

Chapter 1

INTRODUCTION

The MS-6195 ATX IR3 mainboard is a high-performance personal computer mainboard based on the AMD Athlon® processor. This mainboard provides onboard Creative® CT5880 PCI technology in audio. The AMD Athlon® processor is the newest microprocessor in the AMD K86™ family of microprocessors.

The mainboard uses the highly integrated AMD® 751 system controller and AMD 756 peripheral controller. The AMD-751 system controller features: the S2k system interface supports a 100Mhz clock and double-data rate (DDR) transfers, the 33MHz 32-bit bus interface supports up to six PCI masters, the 66MHz AGP 1.0 compliant interface supports 2x data transfer mode, and High Speed memory designed to support a 100MHz SDRAM (PC-100-compatible-DIMM) with serial presence detect (SPD). The AMD-756 peripheral bus controllers feature an integrated ISA bus controller, an enhanced IDE controller with Ultra DMA-66 support, and a keyboard/mouse controller.

The MS-6195 ATX IR3 mainboard is one of our system board to implement the AMD-750 chipset (AMD-751 and AMD-756), which supports a single Slot A for AMD Athlon® processor.

1.1 Mainboard Features

CPU

- Slot A for AMD® Athlon™ processor.
- Support 500MHz, 550MHz, 600MHz, 650MHz or higher processor

Chipset

- AMD® Irongate chipset. (Northbridge)
 - 200MHz EV6 System Interface speed
 - 100MHz SDRAM
 - 1x/2x AGP
 - Status - Silicon currently in bring-up
- AMD® 756™ (Viper) chipset. (Southbridge)
 - OHCI USB
 - APIC
 - ACPI Power Management

Front Side Bus (FSB)

- 100MHz clock is supported. (200MHz Internal System Bus)

Main Memory

- Supports three memory banks using three 168-pin unbuffered DIMM sockets.
- Supports a maximum memory size of 768MB for SDRAM.
- Supports 3.3v PC100 SDRAM DIMM.

Slots

- One AGP (Accelerated Graphics Port) slot.
 - AGP specification compliant
 - AGP 66/133MHz 3.3v device support
- Six 32-bit Master PCI Bus slots and one 16-bit ISA bus slots
- Supports 3.3v/5v PCI bus Interface.

On-Board IDE

- An IDE controller on the AMD® 756 chipset provides IDE HDD/CD-ROM with PIO 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.
 - 2 serial ports (COMA + COMB)
 - 1 parallel port supports SPP/EPP/ECP mode
 - 4 USB ports
 - 1 IrDA connector for SIR.

Audio

- Creative CT5880. (optional)
 - 64 Voice WaveTable Synthesizer
 - Sound Library of over 4000 different sounds
 - Support SPDIF (AC3)
 - Support Microsoft Direct Sound, Direct Sound 3D, Direct Music, and A3DAPL.

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.

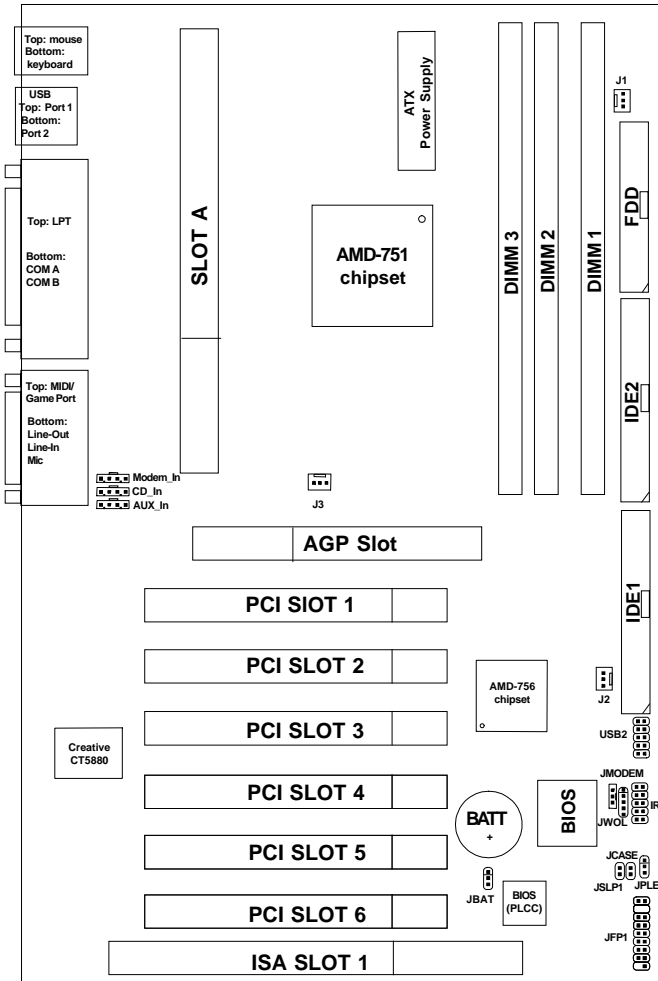
Dimension

- ATX Form Factor : 30.5cm x 19.2cm x 4 layers PCB

Mounting

- 7 mounting holes.

1.2 Mainboard Layout



MS-6195 ATX IR3 Mainboard

Chapter 2

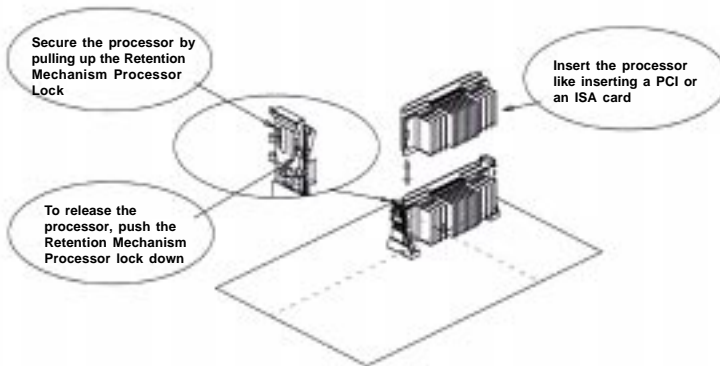
HARDWARE INSTALLATION

2.1 Central Processing Unit: CPU

2.1-1 Processor Installation Procedure

Step 1: Install the Retention Mechanism.

Attach the Retention Mechanism to the Mainboard. Push the Plastic lock to secure the Retention Mechanism into the mainboard.



Step 2: Install the Processor.

Insert the Processor like inserting a PCI or an ISA card.

Step 3: Lock the Processor.

Lock the processor by pulling up the Retention Mechanism processor lock shown above.

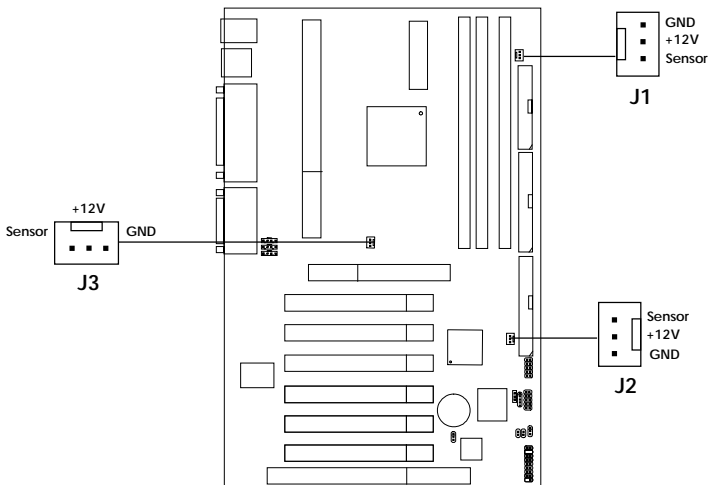
2.1-2 CPU Core Speed Derivation Procedure

The Mainboard can auto-detect the processor speed. Just insert the AMD Athlon processor into Slot A.

If	<u>CPU Clock</u>	=	100MHz
	<u>Core/Bus ratio</u>	=	5
then	<u>CPU core speed</u>	=	<u>Host Clock</u> x <u>Core/Bus ratio</u>
		=	100MHz x 5
		=	500MHz

2.1-4 Fan Power Connectors: J1, J2, & J3

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.**

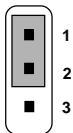
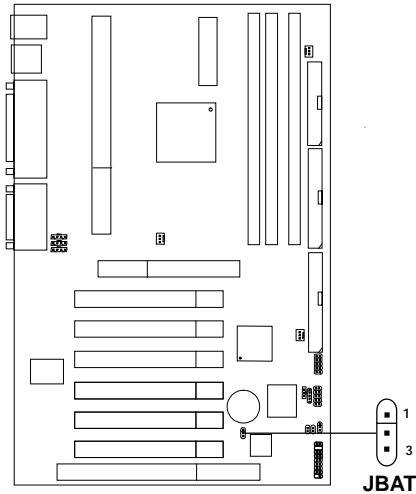


J1: Processor Fan
J2: System Fan
J3: Power Fan

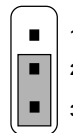
Note: For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. System Hardware Monitor will count and report the fan rotation speed. This is an optional function for System Hardware Monitor.

2.2 Clear CMOS Jumper: JBAT

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



Keep Data



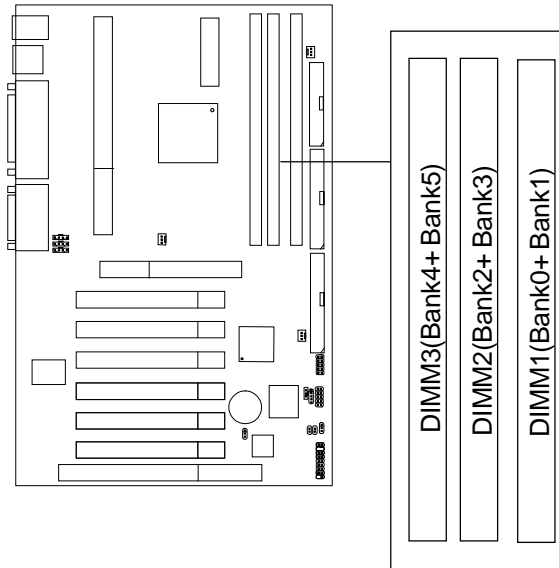
Clear Data

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

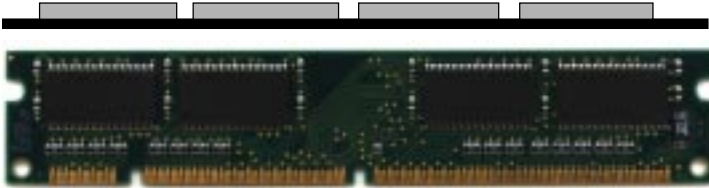
2.3-1 Memory Bank Configuration

The mainboard supports a maximum memory size of 768MB for SDRAM: It provides three 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 256 Mbytes DIMM memory module.

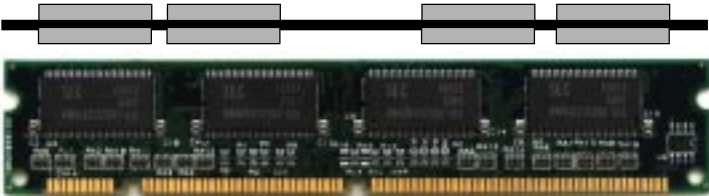


2.3-2 Memory Installation Procedures

A. How to install a DIMM Module

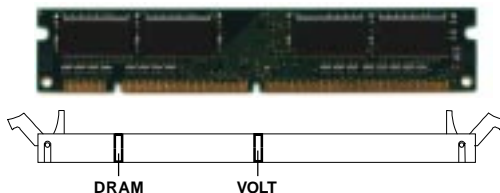


Single Sided DIMM



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.



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

2.3-3 Memory Population Rules

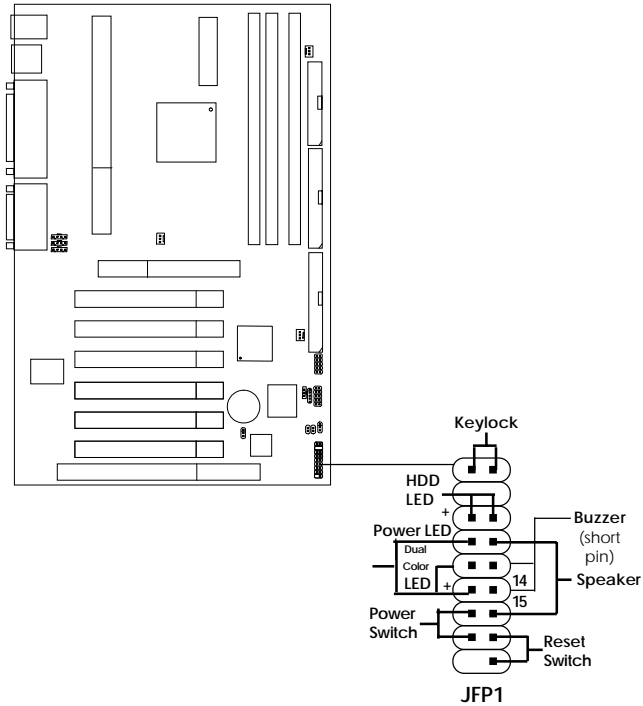
1. Supports only PC100 SDRAM DIMM.
2. To operate properly, at least one 168-pin DIMM module must be installed.
3. This mainboard supports Table Free memory, so memory can be installed on DIMM1, DIMM 2, or DIMM3 in any order.
4. Supports 3.3 volt DIMM.
5. The DRAM addressing and the size supported by the mainboard is shown below:

Table 2.3-1 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	---	---

2.4 Case Connector: JFP1

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 is used to power ON/Off the system.

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

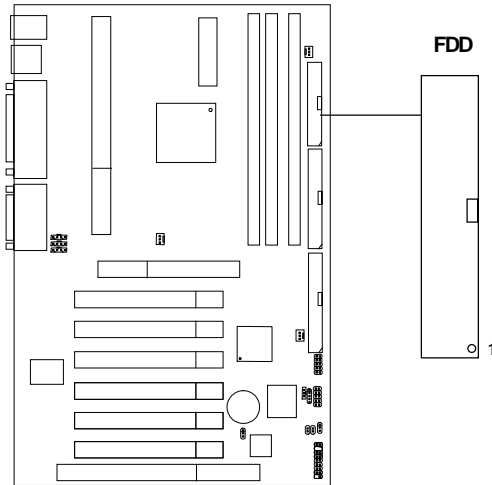
HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

2.4-6 Keylock

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

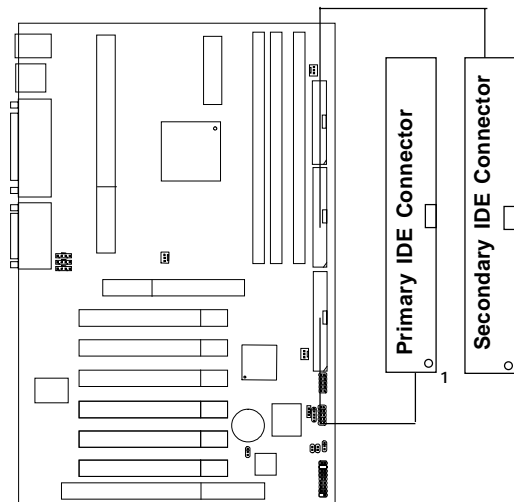
2.5 Floppy Disk Connector: FDD

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/66 (ICH)/ Ultra DMA/33(ICH0) Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33 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.

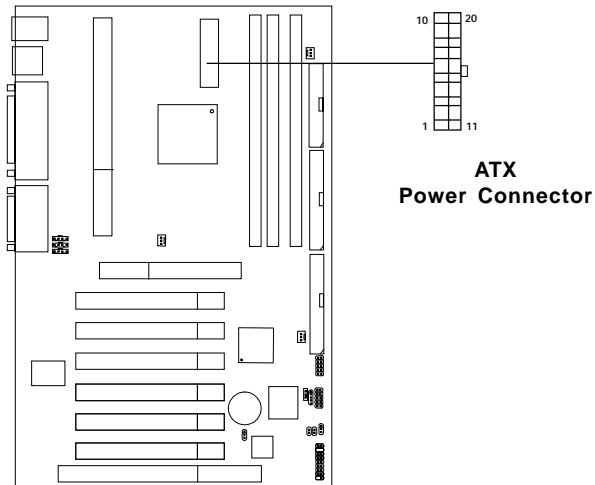
IDE2(Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

2.7 Power Supply

2.7-1 ATX 20-pin Power Connector: JPWR1

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.



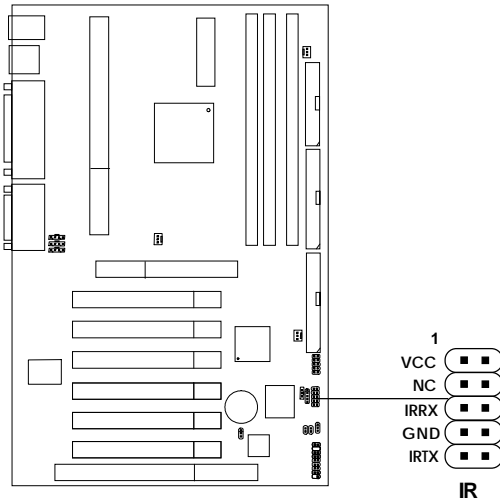
PIN DEFINITION

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.

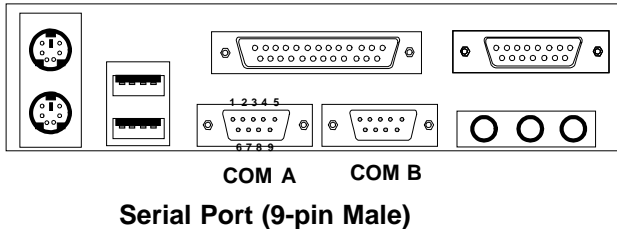
2.8 IrDA Infrared Module Connector: IR

The mainboard provides one infrared (IR) 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.



2.9 Serial Port Connectors: COM A and COM B

The mainboard provides two 9-pin male DIN connector for serial port COM A and 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 DEFINITION

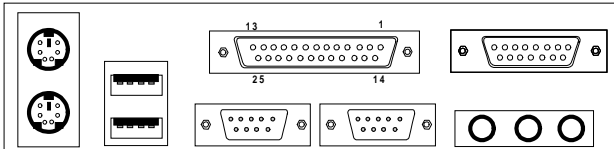
PIN	SIGNAL
1	DCD (Data Carry Detect)
2	SIN (Serial In or Receive Data)
3	SOUT (Serial Out or Transmit Data)
4	DTR (Data Terminal Ready)
5	GND
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	RI (Ring Indicate)

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

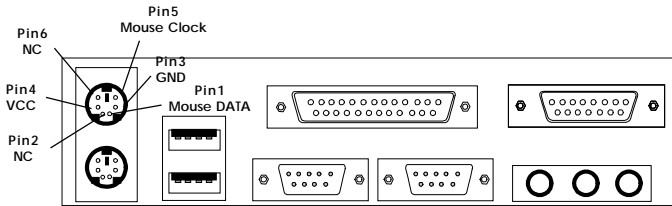


PIN DEFINITION

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: JKBSM1

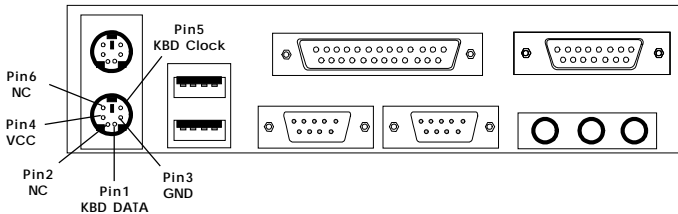
The mainboard provides a standard PS/2[®] mouse mini DIN connector for attaching a PS/2[®] mouse. You can plug a PS/2[®] mouse directly into this connector. The connector location and pin definition are shown below:



PS/2 Mouse (6-pin Female)

2.12 Keyboard Connector: JKBSM1

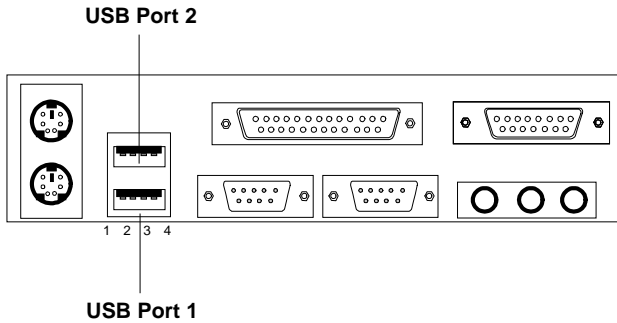
The mainboard provides a standard PS/2[®] keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



PS/2 Keyboard (6-pin Female)

2.13 USB Connectors

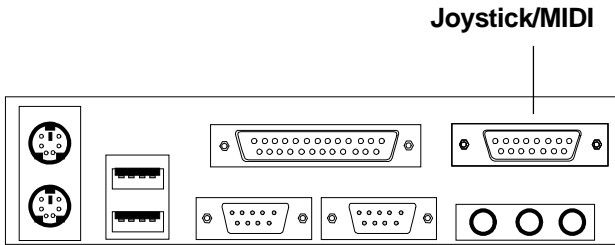
The mainboard provides a **UHCI(Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



PIN	SIGNAL
1	VCC
2	-Data0
3	GND
4	+Data0

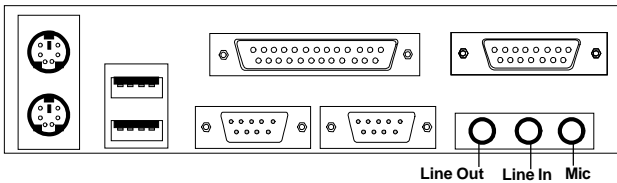
2.14 Joystick/Midi Connectors

You can connect joystick or game pad to this connector.



2.15 Audio Port Connectors

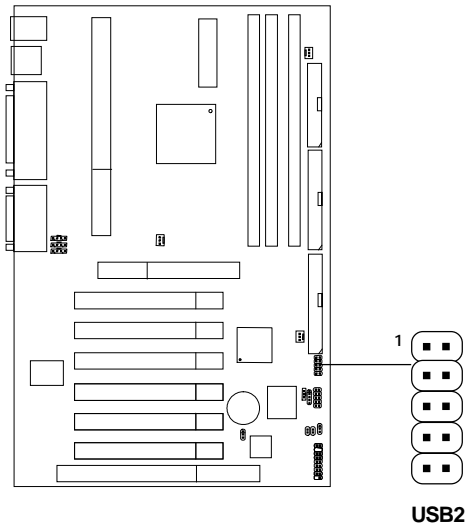
Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape layer, or other audio devices. **Mic** is a connector for the microphones.



1/8" Stereo Audio Connectors

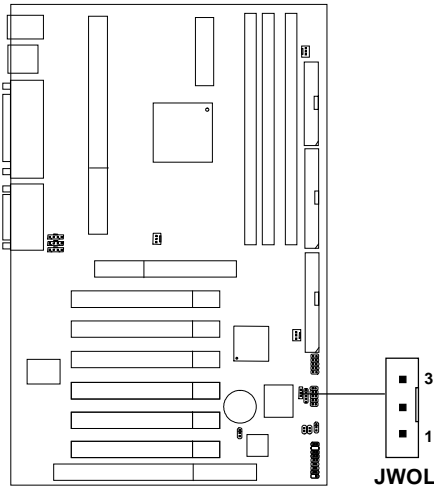
2.16 USB Front Connector (optional)

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



2.17 Wake-Up on LAN Connector: JWOL

The JWOL 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.



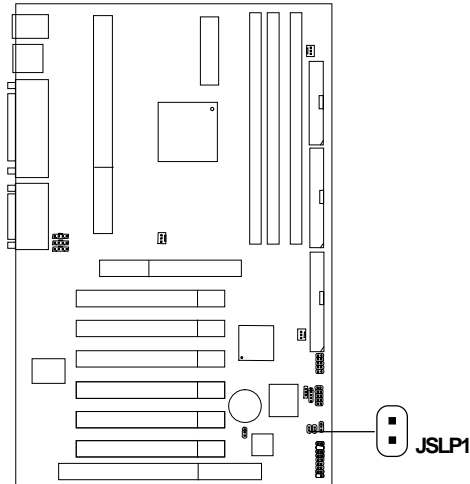
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

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)

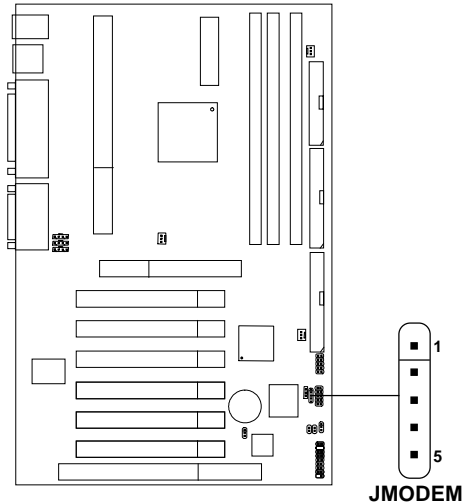
2.18 Power Saving Switch Connector: JSLP1

Attach a power saving switch to **JSLP1**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.



2.19 Modem Wake Up Connector: JMODEM

The JMODEM 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.



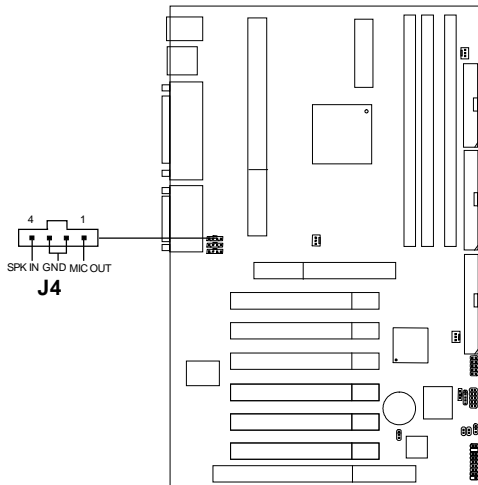
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

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)

2.20 Modem-In: J4 (optional)

The connector is for Modem with internal voice connector.

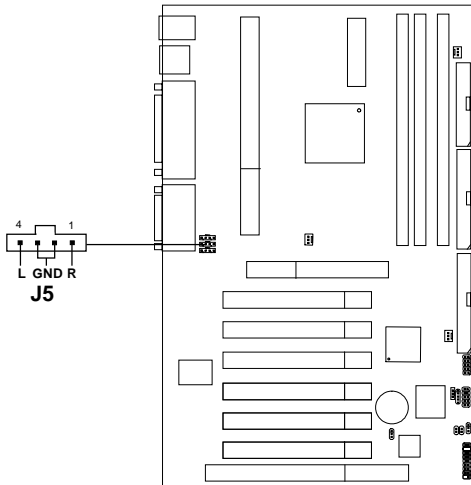


SPK_IN is connected to the Modem Speaker Out connector.

MIC_OUT is connected to the Modem Microphone In connector.

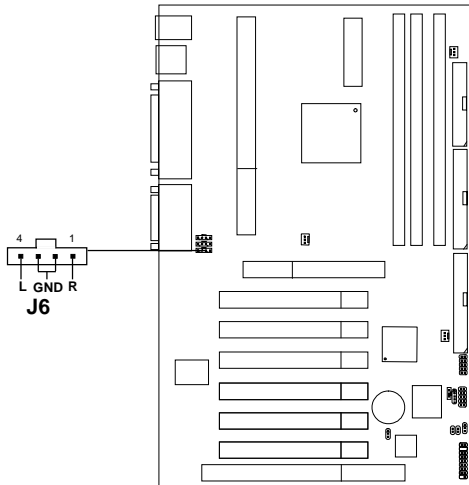
2.21 CD-In Connector: J5 (optional)

This connector is for CD-ROM Audio Connector.



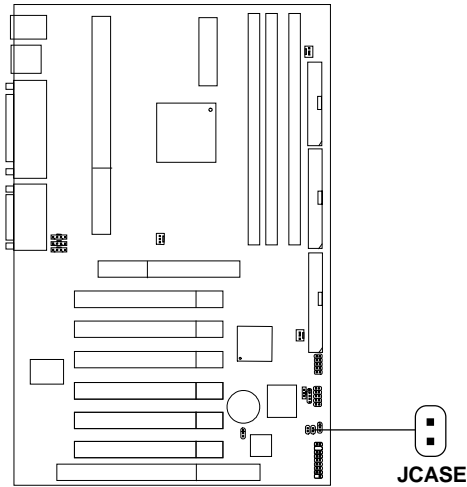
2.22 Aux Line In Connector: J6 (optional)

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



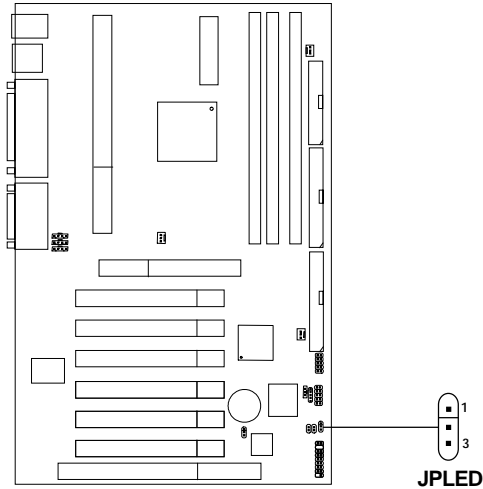
2.23 Chassis Intrusion Switch Case: JCASE

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



2.24 Power Saving LED Connector: JPLED

JPLED can be connected with a LED. When the 2-pin LED is connected to JPLED, the light will turn green, when system is On. During sleep mode, the 2-pin LED will change color from Green to Orange.



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.  
A6195 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	Peripheral Setup
Advanced CMOS Setup	Hardware Monitor Setup
Advanced Chipset Setup	Change Supervisor Password
Power Management Setup	Change User Password
PCI/Plug and Play Setup	Auto-Detect Hard Disks
Load Fail Safe Settings	Save Settings and Exit
Load Optimal Settings	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 Advanced CMOS Setup

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

AMIBIOS SETUP - ADVANCED CMOS SETUP			
(C) 1999 American Megatrends, Inc. All Rights Reserved			
Quick Boot	Disabled	External Cache	WriteBack
		L2 Cache ECC	TableDefault
1st Boot Device	Floppy	System BIOS Cacheable	Disabled
2nd Boot Device	CD-ROM	C000, 32k Shadow	Disabled
3rd Boot Device	IDE0	C800, 16K Shadow	Disabled
4th Boot Device	Disabled	CC00, 16K Shadow	Disabled
Try Other Boot Devices	Yes	D000, 16K Shadow	Disabled
		D400, 16K Shadow	Disabled
Initial Display Mode	BIOS	D800, 16K Shadow	Disabled
Add-On ROM Init	Force-BIOS	DC00, 16K Shadow	Disabled
Hard Disk Access Control	Read-Write		
S.M.A.R.T. For Hard Disk	Enabled		
BootUp Num-Lock	On		
Floppy Drive Swap	Disabled		
Floppy Drive Seek	Enabled	ESC:Exit	↑↓→← :Select Item
PS/2 Mouse Support	Enabled	F1 :Help	PU/PD/+/-:Modify
Primary Display	VGA/EGA	F5 :Old Values (Shift)	F2:Color
Password Check	Setup	F6 :Load BIOS Defaults	
Boot to OS/2 > 64M	No	F7 :Load Setup Defaults	
Internal Cache	WriteBack		

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 Advanced CMOS 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/4th 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 the device boot, if all the Four Boot Devices failed.

Add-On ROM Init

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

Hard Disk Access Control

This option sets the Hard Disk to Read-only or Read-Write. During Read-Only, if you try to write on the Hard Disk, the system will halt.

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 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 subsystem in the computer. The settings are Mono(monochrome), 40CGA, 80CGA or VGA/EGA. The optimal and Fail-Safe default settings are VGA/EGA.

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.

Internal Cache

This option Enabled or Disabled the Internal Cache.

External Cache

This option Enabled or Disabled the External Cache.

L2 CacheECC

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.

3.4 Advanced Chipset Setup

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

AMIBIOS SETUP - ADVANCED CHIPSET SETUP		
(C) 1999 American Megatrends, Inc. All Rights Reserved		
***** SDRAM Timing *****		
Configure SDRAM Timing by SPD	Disabled	
PH Limit	32 Cycles	
Idle Cycle Limit	8 Cycles	
TRC Bank Cycle Timing	8 Cycles	
TRP SRAS Precharge	3 Cycles	
TRAS Timing	5 Cycles	
TRCD Timing	2 Cycles	
CAS Latency	3 Cycles	
DRAM Integrity Mode	Disabled	
DRAM Burst Refresh	Enabled	
Memory Hole	Disabled	
Graphics Aperture Size	32MB	
MDA Support	No	ESC:Exit ↑↓→← :Select Item
USB Function	Disabled	F1 :Help PU/PD/+/-:Modify
USB KB/Mouse Legacy Support	Disabled	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 Advanced Chipset Setup, press <ESC> to go back to the main menu.

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

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

PH Limit

This item specify the number of consecutive Page-Hit requests to allow before choosing a non Page-Hit request. The settings are: 1/4/32/64 cycles.

Idle Cycle Limit

This item specify the number of idel cycles to wait before precharging an idle bank. The settings are: 0/8/12/16/24/32/48 cycles or disabled.

TRC Bank Cycle Timing

This item specify the minimum time to activate the same bank. The settings are: 3/4/5/6/7/8 cycles or reserved.

TRP SRAS Precharge

This item specify the delay from precharge command to activate command. The settings are 2/3 cycles.

Tras Timing

This item specify the minimum bank active time. The settings are: 2/3/4/5/6/7 cycles or reserved.

Tred Timing

This item specify the delay from activation of a bank to the time that a read or write command is accepted. The settings are: 1/2/3/4 cycles.

CAS Latency

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

DRAM Integrity Mode

Set this option to Enabled or Disabled the DRAM integrity mode. The Optional and Fail-Safe default settings are Disabled.

DRAM Burst Refresh

Set this option to Enabled or Disabled the DRAM burst refresh.

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.

Graphics Aperture Size

This option determines the effective size of the graphics aperture used in the particular PAC 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 PAC 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.

MDA Support

This option determines whether the VGA card can support the monochrome. During Enabled, the VGA can support monochrome. The default setting is Disabled.

USB Function

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

USB KB/Mouse Legacy Support

Set this option to Enabled or Disabled USB Mouse & keyboard. The Optional and Fail-Safe default settings are 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		
ACPI Aware O/S	Yes	
Power Management/APM	Enabled	
Video Off Method	Suspend	
Video Off After	Suspend	
HDD power Down Mode	Suspend	
Suspend Time Out (Minute)	Disabled	
Modem Use IO Port	N/A	
Modem Use IRQ	N/A	
Power Button Function	On/Off	
Green PC LED Status	Dual Color	
Restore on AC/Power Loss	Power Off	
Ring Resume from Soft Off	Disabled	
PME# Resume from Soft Off	Disabled	
LAN Resume from Soft Off	Disabled	
Resume By Alarm	Disabled	ESC:Exit ↑↓→← :Select Item
RTC Alarm Date	15	F1 :Help PU/PD/+/-:Modify
RTC Alarm Hour	12	F5 :Old Values (Shift)F2:Color
RTC Alarm Minute	30	F6 :Load BIOS Defaults
RTC Alarm Second	30	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.

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

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS (default)	Initial display power management signaling.

Video Off After

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 Suspend.

HDD 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.

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.

Modem Use IO Port

This indicates which I/O port will be used by the Modem (if there is a modem installed)

Modem Use IRQ

This indicates which IRQ number will be used by the Modem (if there is a modem installed).

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.

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.

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.

Ring Resume from Soft-Off

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.

PME# Resume from Soft Off

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.

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.

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 PCI/Plug and Play Setup

1. Press <ENTER> on “PCI/Plug and Play Setup” of the main menu screen.

AMIBIOS SETUP - PCI/Plug and Play Setup			
(C) 1999 American Megatrends, Inc. All Rights Reserved			
Plug and Play Aware O/S	No	Reserved Memory Size	Disabled
Clear NVRAM	No	Reserved Memory Address	C8000
PCI Latency Timer	32		
Primary Graphics Adapter	PCI		
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: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 PCI/Plug and Play Setup, 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.

Reserved Memory Size

This option allows the user to reserved the memory size for old add-on card. The settings are 16k/23k/64k/Disabled.

Reserved Memory Address

This option allows the user to reserved the memory size of the old add-on card in the reserved memory address. The default setting is C8000.

3.7 Peripheral Setup

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

AMIBIOS SETUP - Peripheral SETUP	
(C) 1999 American Megatrends, Inc. All Rights Reserved	
Onboard FDC	Auto
Onboard Serial Port A	Auto
Onboard Serial Port B	Auto
Serial Port B Mode	Normal
IrDA Protocol	N/A
Ir I/O pin Select	IRRX/IRTX
Onboard Parallel Port	Auto
Parallel Port Mode	ECP
EPP Version	N/A
Parallel Port IRQ	Auto
Parallel Port DMA Channel	Auto
Onboard IDE	Both
Onboard Sound	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 Peripheral Setup, 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 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/IrDA Protocol/Ir I/O pin Select

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

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 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

Parallel Port DMA Channel

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

Onboard IDE

Set this option to enable or disable on board IDE controller.

Onboard Sound

This item allows you to enable/disable the onboard Aureal audio chipset. 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		
-- Hardware Monitor --		+5VSB 5.028V
Spread Spectrum	Enabled	
Stop Un-used PCI Clock	Enabled	
CPU Frequency Selection	100MHz	
CPU Voltage Selection	1.60V	
Chassis Intrusion	Disabled	
CPU Temperature	350C/950F	
System Temperature	330C/910F	
CPU Fan Speed	6683RPM	
Power Fan Speed	0 RPM	
System Fan Speed	0 RPM	
CPU VID	1.60V	
Vcore	1.616V	
Vsram	3.312V	
3.3V	3.360V	
+5.000V	5.08V	
+12.000V	11.851	
-12.000V	-12.646V	
-5.000V	-5.127	
Battery	3.025V	
		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:**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.

Stop Un-Used PCI Clock

This item allows the clock generator to auto-detect the interface of DIMM/PCI. If there's no PCI card present, then the clock will be shutdown. The default setting is Enabled.

CPU Frequency Selection

Before setting this item, check the mainboard clock generator first. This mainboard comes with two kind of clock generator: ICS9248-64 and ICS9248-110. ICS9248-64 CPU Frquencies are: 100,120,133. ICS9248-110 CPU Frequencies are: 90, 95, 100~125, 133, 140, 150.. Check your processor and set this function. If you set this to Manual, you can set the CPU Frequency accordingly.

CPU Voltage Selection

Check your processor and set this function accordingly. If you set this to Manual, you can set the CPU voltage accordingly. CPU voltage are: 1.40, 1.45, 1.50, 1.55, 1.60, 1.65, 1.70, 1.75.

Chassis Intrusion Detect

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 Auto-Detect Hard Disks

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  Blk  PIO  32Bit
Mode  Mode  Mode  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:
Disabled
Enabled

ESC:Exit
↑↓:Select Item
PU/PD/+/-:Modify
(Shift)F2:Color
    
```


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

"Enter 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 Password:"

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

Chapter 4

CREATIVE® AUDIO DRIVER (OPTIONAL)

1. Overview

The Creative® CT5880-DBO digital controller provides the next generation of audio performance to the PC market.

1.1 Features

- SoundScape WaveTable Synthesizer.
- Full DOS Game Compatibility.
- PCI Bus Master for fast DMA.
- Fully Compliant with PC97 Power Management Specification.

1.2 System Requirements

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

Computer	AMD® Athlon® processor or higher
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	Creative® CT5880-DBO

2. Audio 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. Just click the button for automatic installation for audio driver.

2.1 Windows® 95/98/NT 4.0

If you start Windows® 95/98/NT 4.0, this will automatically detect this hardware onboard “PCI Multimedia Audio Device” and “Gameport Joystick”. You need to click “Next”, then “Finish”. Do not click on the “Cancel”. The driver need these ID.

2.1-1 Audio 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 “ Creative AudioPCI” icon.
- Step 4:** This will copy the audio drivers into the hard drive.
- Step 5:** A message will appear stating you must restart the Windows® 95/98/NT 4.0 system, select **yes** to restart.