

The Intel® 815 Chipset extends Intel's graphics capabilities into the value PC segment by incorporating 2D and 3D capabilities with the memory controller, to provide the industry with complete graphics offerings for every computing segment.

1.1 Intel® 815 Chipset

- Support 4MB Display Cache (optional)
- Support AGP 2X/4X BUS
- 2D & 3D Graphics Accelerator

1.2 System Requirements

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

Computer	Intel® Celeron™/ Pentium® III (FC-PGA) processor or higher
Monitor	VGA Support, mimimum 640x480 resolution
Operating system	DOS 5.0 or higher, Windows® 95/98, Windows® NT 3.51 or 4.0, or OS/2®
CD-ROM	Double Speed or Higher
Chipset	Intel® 815 chipset
VGA BIOS	Version 00.23 or Higher

2. Intel® 815 VGA Driver Setup & Usage Procedures

Insert the CD-title into your CD-ROM drive. This CD will auto-run. This will display installation for VGA driver and sound driver, Intel 815/820 INF Update (only for Windows 95/98) and Trend PC-cillin 98. Just click the button for automatic installation for VGA driver.

2.1 Windows® 95/98

If you start Windows® 95/98, this will automatically detect this hardware onboard "Standard PCI Graphics Adapter (VGA)". You need to click "Next", then "Finish". Do not click on the "Cancel". The driver need these ID.

Note: Before installing the Intel 815 VGA Driver, you need to install the Intel 815/820 INF update first.

2.1-1 Display Driver 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 "Intel 815 VGA Driver" icon.
Step 4: This will show an installation menu.
Step 5: Click on "Display Drivers".
Step 6: Click "OK".
Step 7: This will copy the VGA drivers into the hard drive.
Step 8: A message will appear stating you must restart the Windows® 95/98 system, select **yes** to restart.
Step 9: After restarting, Windows® 95/98 will show a new display setting.

2.2 Windows® NT 4.0

You need to install Windows® NT "Service Pack 3" or higher, before you install Windows® NT driver.

2.2-1 Display Driver Installation Procedure:

Step 1:   Click **Start** menu and select **Control Panel** from **Settings** group.

Step 2:   Select **Display** icon.

Step 3:   Select **Settings** on the Display Properties.

Step 4:   Select **Display Type**.

Step 5:   Select **Change** from the **Adapter Type** Area.

Step 6:   Select **Have Disk** of Change Display.

Step 7:   Insert the **CD-Title Disk** into CD-ROM Drive.

Step 8:   When the Install from Disk dialog box appears, look for your CD-ROM drive :**SVGA\Intel\815\NT4\WINNT4**

Step 9:   When the **Change Display** dialog box appears, click **OK**.

Step 10: When the Third-party Drivers dialog box appears, click **Yes.**
A message will appear stating that the drivers were succesfully installed. Click OK. You must now restart Windows® NT 4.0.

Note: You can also use CD autorun to install the VGA NT driver.

2.2-2 Changing resolution, color depth, and refresh rate:
Step 1:   Click **Start** menu and select **Control Panel** from **Settings**
                   group.
Step 2:   Select **Display** icon.
Step 3:   Select **Settings**.
Step 4:   Select Color Palette to change between 256 color, 65536
                   colors, and 16777216 colors.
Step 5:   To select desktop resolution size, go to the Desktop area
                   and use the slide bar to change resolution from 640x480,
                   800x600, 1024x768, 1152x864, 1280x1024, to 1600x1200.
Step 6:   Select Test to test the resolution. If the display test screen
                   was good, then select Yes when the Testing Mode dialog
                   box appears. If the display test screen was bad, then select
                   No. Windows® NT will give you an error message.
Step 7:   Click OK. If the display test screen was good and you
                   select Yes, Windows® NT 4.0 will change the mode without
                   restarting the system.

**2.3 AutoCAD, OS/2 and other application. Please refer
to "On-Line Manual" in the CD-ROM. You need to
install the "Acrobat Reader 3.01" program first.**