Chapter 1

INTRODUCTION

The MICRO ATX AL14 mainboard is a high-performance personal computer mainboard. This mainboard supports Intel® Pentium® processor/Pentium® processor with MMX™ technology, AMD® K6/K6-2/K6-III, and Cyrix® 6x86L/6x86MX/MII processors. This mainboard combines leading edge AGP ATI® 3D 128VR technology in graphics and Creative® ES1373 PCI Enhanced technology in audio. The mainboard also supports three 32-bit PCI (Peripheral Component Interconnect) Local Bus standard slots.

The mainboard uses the highly integrated Aladdin® 5 chipset to support the PCI/ISA and Green standards, and to provide the Host/AGP bridge. The Aladdin® 5 chipset integrates all system control functions such as ACPI (Advanced Configuration and Power Interface). The ACPI provides more Energy Saving Features for the OSPM(OS Direct Power Management) function. The Aladdin® 5 chipset also improves the IDE transfer rate by supporting Ultra DMA/33 IDE that transfer data at the rate of 33MB/s.

1.1 Mainboard Features

CPU
- Socket 7 supports Intel® Pentium® processor with MMX™ technology.
- Cyrix® 6x86L/6x86MX/MII are supported.
- AMD® K6/K6-2/K6-III processors are supported.

Chipset
- Aladdin® 5 M1541/M1543C chipset.

FSB (Front Side Bus)
- 100/95/83.3/75/66MHz clocks are supported.

Cache Memory
- Supports 512K or 1MB Pipelined Burst cache memory.

Switching Regulator
- Provides CPU with voltage ranging from 1.3V to 3.5V
- Support VI/O 3.45 for AMD K6 300 processor

Main Memory
- Supports four memory banks using two 168-pin unbuffered DIMM.
- Supports a maximum memory size of 256MB.

Slots
- Three 32-bit Master PCI Bus slots and one 16-bit ISA bus slots(wherein one PCI/ISA is shared).
- Supports 3.3v/5v PCI bus Interface.

On-Board IDE
- An IDE controller on the Aladdin® M1543C PCI Chipset provides IDE HDD/CD-ROM with PIO, DMA and Ultra DMA/33 operation modes.
- Connect up to four IDE devices.

Video
- ATI® 3D 128 VR
    - Running on AGP BUS.
        - Onboard 16MB SGRAM.
        - 3D Acceleration.

Audio
- Creative® ES1373
    - Running on PCI BUS.
    - 64 Voice and AC3 Capable
    - Support Direct Sound and Direct Sound 3D
    - AC97' Compliant

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 ports (COMA)
    - 1 parallel port supports SPP/EPP/ECP mode
    - 2 USB ports
    - 1 IrDA connector for SIR/FIR.
    - 1 VGA port

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

Dimension
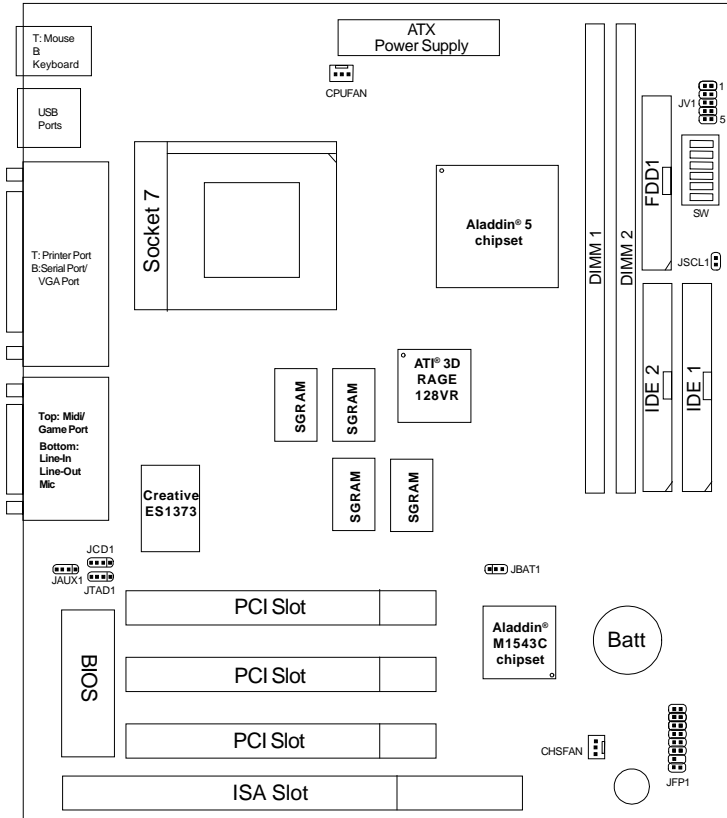- Micro-ATX form factor : 24.4cm(L) x 24.5cm(W) x 4 layers PCB

Mounting
- 7 mounting holes.

Remote Control
- Meet ACPI specifications.
- Power ON/OFF switch connector on-board.
- Soft Power-Off.
- Support modem ring wake-up .
- Support alarm wake-up.
- Support LAN wake-up.

## 1.2 Mainboard Layout

MS-5191 MICRO ATX AL14 Mainboard

Chapter 2

HARDWARE INSTALLATION

2.1 Central Processing Unit: CPU

The **MICRO ATX AL14** mainboard operates with **Intel® Pentium® processor with MMX™ technology**, **AMD® K6/K6-2/K6-III**, and **Cyrix® 6x86L/ 6x86MX/MII** processors. It could operate with 2.0V to 1.3V processors. The mainboard provides a 321-pin ZIF Socket 7 for easy CPU installation, a DIP switch (SW1) to set the proper speed for the CPU and (JV1) for setting the CPU voltage. It is recommended that the processor should have a cooling fan attached to prevent from overheating.

2.1-1 CPU Installation Procedure

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.
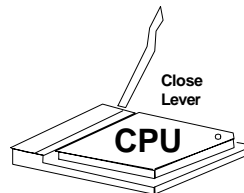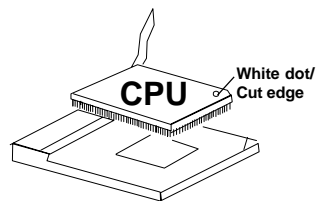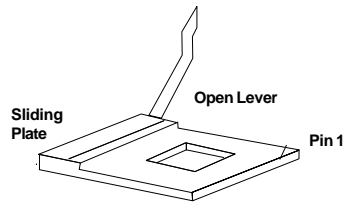
2.1-2 CPU Core Speed Derivation Procedure

1. The DIP Switch SW1 (4, 5, & 6) is used to adjust the CPU clock frequency.

SW1			CPU
4	**5**	**6**	**Clock**
OFF	OFF	OFF	100MHz
ON	OFF	OFF	95MHz
OFF	ON	OFF	83MHz
OFF	OFF	ON	75MHz
OFF	ON	ON	66MHz
ON	ON	ON	60MHz
ON	OFF	ON	68MHz

2. The DIP Switch SW1 (1, 2, and 3) is used to set the Core/Bus (Fraction) ratio of the CPU. The actual core speed of the CPU is the Host Clock Frequency multiplied by the Core/Bus ratio. For example:

If   CPU Clock   =   66MHz
         Core/Bus ratio   =   3/2
then   CPU core speed   =   Host Clock x Core/Bus ratio
                             =   66MHz x 3/2
                             =   100MHz

SW1			CPU
1	**2**	**3**	**Core/Bus Ratio**
OFF	OFF	ON	5.5x
OFF	ON	ON	5x
ON	ON	ON	4.5x
ON	OFF	ON	4x
OFF	OFF	OFF	3.5x
OFF	ON	OFF	3x
ON	ON	OFF	2.5x
ON	OFF	OFF	2x

2.1-3 CPU Voltage Setting: JV1
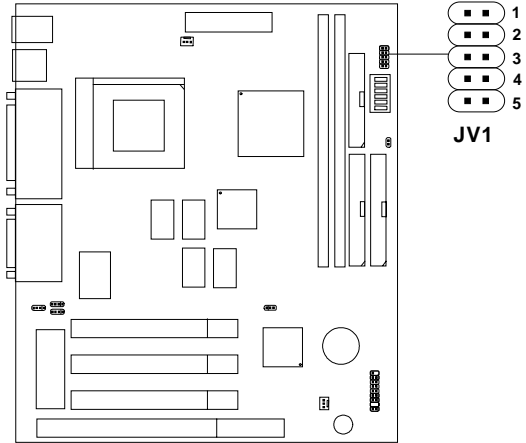
V I/O	Vcore	JV1	V I/O	Vcore	JV1
3.4	3.4		3.4	2.8	
3.4	3.3		3.4	2.3	
3.4	3.2		3.4	2.2	
3.4	2.9				

Other CPU Voltage Setting

1	2	3	4	5	VI/O	VCore
OFF	OFF	OFF	OFF	ON	3.45	1.3
ON	OFF	OFF	OFF	ON	3.45	1.35
OFF	ON	OFF	OFF	ON	3.45	1.4
ON	ON	OFF	OFF	ON	3.45	1.45
OFF	OFF	ON	OFF	ON	3.45	1.5
ON	OFF	ON	OFF	ON	3.45	1.55
OFF	ON	ON	OFF	ON	3.45	1.6
ON	ON	ON	OFF	ON	3.45	1.65
OFF	OFF	OFF	ON	ON	3.45	1.7
ON	OFF	OFF	ON	ON	3.45	1.75
OFF	ON	OFF	ON	ON	3.45	1.8
ON	ON	OFF	ON	ON	3.45	1.85
OFF	OFF	ON	ON	ON	3.45	1.9
ON	OFF	ON	ON	ON	3.45	1.95
ON	ON	ON	ON	ON	3.45	2.0
ON	OFF	OFF	OFF	OFF	3.45	2.1
OFF	ON	OFF	OFF	OFF	3.45	2.2
ON	ON	OFF	OFF	OFF	3.45	2.3
OFF	OFF	ON	OFF	OFF	3.45	2.4
ON	OFF	ON	OFF	OFF	3.45	2.5
OFF	ON	ON	OFF	OFF	3.45	2.6
ON	ON	ON	OFF	OFF	3.45	2.7
OFF	OFF	OFF	ON	OFF	3.45	2.8
ON	OFF	OFF	ON	OFF	3.45	2.9
OFF	ON	OFF	ON	OFF	3.45	3.0
ON	ON	OFF	ON	OFF	3.45	3.1
OFF	OFF	ON	ON	OFF	3.45	3.2
ON	OFF	ON	ON	OFF	3.45	3.3
OFF	ON	ON	ON	OFF	3.45	3.4
ON	ON	ON	ON	OFF	3.45	3.5

2.1-4 CPU Speed and Voltage Setting: SW1 and JV1

To set the proper speed and voltage of the CPU, you must know the specifications of your CPU (*always ask the vendor for CPU specifications*).
Then refer to **Table 2.1 (Intel® Processor)**, **Table 2.2 (Cyrix® Processor)**, **and Table 2.3 (AMD® Processor)** for proper setting.
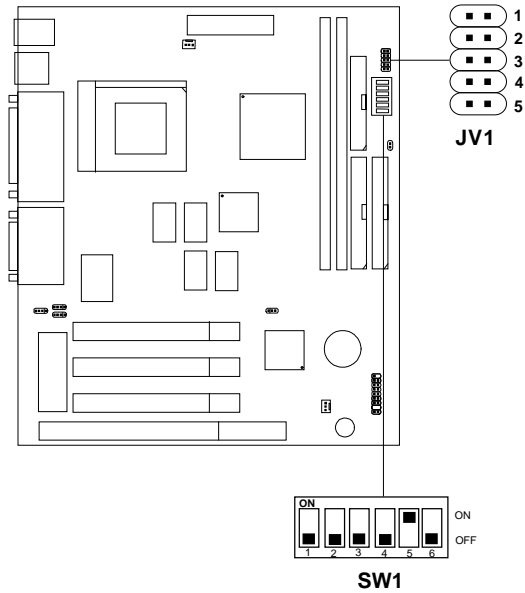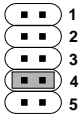
Table 2.1 Intel® Processor

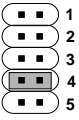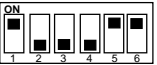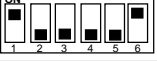### a. Intel® Pentium® Processor with MMX™ Technology

166 MHz	3.4	2.8		
200 MHz				
233 MHz				

Note: In case, you encounter a CPU with different voltage, just go to **Section 2.1-3** and look for the proper voltage settings.

Table 2.2 Cyrix® Processor
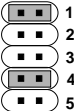
Cyrix® 6x86 processor uses PR to rate the speed of their processors based on Intel® Pentium® processor core speed. For example, PR150 (120MHz) has 150MHz core speed of Intel® Pentium® processor, but it has120MHz core speed in Cyrix® processor. Cyrix® 6x86 processor should always use a more powerful fan (ask vendor for proper cooling fan).
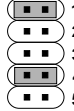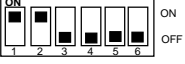
a. Cyrix® 6x86L processor

CPU Type	CPU Voltage		CPU Speed	
	VI/O	Vcore	JV1	SW1
PR166 133MHz (66x2)	3.4	2.8		
PR150 120MHz (60x2)				
PR200 166MHz(66x2.5)				

b. Cyrix® 6x86MX Processor

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	JV1	SW1
PR200 (75 x 2)	3.4	2.9	JV1: 1,2,3,4,5	SW1 settings
PR233 (66 x 3)				SW1 settings
(75 x 2.5)				SW1 settings
(83 x 2)				SW1 settings
PR266 (83 x 2.5)				SW1 settings

c. Cyrix® MII processor
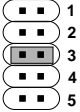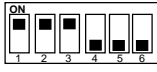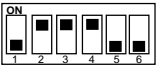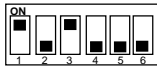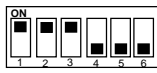
CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	JV1	SW1
PR300 (66x3.5)	3.4	2.9	JV1: 1,2,3,4,5	SW1 settings
PR333 (100x2.5)				SW1 settings

Note: In case, you encounter a CPU with different voltage, just go to **Section 2.1-3** and look for the proper voltage settings.

Table 2.3 AMD® Processor
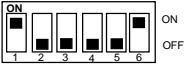
AMD® K6 processor uses PR to rate the speed of their processors based on
Intel® Pentium® processor core speed . For example, PR133(100MHz) has
133MHz core speed of Intel® Pentium® processor but has 100MHz core
speed in AMD® processor.

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	JV1	SW1
166MHz	3.4	2.9		
200MHz				
233MHz	3.4	3.2		
266MHz	3.4	2.2		
300MHz				
K6-2 300MHz				
K6-2 333MHz				
K6-2 350MHz				
K6-2 366MHz				
K6-2 380MHz				
K6-2 400MHz				

CPU Type	CPU Voltage			CPU Speed
	VI/O	Vcore	JV1	SW1
K6-2 450MHz	3.4	2.4		
K6-2 475MHz				
K6-3 400MHz				
K6-3 450MHz				

Note: In case, you encounter a CPU with different voltage, just go to
Section 2.1-3 and look for the proper voltage settings.

2.1-6 Fan Power Connectors: CPUFAN & CHSFAN

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 can use a specially designed fan w/ speed sensor to take advantage of System Hardware Monitor's CPU fan control.
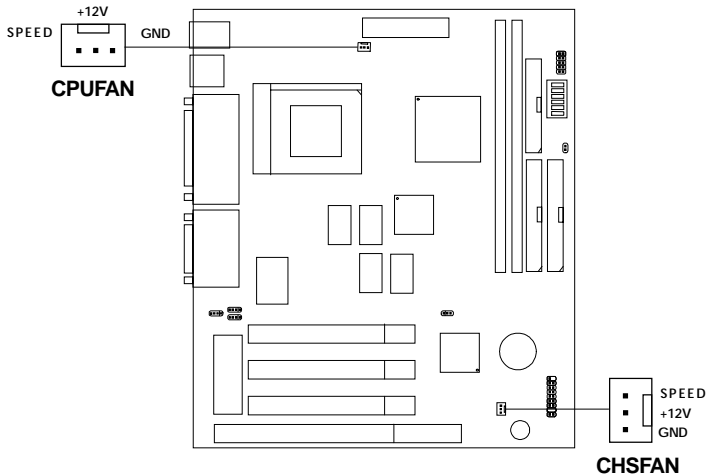
JFAN1:   CPU FAN
JSFAN1: System (chassis) FAN

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: Always consult vendor for proper CPU cooling fan.

2.2 Memory Installation

2.2-1 Memory Bank Configuration

The mainboard provides two 168-pin DIMM (Double In-Line Memory) sockets. It supports four memory banks for a maximum of 512MB memory. You can use DIMM from 8MB, 16MB, 32MB, 64MB, 128MB to 256MB.
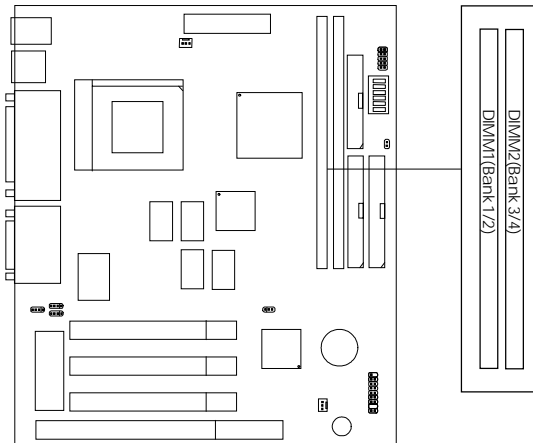
! **WARNING!** **If you use 100 MHz CPU Bus Frequency, only PC100 DIMM Specs. is supported.**

2.2-2 Memory Installation Procedure:

A. How to install DIMM Module
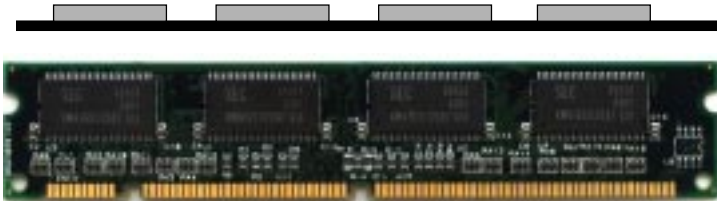
Single Sided DIMM
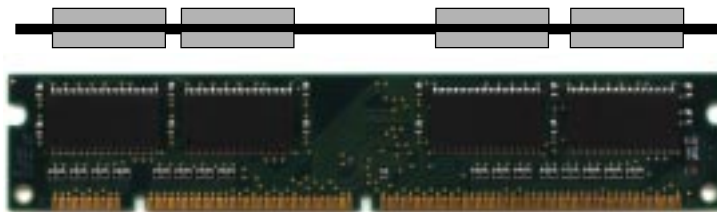
Double Sided DIMM

1. The DIMM slot has two keys marked "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
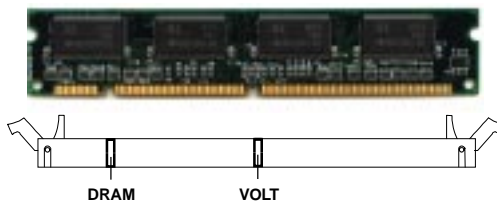
3. The plastic clip at the side of the DIMM slot will automatically close.

2.2-3 Memory Population Rules

1. This mainboard supports Table Free memory, so memory can be installed in DIMM1 or DIMM2 in any order.

2. Use only 3.3v unbuffered DIMM.

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

4. Using 100MHz CPU Bus frequency, only PC100 DIMM is supported.

Table 2.2-1 EDO DRAM 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	SYMM	10	10	8MBx4	16MBx8
	1Mx16	ASYM	12	8	8MBx4	16MBx8
	2Mx8	ASYM	11	10	16MBx8	32MBx16
	2Mx8	ASYM	12	9	16MBx8	32MBx16
	4Mx4	SYMM	11	11	32MBx16	64MBx32
	4Mx4	ASYM	12	10	32MBx16	64MBx32
64M	2Mx32	ASYM	11	10	16MBx2	32MBx4
	2Mx32	ASYM	12	9	16MBx2	32MBx4
	2Mx32	ASYM	13	8	16MBx2	32MBx4
	4Mx16	SYMM	11	11	32MBx4	64MBx8
	4Mx16	ASYM	12	10	32MBx4	64MBx8
	8Mx8	ASYM	12	11	64MBx8	128MBx16

Table 2.2-2 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
	4Mx4	ASYM	11	10	32MB	64MB
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
	16Mx4	ASYM	13	10	128MB	256MB
64M	2Mx32	ASYM	11	8		
	4Mx16	ASYM	12	8		
	8Mx8	ASYM	12	9		
	16Mx4	ASYM	12	10		

2.3 Case Connector: JFP1

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

JFP1
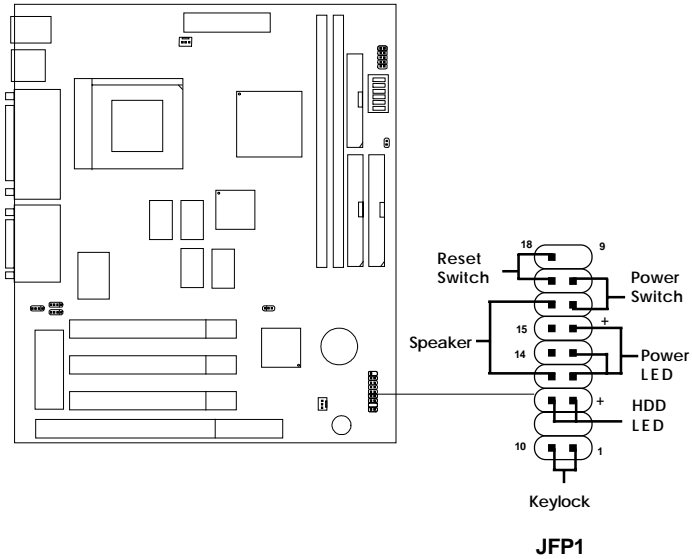
2.3-1 Power Switch

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

2.3-2 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.

2.3-3 Keylock

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

2.3-4 Power LED

The Power LED is always lit while the system power is on. You can connect the Power LED from the system case to this pin.

2.3-5 Speaker

Speaker from the system case is connected to this pin.

2.3-6 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 Floppy Disk Connector: FDD

The mainboard also provides a standard floppy disk connector, FDD supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.
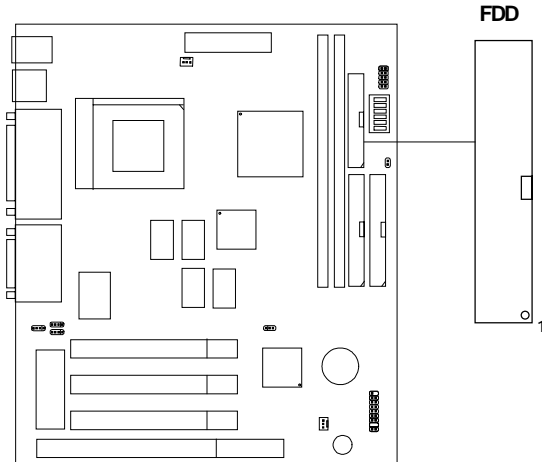
2.5 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides
two HDD connectors IDE1 (Primary) and IDE2 (Secondary). You can
connect up to four hard disk drives, CD-ROM, 120MB Floppy and other
devices to IDE1 and IDE2.
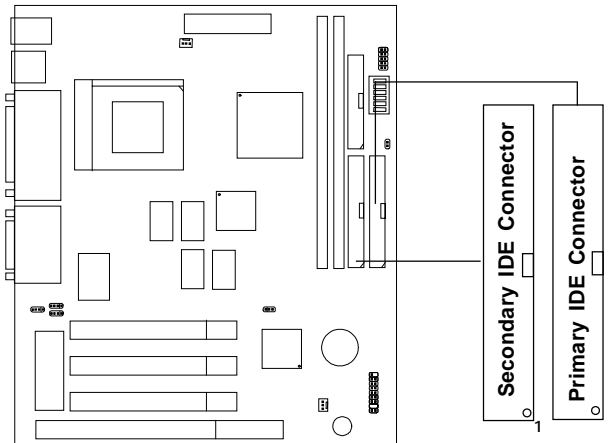
IDE1(Primary IDE Connector)

   The first hard disk should always be connected to IDE1. IDE1
   can connect a Master and a Slave drive.

IDE2(Secondary IDE Connector)

   IDE2 can connect a Master and a Slave drive.

2.6 ATX 20-pin Power Connector: JWR1

This type of connector already supports the remote ON/OFF function. However, you need to connect the **Remote Power On/OFF switch (JRMS1)**.

**ATX
Power Connector**
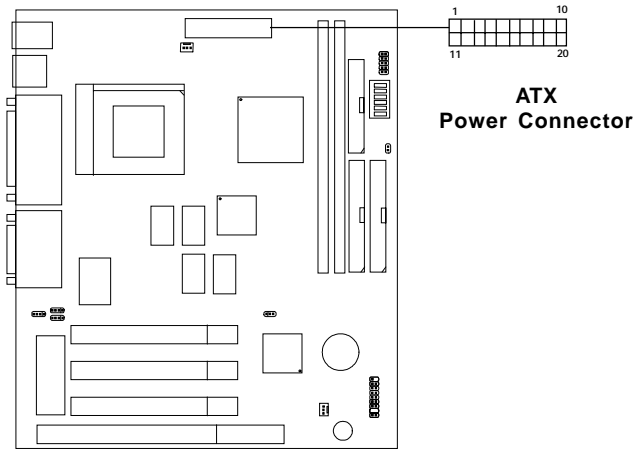
PIN DEFINITION

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.

2.7 Serial Port Connector: COM A

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
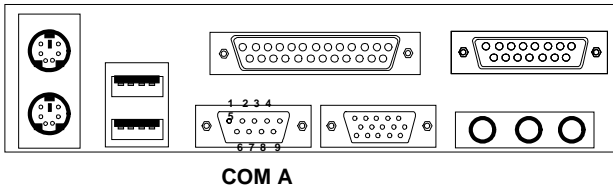
Serial Ports (9-pin Male)

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)

2.8 VGA DB 15 Pin Connector

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

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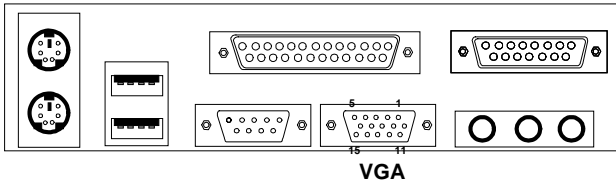
Analog Video Display Connector(DB15-S)	
Pin	Signal Description
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

2.9 Parallel Port Connector: LPT

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)

L P T
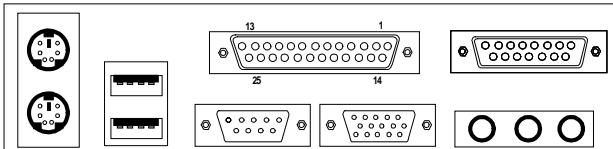
PIN DEFINITION

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		

2.10 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:
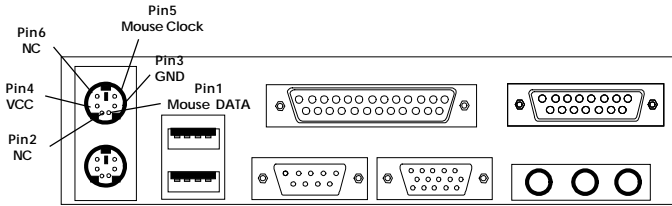
PS/2 Mouse (6-pin Female)

2.11 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.
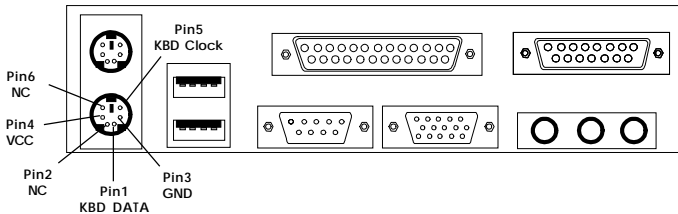
PS/2 Keyboard (6-pin Female)

2.12 Joystick/Midi Connector

You can connect joystick or game pads to this connector.

Joystick/MIDI
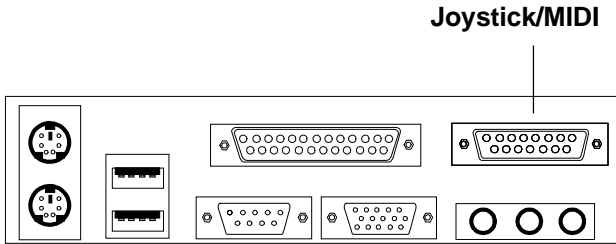
2.13 Audio Port Connectors

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.

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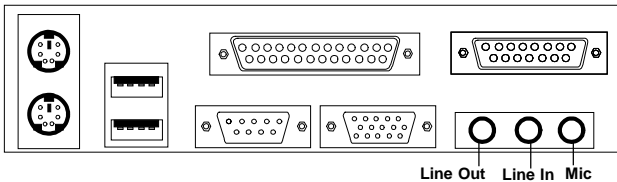
1/8" Stereo Audio Connectors

2.14 USB Connectors

The mainboard provides a **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 2

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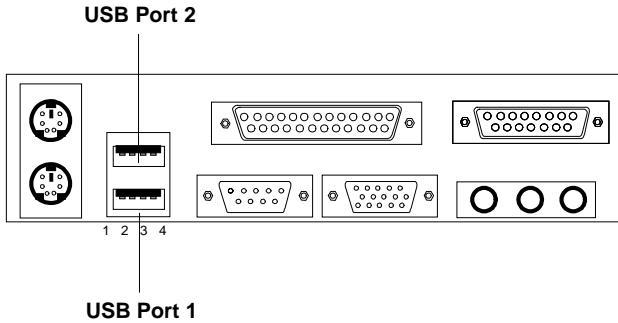
PIN	SIGNAL
1	VCC
2	-Data0
3	+Data0
4	GND

2.15 Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. If you use the on-board battery, you must short 1-2 pins of JBAT1 to keep the CMOS data.

JBAT1
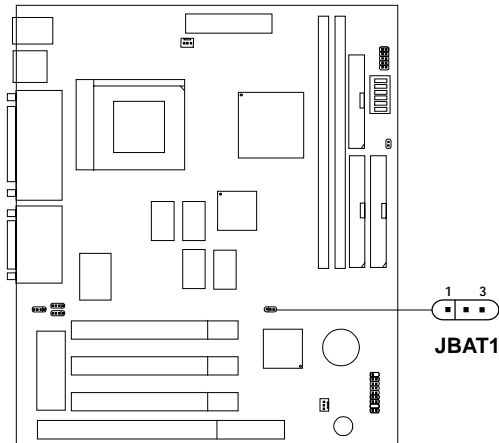
Note: You can clear CMOS by shorting 2-3 pin, while the system is off. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard. Always unplug the power cord from the socket wall.

2.16 CD Line-In: JCD1

The mainboard provides CD Line-in connector to let you connect to the cable provided by the CD-ROM.
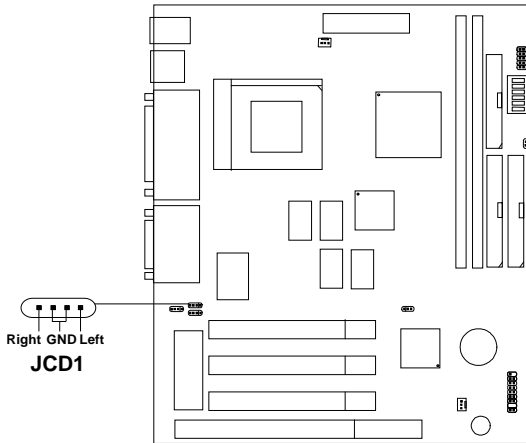
2.17 Audio Auxiliary Connector: JAUX1

Connect the audio cable provided by the CD, TV Tuner, or etc. into this connector.

Right GND Left

JAUX1
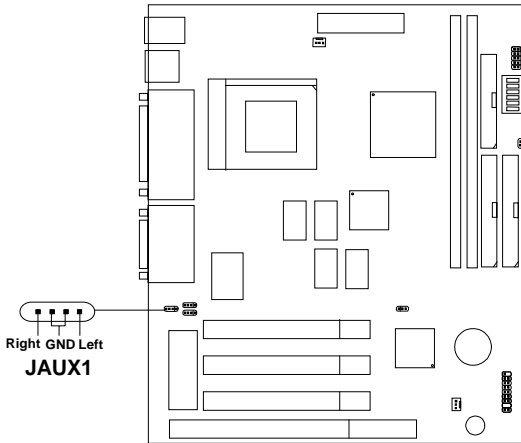
2.18 Internal Voice Modem Connector: JTAD1

This connector is for Internal Modem Card with internal voice connector.

Phone GND Mono-out

JTAD1
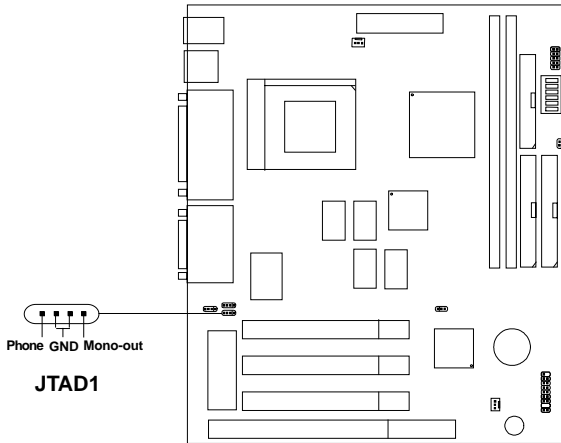
Chapter 3

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.
AR5191MS VXXX XXXXXX
Main Processor: XXXXX
Processor Clock: XXXMHz

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  1.20
 (C)  1998  American  Megatrends,  Inc.  All  Rights
                    Reserved

                 Standard  CMOS  Setup
                 Advanced  CMOS  Setup
                Advanced  Chipset  Setup
                Power  Management  Setup
                   Peripheral  Setup
                Auto-Detect  Hard  Disks
                 Change  User  Password
              Change  Supervisor  Password
      Auto  Configuration  with  Optimal  Settings
     Auto  Configuration  with  Fail  Safe  Settings
                Save  Settings  and  Exit
                  Exit  without  Saving




     Standard CMOS setup for changing time, hard disk type, 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 3.6 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)1998  American  Megatrends,Inc.All  Rights  Reserved

    Date (mm/dd/yyyy):     Fri Feb 27, 1998
    Time (hh/mm/ss):       17:09:25

    Floppy Drive A:        1.44 MB 3 1/2
    Floppy Drive B:        Not Installed
                                                    LBA   Blk   PIO   32Bit
                Type  Size  Cyln  Head  WPcom Sec   Mode  Mode  Mode  Mode
    Pri Master :Auto                                                  ON
    Pri Slave  :Auto                                                  ON
    Sec Master :Auto                                                  ON
    Sec Slave  :Auto                                                  ON

    Boot  Sector  Virus  Protection   Disabled


    Month    : Jan-Dec                        ESC:Exit :Sel
    Day      : 01-31                          PgUp/PgDn:Modify
    Year     : 1901-2099                      F2/F3: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)  1998  American  Megatrends,  Inc.  All  Rights
                        Reserved
1st Boot Device              FLOPPY        Available  Options:
2nd Boot Device              IDE-0         Disabled
3rd Boot Device              LS120/ZIP     IDE0
4th Boot Device              Disabled      IDE1
Boot Num-lock                On            IDE2
Floppy Drive Swap            Disabled      IDE3
Floppy Drive Seek            Enabled       Floppy
Floppy Access Control        Normal        ARMD-FDD
Typematic Control            Normal        ARMD-HDD
Password Check               Setup         CDROM
External Cache               Enabled       SCSI
System BIOS Cacheable        Disabled      Network
Video BIOS Shadow            Enabled




                                           ESC:Exit  :Sel
                                           PgUp/PgDn:Modify
                                           F2/F3: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 Advanced CMOS Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

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.
Floppy	The system will boot from Floppy drive.
ARMD-FDD	The system will boot from IOMEGA drive.
ARMD-HDD	The systm will boot from LS-120 drive.
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.

Boot 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 flopppy drives A: and B: are swapped. The settings are Enabled and Disabled. The Optimal and Fail-Safe default setting is Disabled.

Floppy Drive Seek

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 setting is Enabled.

Floppy Access Control

This option sets the Floppy to Read-only or Normal. The default value is Normal.

Typematic Control

Key strokes repeat at a rate determined by the keyboard controller. When in normal mode, the typematic rate and typematic delay can be selected. The default setting is Normal.

Password Check

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

External Cache

This option enables the level 2 cache memory. Choose Enabled or Disabled.

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.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM for faster execution. Video shadow will increase the video performance.

Enabled(default)	Video shadow is enabled
Disabled	Video shadow 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) 1998 American Megatrends, Inc. All Rights
                      Reserved

USB  Function                 Enabled      Available  Options:
USB  Legacy Support           Disabled       Disabled
DRAM  Timing                  Normal         Enabled
SDRAM CAS Latency             Auto
SDRAM Burst X-1-1-1-1-1-1-1   Enabled
Graphics  Aperture  Size      64
Primary Frame Buffer          Enabled
VGA Frame Buffer              Enabled
   Data Merge                 Disabled
Passive  Release              Disabled
ISA  Line  Buffer             Enabled
Delay  Transaction            Disabled
AT Bus Clock                  Auto
AMD K6 Write Allocation       Disabled
Memory  Hole                  Disabled
Onboard  Sound  Chip          Enabled




                                           ESC:Exit :Sel
                                           PgUp/PgDn:Modify
                                           F2/F3: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 Advanced Chipset Setup, press <ESC> to go back to the main menu.

Description of the item on screen are as follows:

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

USB Keyboard Legacy Support
Set this option to Enable or Disable USB keyboard/mouse.
The Optional and Fail-Safe default settings are Disabled.

DRAM Timing
Choose DRAM timing for customize setup.

SDRAM CAS Latency
This option determines the CAS latency time parameter of SDRAM.
The settings are 2 clks or 3 clks.

SDRAM Burst X-1-1-1-1-1-1-1
During Enabled, this will improve the SDRAM module burst
function. Some SDRAM module doesn't support this function, so this must
be set to Disabled.

Graphics Aperture Size
This option determines the effective size of the graphics aperture
used in the particular configuration. The AGP aperture is memory-mapped,
while graphics data structure can reside in a graphics aperture. The aperture
range should be programmed as non cacheable in the processor cache,
access with the aperture range are forwarded to the main memory, then
translated to 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.

Primary Frame Buffer

The processor provides a write-combining with buffering strategy for write operation. This is useful for frame buffering. Writing to USWC memory can be buffered and combined in the processor's write-combining buffer (WCB). The WCBs are viewed as a special purpose outgoing write buffers, rather than a cache. The WCBs are written into memory to allocate a different address, or after executing a serializing, locked, or I/O instructions.

During Enabled, this will enable the processor memory location C000 and DFFF segment as USWC memory type.

VGA Frame Buffer

The processor provides a write-combining with buffering strategy for write operation. This is useful for frame buffering. Writing to USWC memory can be buffered and combined in the processors write-combining buffer (WCB). The WCBs are viewed as a special purpose outgoing write buffers, rather than a cache. The WCBs are written into memory to allocate a different address. or after executing a serializing, locked, or I/O instructions.

During Enabled, this will enable the processor memory location A000 and B000 segment as USWC memory type.

Data Merge

During Enabled, this will use the Burst Cycle for Data Transfer. The default setting is Disabled.

Passive Release

During Enabled, this will allow the chipset to use passive release while transferring control information or data for transaction. During Disabled, chipset will perform PCI accesses without using passive release.

ISA Line Buffer

When an ISA/DMA master reads from the PCI memory, the M1543 chipset prefetches 8 bytes of data into the line buffer. Default setting is Enabled.

Delay Transaction

During Enabled, the chipset delay transaction mechanism is enabled when the chipset is the target of a PCI transaction. A read cycle from Host to PCI is immediately retrieved due to any pending PCI to DRAM cycle. During Disabled, a read cycle from the Host to PCI is waited until time-out due to any pending PCI to DRAM cycle.

AT Bus Clock

This is used to set the ISA Bus Clock Frequencies.

AMD K6 Write Allocation

During Enable, this item will affect the L1 Cache Hit Rate, which will change the performance of some application software.

Memory Hole

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements. The settings are: Enabled and Disabled.

Onboard Sound Chip

Choosing Enabled will allow the system to use the onboard sound. Choose Disabled, when using add-on sound card.

3.5 Power Management Setup

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

```
        AMIBIOS  SETUP  -  POWER  MANAGEMENT  SETUP
      (C)  1998  American  Megatrends,  Inc.  All  Rights
                          Reserved

Power  Management / APM         Enabled      Available  Options:
Green  Monitor  Power  State    Off          Disabled
Video  Power  Down  Mode        Stand By     Enabled
Hard Disk Power  Down  Mode     Disabled
Standby  Time  Out              Disabled
Suspend  Time  Out              Disabled
Power  Button  Function         Soft Off
Ring/LAN  Resume                Disabled
MODEM  Use  IRQ                 4
RTC  Alarm  Resume              Disabled
RTC  Alarm  Date                Disabled
RTC  Alarm  Hour                12
RTC  Alarm  Minute              30
RTC  Alarm  Second              00




                                             ESC:Exit  :Sel
                                             PgUp/PgDn:Modify
                                             F2/F3: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 Power Management Setup, press <ESC> to go back to the main menu.

Description of the item on screen are as follows:

Power Management/APM

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

Green Monitor Power State

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

Video Power Down Mode

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

Hard Disk Power Down Mode

This option will specify 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 Disabled.

Standby Time Out

This option specify the length of a period system inactivity while in Full power on state. When this length of time expires, the computer enters Standby 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. The Optimal and Fail-Safe default settings is Disabled.

Suspend Time Out

This option specifies the length of a period 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. The Optimal and Fail-Safe default settings is Disabled.

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.

Ring/LAN Resume

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

Modem Use IRQ

This indicates which IRQ no. will be used by the Modem (if there is a Modem).

RTC Alarm Resume

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.

3.6 Peripheral Setup

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

```
        AMIBIOS  SETUP  -  PERIPHERAL  SETUP
   (C) 1998 American Megatrends, Inc. All Rights
                      Reserved
OnBoard FDC                    Enabled    Available  Options:
OnBoard Serial Port1           3F8/COM1   Enabled
OnBoard Serial Port2           2F8/COM2   Disabled
Onboard Serial Port3           Disabled
OnBoard Parallel Port          378H
  Serial Port3 Mode            N/A
  Serial Port3 IRQ             N/A
  Serial Port3 DMA             N/A
  IR Transceiver Module Type   N/A
  IR Half-Duplex Mode          N/A
Onboard Parallel Port          378h
  Parallel Port Mode           Normal
  EPP Version                  N/A
  Parallel Port IRQ            7
  Parallel Port DMA Channel    N/A
Keyboard PowerOn               Enabled
Poweron Select                 Power
Onboard IDE                    Both
CDROM Dual Mode                Normal

                                          ESC:Exit  :Sel
                                          PgUp/PgDn:Modify
                                          F2/F3: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 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 1/Onboard Serial Port 2

Choose Auto, 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.*

Onboard Parallel Port

Choose Auto, for the BIOS to automatically assign the 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.*

EPP Version

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

Parallel Port Mode

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

Parallel Port IRQ

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

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

Parallel Port DMA Channel

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

Keyboard Power On

This function allows you to Enabled or Disabled the Keyboard Power On.

PowerOn Select

This function allows you to select the item to power on the system.

Onboard IDE

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

CDROM Dual Mode

Set this option to Normal or Turbo.

Chapter 4

ALi® IDE DRIVER

1. Overview

The on-chip IDE controller supports two separate IDE controllers for up to 4 IDE devices providing an interface for IDE hard disks and CD-ROMS. The Ultra DMA specification (which supports the 33M bytes per second transfer rate) has been implemented in this IDE controller. The ATA bus pins & the smart deep Buffer (16 x 32-bit Read Ahead and Posted Write) are all dedicated for separate channel to improve the reliability and the performance of IDE Master. Dedicated Pins and Buffers are also the best implementation for today's concurrent OS and application to reduce overhead and achieve the best performance. The IDE controller also supports Tri-state IDE signals for Swap Bay support.

2. ALi IDE Driver Setup & Usage Procedures

2.1 Windows® 95/98

2.1-1 ALi IDE Driver Installation Procedure:

Step 1: Click on "ALi IDE Driver" icon.
Step 2: This will show an ALi IDE Driver installation menu.
Step 3: Click on "Next".
Step 4: Click on "Next" to install ALi PCI Bus Master IDE Driver.
Step 5: This will copy the ALi IDE driver into the hard drive.
Step 6: A message will appear stating you must restart the Windows® 95/95 system, select **OK** to restart.
Step 7: After restarting, Windows® 95/98 will show a new display setting.

Chapter 5

ATI® RAGE PRO TURBO VGA DRIVER

1. Overview

The ATI® RAGE PRO TURBO is a highly integrated graphics controller. Incorporated within this single chip are the 2D, 3D, and video accelerators, palette DAC, and dual-clock synthesizer. This multi-function integrated controller delivers TV-quality scaled video optimized for MPEG playback, industry-leading mach64 2D performance.

1.1 ATI® RAGE PRO TURBO Features

- Support 8M SDRAM for 100MHz.
- Support AGP 2X BUS Up to 133MHz.
- Stunningly fast 2D and 3D performance, achieved through 128-bit engine and advanced 3D architecture
- An enhanced 3D feature with the addition of a 32-bit Z-buffer and an OpenGL stencil buffer, together with improvements in edge anti-aliasing, texture compositing, subpixel/subtexel acuracy, and Z-based fog.
- Enhanced multimedia functionality through a video port that supports AMC.

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

Monitor	VGA Support, mimimum 640x480 resolu tion
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

2. ATI® Rage PRO TURBO 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. Also included are MSI Utility, Adobe Acrobat, Remote Control Utility, and PC-Cillin 98. Just click the button for automatic installation for ATI Rage Pro Turbo VGA driver.

2.1 Windows® 95/98

If you start Windows® 95/98, 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 ALi AGP 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 "ALi AGP Driver" icon.

Step 4:   This will show an ALi AGP Driver installation menu.

Step 5:   Click on "Next".

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 **OK** to restart.

Step 9: After restarting, Windows® 95/98 will show a new display setting.

2.1-2 Microsoft DirectX6 Installation Procedure:

Step 1: Click on "Microsoft "DirectX6" icon.

Step 2: This will show a Micrososft DirectX6 installation menu

Step 3: Click on "Yes" to continue.

Step 4: This will copy the Microsoft DirectX6 into the hard drive.

Step 5: A message will appear stating you must restart the Windows® 95/98 system, select **OK** to restart.

Step 6: After restarting, Windows® 95/98 will show a new display setting.

2.1-3 ATI Rage Pro Turbo VGA Installation Procedure:

Step 1: Click on "ATI Rage Pro VGA Drivers" icon.

Step 2: This will show an ATI Rage Pro Turbo VGA Drivers installation menu

Step 3: Click on "Next" to continue.

Step 4: A Licence Agreement will be shown in the screen.

Step 5: Click on "Yes" to continue.

Step 6: A message will appear stating you must restart the Windows® 95/95 system, select **Finish** to restart.

Step 7: After restarting, Windows® 95/98 will show a new display setting.

2.1-4 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 16 color, 256 color, Hi color, or True color.

Step 5: Select desktop resolution from 640x480, 800x600, 1024x768, and 1280x1024.

Step 6: Select Refresh rate list box to change the screen refresh rate.

Step 7: Click OK or Apply.

2.2 Windows® NT 4.0

You need to install Windows® NT "Service Pack", 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 :**\VGAATI\NT40\ati.inf**.
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.

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 16 color, 256 color,
               32768 colors, 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, to 1280x1024.
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.**

Chapter 6

CREATIVE® 1373 AUDIO DRIVER

1. Overview

The Creative® 1373 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.

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® 1373

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. Also
included are Intel® PIIX4 patch for Windows® 95, PC-cillin 98, and
Bus Master driver. Just click the button for automatic installation for
audio driver.

2.1 Windows® 95/98

If you start Windows® 95/98, 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"sound drivers 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 system, select **yes** to restart.

Note: You must install Audio Driver before installing USB support.

2.2 Windows® NT 4.0

2.2-1 Audio Driver Installation Procedure:
Step 1: Click **Start** menu and select **Control Panel** from **Settings** group.
Step 2: Select **Multimedia** icon.
Step 3: Click on the **Devices** tab.
Step 4: Click **Add**.
Step 5: Double click on **Unlisted or Updated Driver** in the list.
Step 6: Insert the **CD-ROM Disk** into the CD-ROM Drive.
Step 7: When the Install from Disk dialog box appears, look for your CD-ROM drive :**Sound\Creative\ AudioPCI\Drivers\ NT40 \English\I386\CD**
Step 8: Click **OK**.
Step 9: Click **OK**.
Step 10: A message will appear stating that the drivers were succesfully installed. Click OK. You must now restart Windows® NT 4.0.

2.3 Detailed User's Manual

The detailed user's manual can be found on following path of the CD-ROM provided:

PATH: Sound\Creative\AudioPCI\Docs\Manual.doc