Chapter 1

INTRODUCTION

The 694D PRO (MS-6321) ATX mainboard is a high-performance computer mainboard based on VIA® VT82C694X chipset. The 694D PRO is designed for Intel® Pentium® III (FC-PGA) processor for cost-effective business/personal desktop markets.

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

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

1.1 Mainboard Features

CPU
- Support dual Intel® Pentium® III(FC-PGA) processor.
- Supports 533MHz, 566MHz, 600MHz, 667MHz, 700MHz, 733MHz, 800MHz, 866MHz, and 933MHz .

Chipset
- VIA® 694X chipset. (510 BGA)
  - FSB @133MHz
  - AGP 4x and PCI plus Advanced ECC Memory Controller
  - Support PC100/133 SDRAM & VCM technology
- VIA® VT82C686A chipset. (352 BGA)
  - Advanced Power Management Features
  - DirectSound AC97 Audio
  - Dual bus Master IDE Ultra DMA 33/66
- 1394 PHY Controller (optional)
  - TI® TSB41LV02 PHY Digital-to-Analog Transceiver
  - Support up to Two 1394/1394A v 2.0 Compatible Data Channels
- 1394 Link Layer Controller (optional)
  - TI® TSB12LV26 1394 Link Layer Host Controller
  - IEEE 1394, 1394 OHCI v1.0 & 1394A v2.0 compatible
  - Supports 100/200/400 Mbps High Throughput
  - 3.3V & 5V Operation for PCI-to 1394 Interface
- Promise ATA100
  - Dual bus master IDE Ultra DMA/ATA 100
  - up to 133MB/sec burst transfer rate (through PCI Bus)

Clock Generator
- 66.6MHz, 100MHz and 133Mhz clocks are supported.

Main Memory
- Support eight memory banks using four 168-pin unbuffered DIMM.
- Support a maximum memory size of 2.0GB.
- Support ECC(1-bit Error Code Correct) function.
- Support 3.3V SDRAM DIMM.

Slots
- One AGP 4x(Accelerated Graphics Port) slot.
    - AGP specification compliant
    - AGP 66/133MHz 3.3V device support
- One CNR(Communication Network Riser) slot which support Modem only.
- Five 32-bit Master PCI Bus slots.
- Supports 3.3V/5V PCI bus Interface.

On-Board IDE
- An IDE controller on the VIA® VT82C686A Chipset provides IDE HDD/ CD-ROM with PIO, Bus Master and Ultra DMA 33/66 operation modes.
- Can connect up to eight IDE devices. (If Promise ATA100 driver is installed)
    - 4 Ultra DMA100 + 4 Ultra DMA33/66

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/HP connector for HPSIR.

Audio
- Chip integrated

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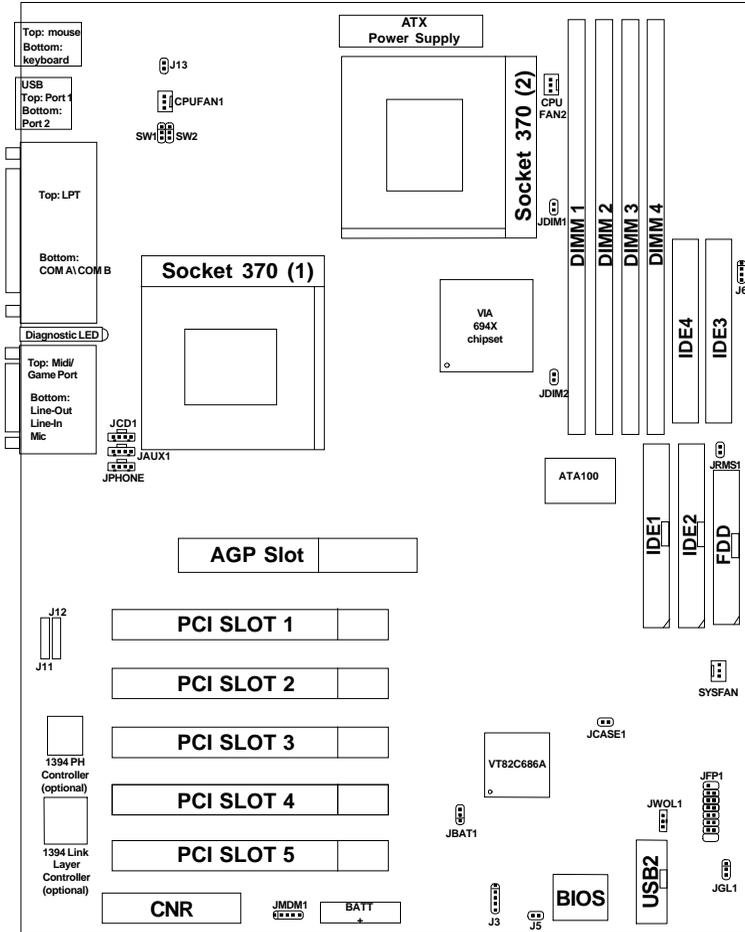
Dimension
- ATX Form Factor

Mounting
- 9 mounting holes.

1.2 Mainboard Layout

Top: mouse
Bottom: keyboard

USB
Top: Port 1
Bottom: Port 2

Top: LPT

Bottom: COM A\COM B

Diagnostic LED

Top: Midi/ Game Port

Bottom: Line-Out Line-In Mic

J13

CPUFAN1

SW1 SW2

Socket 370 (1)

JCD1

JAUX1

JPHONE

ATX Power Supply

Socket 370 (2)

CPU FAN2

JDIM1

DIMM 1

DIMM 2

DIMM 3

DIMM 4

VIA 694X chipset

JDIM2

ATA100

AGP Slot

PCI SLOT 1

PCI SLOT 2

PCI SLOT 3

PCI SLOT 4

PCI SLOT 5

CNR

J12

J11

1394 PH Controller (optional)

1394 Link Layer Controller (optional)

JMDM1

BATT

IDE4

IDE3

J6

JRMS1

IDE1

IDE2

FDD

SYSFAN

JCASE1

VT82C686A

JFP1

JWOL1

JBAT1

USB2

BIOS

J3

J5

JGL1

694D PRO (MS-6321) ATX Mainboard

Chapter 2

HARDWARE INSTALLATION

2.1 Central Processing Unit: CPU

The mainboard operates with **Intel® Pentium® III (FC-PGA) processor.** The mainboard uses a CPU socket called Socket 370 for easy CPU installation. The CPU should always have a Heat Sink and a cooling fan attached to prevent overheating.

2.1-1 CPU Installation Procedures

1. Pull the lever sideways away from the socket. Then, raise the lever up to a 90-degree angle.

2. Locate Pin 1 in the socket and look for the white dot or cut edge in the CPU. Match Pin 1 with the white dot/cut edge. Then, insert the CPU. It should insert easily.

3. Press the lever down to complete the installation.
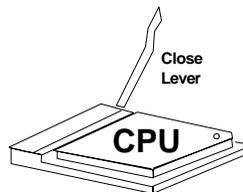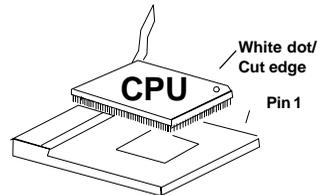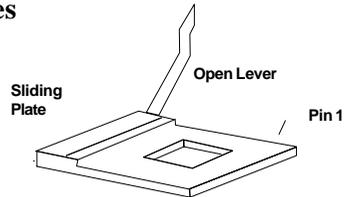
2.1-2 CPU Core Speed Derivation Procedure

The BIOS can be used to set the CPU Host Bus Frequency Clock.

If	<u>CPU Clock</u>	= 66MHz
	<u>Core/Bus ratio</u>	= 3.5
then	<u>CPU core speed</u>	= <u>Host Clock</u> x <u>Core/Bus ratio</u>
		= 66MHz x 3.5
		= 233MHz

2.1-3 CPU Speed Setting: SW1/SW2

To adjust the speed of the CPU, you must know the specification of your CPU (*always ask the vendor for CPU specification*). The mainboard can auto-detect between 66, 100 or 133MHz CPU Bus Frequency.
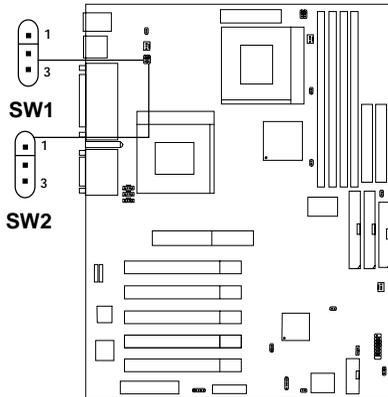
SW2	SW1	Function
1-2	1-2	Auto
1-2	Null	$66.6 \rightarrow 100$ MHz
Null	1-2	$100 \rightarrow 133$ MHz
2-3	1-2	$133 \rightarrow 100$ MHz
2-3	2-3	$133 \rightarrow 66.6$ MHz $100 \rightarrow 66.6$ MHz

2.1-4 Dual Processor or Single Processor Installation

Intel® Pentium III processor has termination circuitry for the processor's AGTL+ bus. In a two processor platform, each end of the bus must be properly terminated, whether or not both processor socket locations have processors installed. The 694DPro has implemented 2 methods to meet Intel® Design guide. Please check onboard AGTL+ bus terminator resistor support at location (1). If there's no onboard AGTL+ Bus Terminator Resistor, users should get PGA 370 bus terminator card (MS-6916) from MSI to plug into CPU 2.

Onboard AGTL+ Bus Terminator Resistor

AGTL+ Bus Terminator Location (1)

PGA 370 Bus Terminator Card (MS-6916)
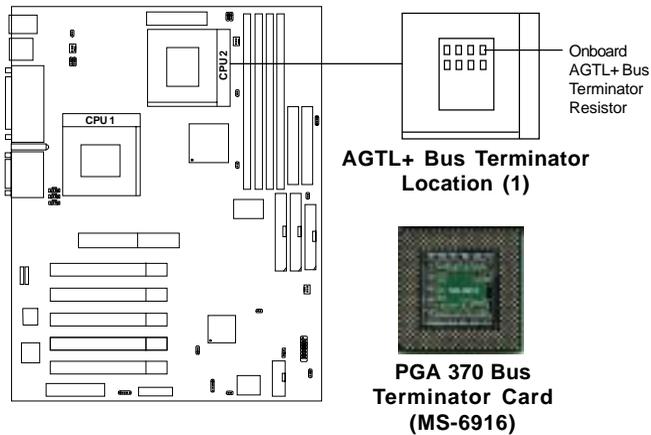
Processor	Function
Dual Processor	**CPU 1 + CPU 2**
Single Processor	**CPU 1 + PGA 370 Bus Terminator Card (CPU 2) or** **CPU 1 + Onboard AGTL+ Bus Terminator Resistor (located inside CPU 2)**

2.1-5 Fan Power Connectors: CPUFAN1/CPUFAN2/SYSFAN

These connectors support system cooling fan with + 12V. It supports three pin head connector.   When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard has System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of this function.
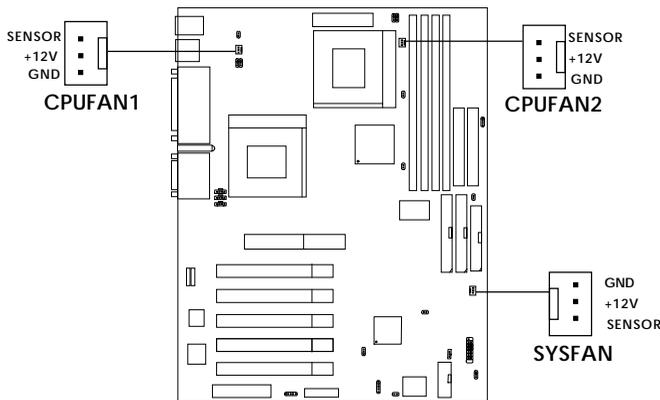
CPUFAN1: Processor Fan 1
CPUFAN2: Processor Fan 2
SYSFAN: System Fan (Non speed report)

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

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

2.2 Clear CMOS Jumper: JBAT1

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

JBAT1
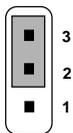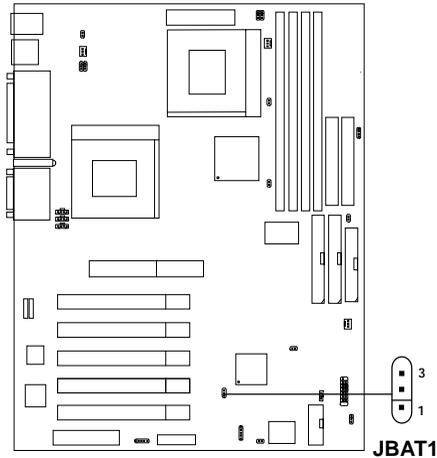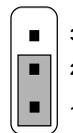
Clear Data   **Keep Data**

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

2.3 Memory Installation

2.3-1   Memory Bank Configuration

The mainboard supports a maximum memory size of 512MB (8M x 8) or 1G (16M x 4) registered DIMM for SDRAM: It provides four 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 256 Mbytes DIMM memory module.

WARNING!
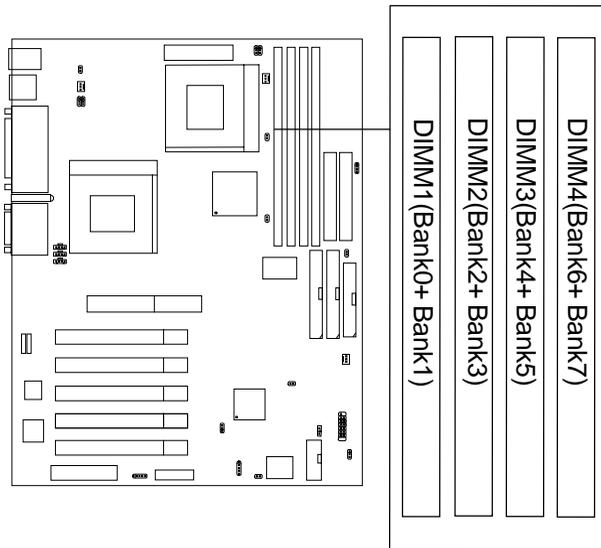
There are three kinds of DIMM specification supported by this mainboard: PC133, PC100 and PC66. If you use 66MHz CPU Bus Frequency, these four DIMM Specs. is supported. If you use 100 MHz CPU Bus Frequency, only PC100 DIMM Specs. is supported.If you use 133 MHz CPU Bus Frequency, only PC133 DIMM Specs. is supported.

2.3-2   Memory Installation Procedures

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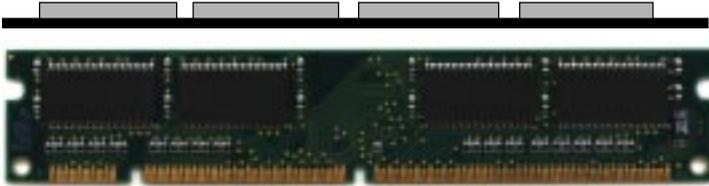
Single Sided DIMM
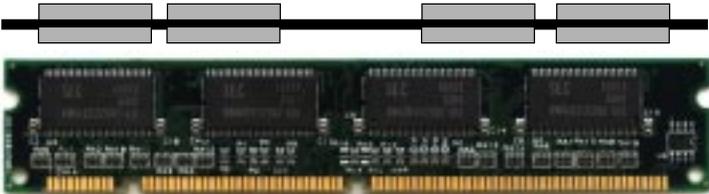
Double Sided DIMM

1. The DIMM slot has 2 Notch Keys "VOLT and DRAM", so the DIMM memory module can only fit in one direction.

2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.

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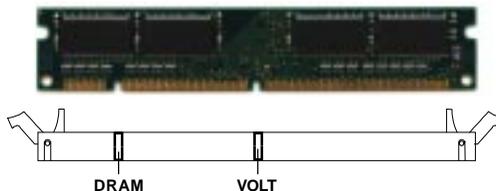
3. The plastic clip at the side of the DIMM slot will automatically close.

2.3-3 Memory Population Rules

1. Supports only SDRAM DIMM.

2. To operate properly, at least one 168-pin DIMM module must be installed.

3. This mainboard supports Table Free memory, so memory can be installed on DIMM1, DIMM 2, DIMM 3 or DIMM 4 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
	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	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB

2.4 Case Connector: JFP1

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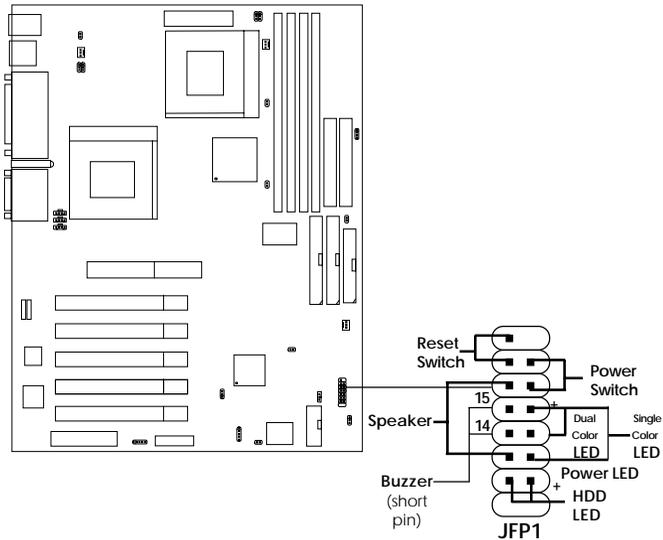
2.4-1 Power Switch

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

2.4-2 Reset Switch

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

2.4-3 Power LED

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

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

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

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

          ORANGE Color: Indicate the system is in suspend mode.

2.4-4 Speaker

Speaker from the system case is connected to this pin.

If on-board Buzzer is available:

Short pin 14-15:   On-board Buzzer Enabled.

Open pin 14-15:   On-board Buzzer Disabled.

2.4-5 HDD LED

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

2.5 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.
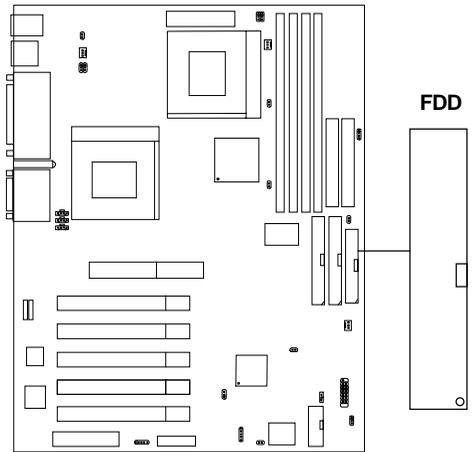
2.6 Hard Disk Connectors: IDE1, IDE2, IDE3 & IDE4

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA function. It has four HDD connectors IDE1 (primary), IDE2 (secondary), IDE3 and IDE4. You can connect up to eight hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1, IDE2, IDE3 and IDE4. These connectors support the provided IDE hard disk cable.
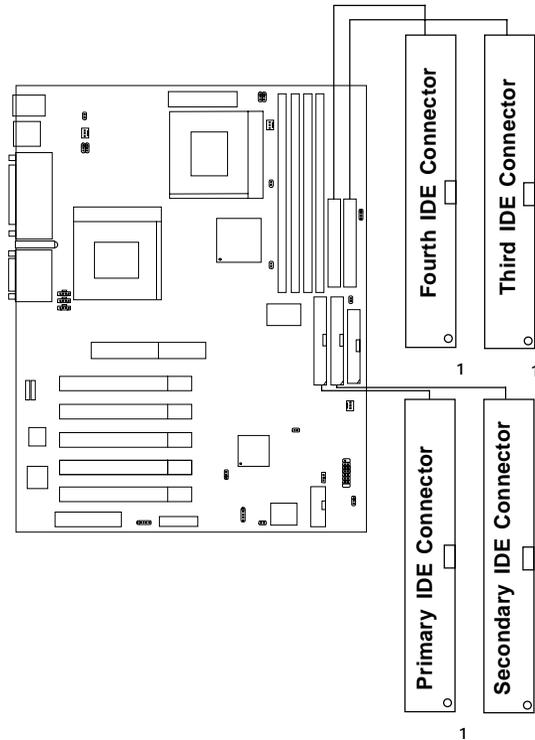
IDE1 (Primary IDE Connector)

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.

IDE3 (Third IDE Connector)

ATA100(1) can also connect a Master and a Slave drive.

IDE4 (Fourth IDE Connector)

ATA100(2) can also connect a Master and a Slave drive.

2.7 Power Supply

2.7-1 ATX 20-pin Power Connector: JWR1

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

ATX Power Connector
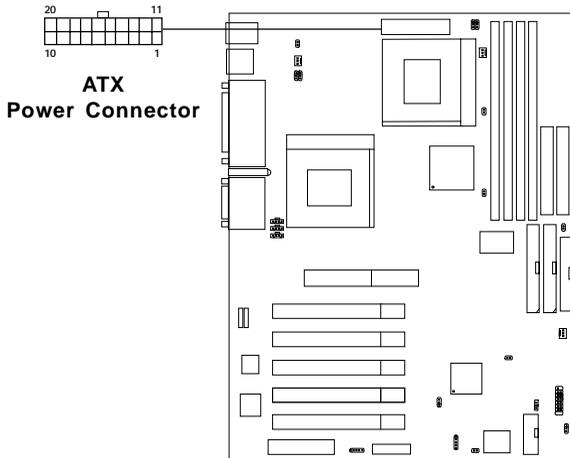
PIN DEFINITION

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.

2.7-2   Remote Power On/Off Switch: JRMS1

Connect to a 2-pin push button switch. During OFF state, press once and the system turns on. **During ON stage, push once and the system goes to sleep mode: pushing it more than 4 seconds will change its status from ON to OFF**. If you want to change the setup, you could go to the BIOS Power Management Setup. This is only used for ATX type power supply.

JRMS1
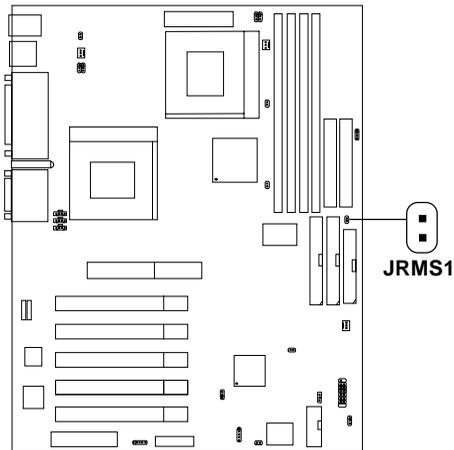
2.8 HP Infrared Module Connector: J3

The mainboard provides one infrared (J3) 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.
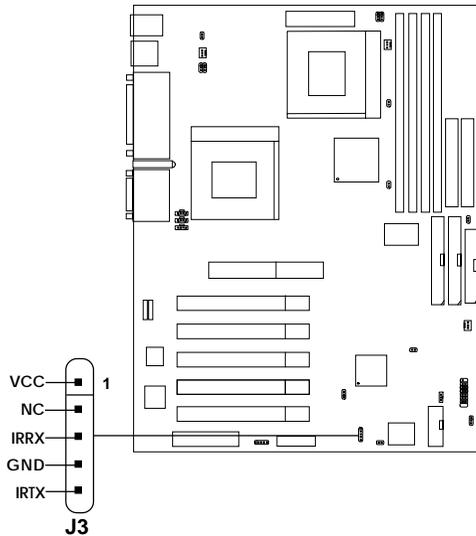
2.9 Serial Port Connectors: COM A and COM B

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

COM A   **COM B**
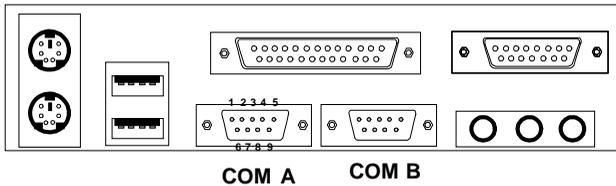
Serial Port (9-pin Male)

PIN DEFINITION

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

2.10 Parallel Port Connector: LPT1

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

Parallel Port (25-pin Female)

LPT 1
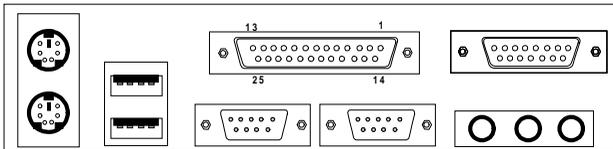
PIN DEFINITION

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

2.11 Mouse Connector: JKBMS1

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:
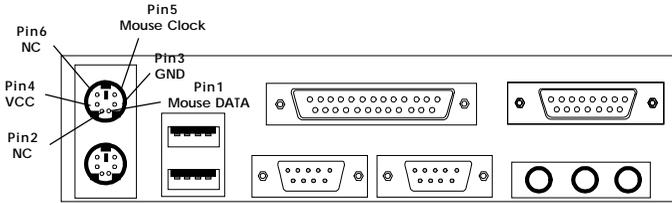
PS/2 Mouse (6-pin Female)

2.12 Keyboard Connector: JKBMS1

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.
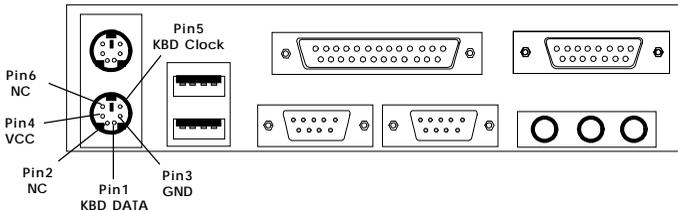
PS/2 Keyboard (6-pin Female)

2.13 Joystick/Midi Connectors

You can connect joystick or game pad to this connector.

Joystick/MIDI
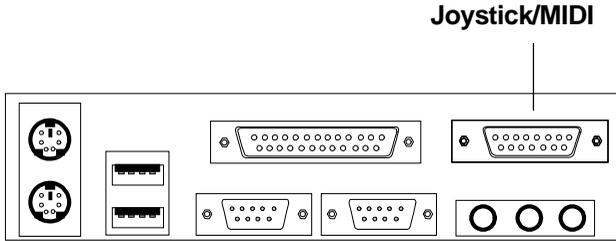
2.14 Audio Port Connectors

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

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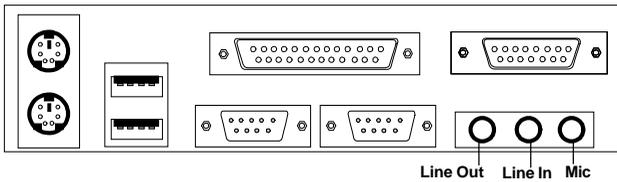
1/8" Stereo Audio Connectors

2.15 USB Connectors

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

USB Port 2

1 2 3 4

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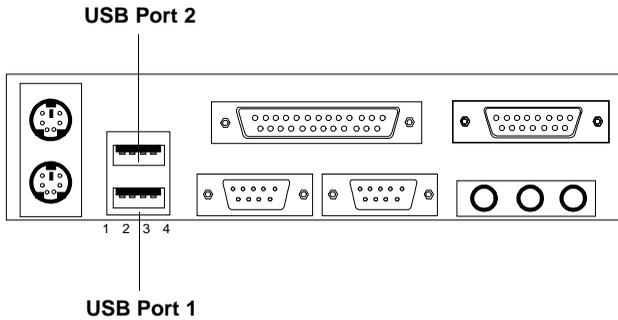
PIN	SIGNAL
1	VCC
2	-Data
3	+Data
4	GND

2.16 Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is for use with LAN add-on cards that supports
Wake Up on LAN function. To use this function, you need to set the
"Wake-Up on LAN" to enable at the BIOS Power Management Setup.
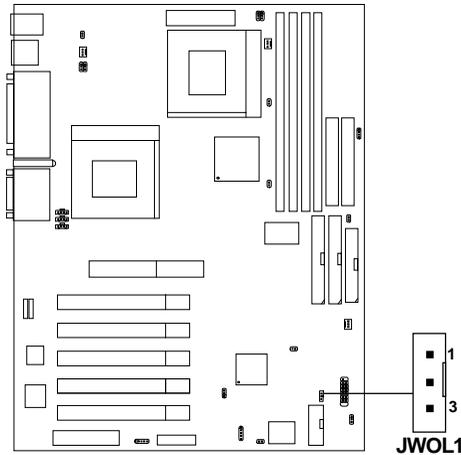
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

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

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

2.17 Modem Wake Up Connector: JMDM1

The JMDM1 connector is for use with Modem add-on card that supports the Modem Wake Up function.

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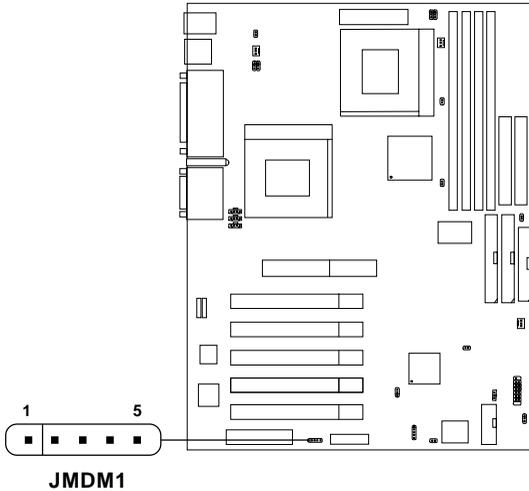
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

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

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

2.18 Power Saving LED Connector: JGL1

JGL1 can be connected with dual color LED. There are two types of LED that you can use: 3-pin LED or 2-pin LED (ACPI request). When the 2-pin LED is connected to JGL1, the light will turn green, when system is On. During sleep mode, the 2-pin LED will change color from Green to Orange. For 3-pin LED, when LED is connected to JGL1, this will light when the system is On and blinks when it is in suspend/sleep mode.

JGL1
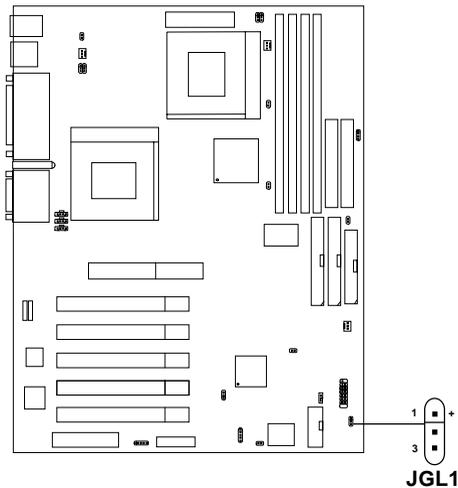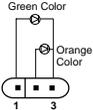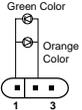
3-pin LED	**2-pin LED**
Green Color / Orange Color	Green Color / Orange Color
1-2 Single Color 1-3 Blink	1-2 Dual Color

2.19 Chassis Intrusion Switch Case: JCASE1

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

JCASE1
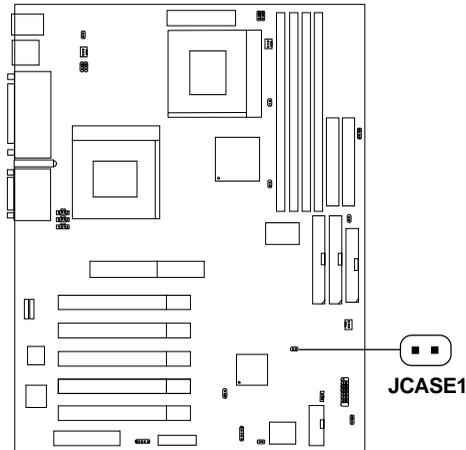
2.20 Ultra DMA 100 LED Connector: J6

This connector is used for Ultra DMA 100 IDE 3 & IDE 4 HDD LED status.
The Ultra DMA 100 HDD LED shows the activity of the hard disk drive.
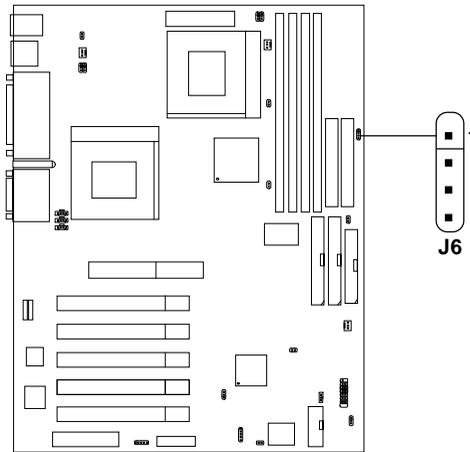
2.21 BIOS Flash Jumper: J5

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

J5
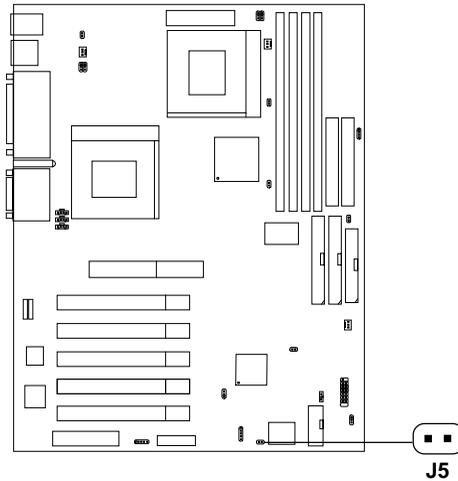
BIOS Flash
Locked

BIOS Flash
Unlocked

2.22 USB Power Jumper: J13

This jumper is used for setting the 5V standby power for rear USB port.
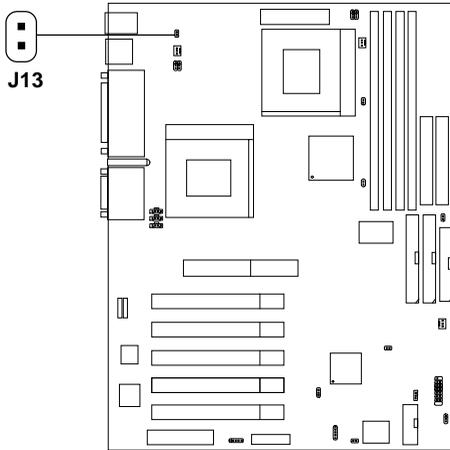
J13	Function
Short	5V Standby power for Rear USB port
Open	No 5V Standby power for Rear USB port

2.23 USB Front Connector: USB2

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

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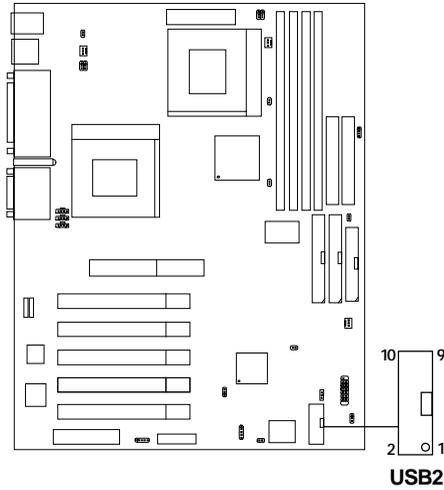
Pin	Description	Pin	Description
1	NC	6	+Data
2	VCC	7	GND
3	GND	8	-Data
4	NC	9	GND
5	NC	10	NC

2.24 CD-In Connector: JCD1

This connector is for CD-ROM audio connector.

R GND L

JCD1
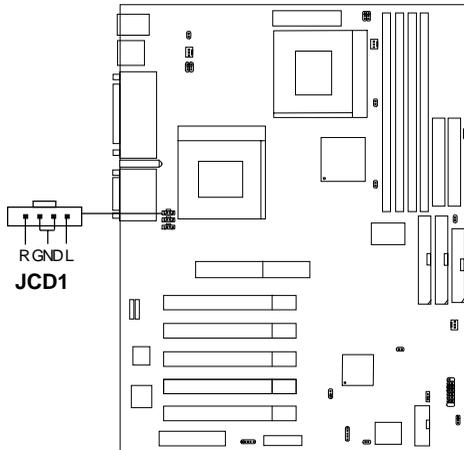
2.24 AUX Line In Connector: JAUX1

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

R GND L

JAUX1
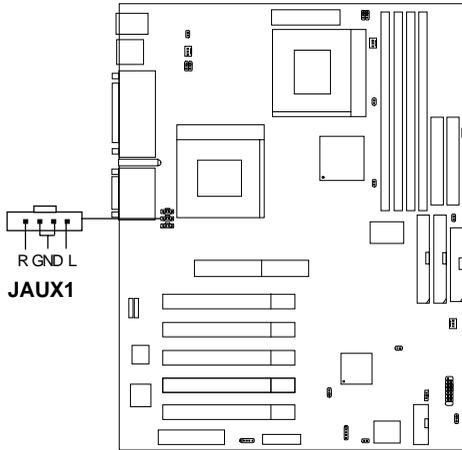
2.25 Modem-In: JPHONE

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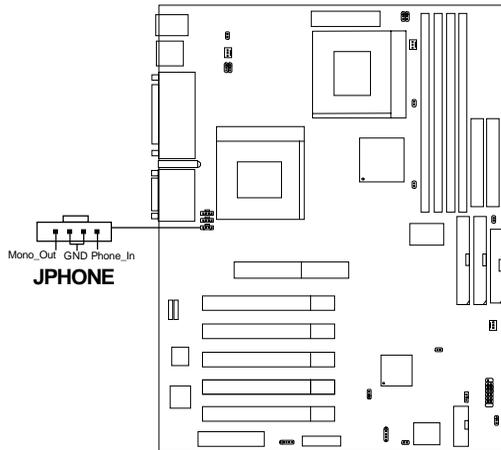
Mono_Out is connected to the Modem Speaker Out connector.
Phone_In is connected to the Modem Microphone In connector.

2.26 Diagnostic LED

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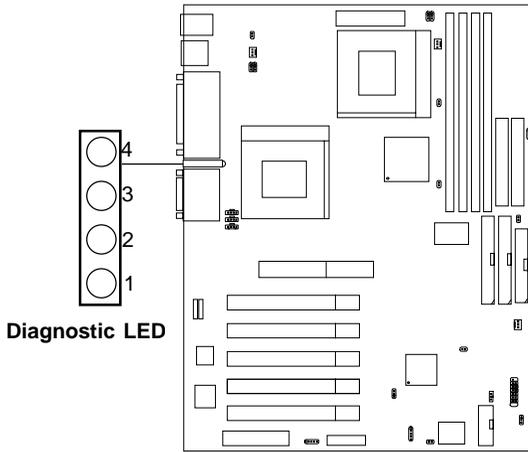
Diagnostic LED

Diagnostic LED Function

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

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

2.27   CNR (Communication Network Riser)

The Communication Network Riser specification is an open industry-standard specification that defines a hardware scalable Original Equipment Manufacturer (OEM) mainboard riser board and interface, **which supports modem only.**

CNR

2.28   IEEE 1394 Connector(optional)

The IEEE 1394 high-speed serial bus complements USB by providing enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.
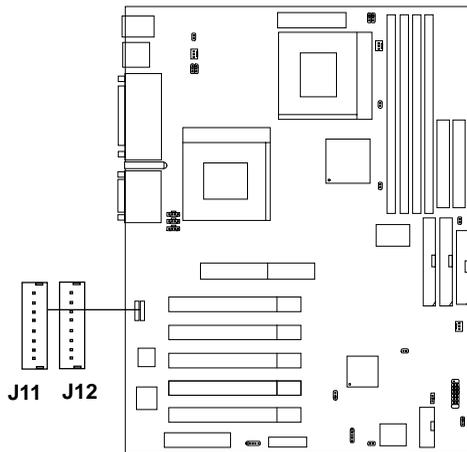
J11   J12

A. Software Support

IEEE 1394 Driver is provided by Windows® 98 SE and Windows® 2000. Just plug in the IEEE 1394 connector into J11 & J12. These Operating System will install the driver for IEEE 1394.

B. Hardware Installation

IEEE 1394 Port

Locate the IEEE 1394 connector (J11, J112) on the mainboard.

Insert the IEEE 1394 Port into the connector.
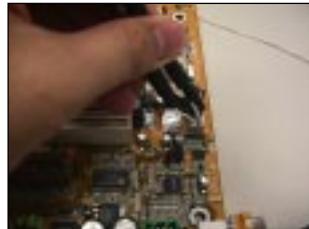
Place the IEEE 1394 Port into the first slot of your system case.
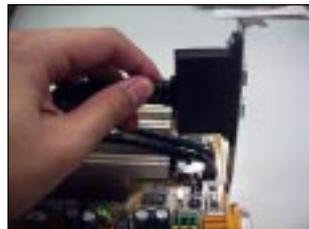
Chapter 3

AWARD® BIOS SETUP

Award® BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM), so that it retains the Setup information when the power is turned off.

3.1 Entering Setup

Power on the computer and press <Del> immediately to allow you to enter Setup. The other way to enter Setup is to power on the computer. When the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

> TO ENTER SETUP BEFORE BOOT, PRESS <CTRL-ALT-ESC>
> OR <DEL> KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

> PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC>
> OR <DEL> TO ENTER SETUP

3.2 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3.3 The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

CMOS Setup Utility - Copyright(C) 1984-2000

```
┌─────────────────────────────────────────────────────────────────┐
│  STANDARD  CMOS  Features  │ Frequency/Voltage  Control           │
│                            │                                      │
│  Advanced  BIOS  Features  │ Load  Fail-Safe  Defaults            │
│                            │                                      │
│  Advanced  Chipset  Features │ Load  Optimized  Defaults          │
│                            │                                      │
│  Integrated  Peripherals   │ Set  Supervisor  Password            │
│                            │                                      │
│  Power  Management  Setup  │ Set  User  Password                  │
│                            │                                      │
│  PnP/PCI  Configurations   │ Save  &  Exit  Setup                 │
│                            │                                      │
│  PC  Health  Status        │ Exit  Without  Saving                │
│  ─────────────────────────────────────────────────────────────── │
│   Esc  :  Quit          ↑↓→←    : Select Item                    │
│   F10  :  Save & Exit  Setup                                      │
│  ─────────────────────────────────────────────────────────────── │
│                                                                   │
│           Time,  Date,  Hard  Disk  Type...                       │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

Standard CMOS Setup
    Use this Menu for basic system configurations.

Advanced BIOS Features
    Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features
    Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
>Use this menu to specify your settings for integrated peripherals.

Power Management Setup
>Use this menu to specify your settings for power management.

PnP/PCI Configuration
>This entry appears if your system supports PnP/PCI.

PC Health Status (Optional)
>This entry shows your PC health status. If Hardware Monitor Chipset is installed.

Frequency/Voltage Control
>Use this menu to specify your settings for frequency/voltage control.

Load Fail-Safe Defaults
>Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults
>Use this menu to load the BIOS default values that are factory settings for optimal performance system operations.

Supervisor/User Password
>Use this menu to set User and Supervisor Passwords.

Save & Exit Setup
>Save CMOS value changes to CMOS and exit setup.

Exit Without Saving
>Abandon all CMOS value changes and exit setup.

3.4 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
Standard CMOS Setup

```
 Date(mm:dd:yy):          Fri,May 19,2000
 Time(hh:mm:ss):          00:00:00                    Item Help


 IDE  Primary Master      Press Enter 4310 MB    Menu Level  >
 IDE  Primary Slave       Press Enter None
 IDE  Secondary Master    Press Enter None       Change the day, month,
 IDE  Secondary Slave     Press Enter None       year and century


 Drive A                  1.44M, 3.5in.
 Drive B                  None


 Video                    EGA/VGA
 Halt On                  All, But Keyboard


 Based Memory               640K
 Extended  Memory         392192K
 Total  Memory            393216K


↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults
```

Date

The date format is <day><month> <date> <year>.

Day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year, depends on the year of the BIOS

Time

The time format is <hour> <minute> <second>.

PrimaryMaster/PrimarySlave
SecondaryMaster/Secondary Slave

Press PgUp/<+> or PgDn/<-> to select Manual, None, Auto type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Manual to define your own drive type manually.

If you select Manual, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is SCSI, the selection shall be
"None".
If the controller of HDD interface is CD-ROM, the selection shall be
"None".

Access Mode	The settings are Auto, Normal, Large,LBA.
Cylinder	number of cylinders
Head	number of heads
Precomp	write precom
Landing Zone	landing zone
Sector	number of sectors

3.5 Advanced BIOS Features

CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
Advanced BIOS Features

```
┌─────────────────────────────────────────────┬──────────────────────┐
│ Virus  Warning              Disabled         │                      │
│ CPU Internal Cache          Enabled          │      Item Help       │
│ External  Cache             Enabled          │                      │
│ CPU L2 Cache ECC Checking   Enabled          │                      │
│ Quick Power On Self Test    Enabled          ├──────────────────────┤
│ ATA/100 & SCSI Boot Order   ATA,SCSI         │ Menu Level   >       │
│ First Boot device           Floppy           │                      │
│ Second Boot device          HDD-0            │                      │
│ Third Boot device           LS120            │                      │
│ Boot Other device           Enabled          │                      │
│ Swap Floppy Drive           Disabled         │                      │
│ Boot Up Floppy Seek         Enabled          │                      │
│ Boot Up Numlock Status      On               │                      │
│ Gate A20 Option             Normal           │                      │
│ Typematic Rate Setting      Disabled         │                      │
│ Typematic Rate (Chars/Sec)  6                │                      │
│ Typematic Delay (Msec)      250              │                      │
│ Security Option             Setup            │                      │
│ MPS Version Control for OS  1.4              │                      │
│ OS Select for DRAM > 64MB   Non-OS2          │                      │
│ Video BIOS Shadow           Enabled          │                      │
│ C8000-CBFF  Shadow          Disabled         │                      │
│ CC000-CFFF  Shadow          Disabled         │                      │
│ D0000-D3FF  Shadow          Disabled         │                      │
│ D4000-D7FF  Shadow          Disabled         │                      │
│ D8000-DBFF  Shadow          Disabled         │                      │
│ DC000-DFFF  Shadow          Disabled         │                      │
├─────────────────────────────────────────────┴──────────────────────┤
│ ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help │
│    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults    │
└─────────────────────────────────────────────────────────────────────┘
```

Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write date into this area, BIOS will show a warning message on screen and alarm beep.

Disabled (default)	No warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

CPU Internal Cache

The default value is Enabled.

Enabled (default)   Enable cache
Disabled   Disable cache

Note: The internal cache is built in the processor.

External Cache

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

CPU L2 Cache ECC Checking

Choose Enabled or Disabled. This option enables the level 2 cache memory ECC(error check correction).

Processor Number Feature

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

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

Enabled   Enable quick POST
Disabled (default)   Normal POST

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Floppy, LS/ZIP, HDD-0/HDD-1/HDD-2/HDD-3, SCSI, CDROM, LAN, and Disabled.

Swap Floppy Drive

Switches the floppy disk drives between being designated as A and B. Default is Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Boot Up NumLock Status

The default value is On.
On (default)   Keypad is numeric keys.
Off   Keypad is arrow keys.

Gate A20 Option

   Normal   The A20 signal is controlled by keyboard
                           controller or chipset hardware.
   Fast   The A20 signal is controlled by port 92 or
                           chipset specific method.

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The settings are: Enabled/Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down. The settings are: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke   The settings are: 250, 500, 750, 1000.

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System   The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

Setup(default)The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

MPS Version Control for OS

An MP Platform interface standard that extends the performance of the existing PC/AT platform beyong the traditional single processor limit, while maintaining 100% PC/AT binary compatibility.

OS Selection for DRAM > 64MB

Allows OS2® to be used with > 64 MB of DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2®.

Viedo BIOS Shadow

This determines whether the 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.

3.6 Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Choose the "ADVANCED CHIPSET FEATURES" from the Main Menu and the following screen will appear.

CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
Advanced Chipset Features

```
Bank 0/1 DRAM Timing       SDRAM 8/10ns          Item Help
Bank 2/3 DRAM Timing       SDRAM 8/10ns
Bank 4/5 DRAM Timing       SDRAM 8/10ns
Bank 6/7 DRAM Timing       SDRAM 8/10ns
SDRAM Cycle Length         3                 Menu Level   >
DRAM Clock                 Host CLK
Memory Hole                Disabled
P2C/C2P Concurrency        Enabled
Fast R-W Turn Around       Disabled
System BIOS Cacheable      Disabled
Video RAM Cacheable        Disabled
AGP Aperture Size          64M
AGP 4X Mode                Enabled
AGP Driving Control        Auto
AGP Driving Value          DA
AGP Fast Write             Disabled
OnChip USB                 Enabled
USB Keyboard Support       Disabled
USB Mouse Support          Disabled
OnChip Sound               Auto
OnChip Modem               Auto
CPU to PCI Write Buffer    Enabled
PCI Dynamic Bursting       Enabled
PCI Master 0 WS Write      Enabled
PCI Delay Transaction      Enabled
PCI#2 Access #1 Retry      Disabled
AGP Master 1 WS Write      Enabled
AGP Master 1 WS Read       Enabled
Memory Parity/ECC Check    Disabled

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults
```

Note: Change these settings only if you are familiar with the chipset.

Bank 0/1 DRAM Timing/Bank 2/3 DRAM Timing
Bank 4/5 DRAM Timing/Bank 6/7 DRAM Timing
        The DRAM timing is controlled by the DRAM Timing Registers.
The Timings programmed into this register are dependent on the system
design. Slower rates may be required in certain system designs to support
loose layouts or slower memory.

SDRAM Cycle Length
        This item allows you to select the SDRAM cycle length. The set-
tings are 2 or 3.

DRAM Clock
        The chipset support synchronous and asynchronous mode
between the host clock and DIMM clock.
        Host CLK (default)   DIMM clock equal to host clock
        66MHz   DIMM clock equal to 66MHz

Memory Hole
        In order to improve performance, certain space in memory can be
reserved for ISA cards. This memory must be mapped into the memory
space below 16 MB.
        Enabled   Memory hole supported.
        Disabled (default)   Memory hole not supported.

P2C/C2P Concurrency
        This item allows you to Enable or Disable the PCI to CPU, CPU to
PCI concurrency. The default setting is Enabled.

Fast R-W Turn Around
        This item controls the DRAM timing. It allows the user to Enable
or Disable the fast read, write turn around. The settings are Enabled or
Disabled. The default setting is Disabled.

System BIOS Cacheable

Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

Video RAM Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

AGP Aperture Size

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

AGP-4X Mode

This item is used to Enabled or Disabled the AGP support for AGP 4x mode.

AGP Driving Control

This item allows you to adjust the AGP driving force. Choose Manual to key in a AGP Driving Value in the next selection. This field is recommended to set in Auto for avoiding any error in your system. The default setting is Auto.

AGP Driving Value

This item allows you to adjust the AGP driving force.

Onchip USB

Set this option to Enable or Disable the onchip USB controller. The default setting is Enabled.

USB Keyboard Support

Set this option to Enable or Disable the USB keyboard/mouse support. The default setting is Disabled.

OnChip Sound

This item allows you to control the onboard AC 97 audio.

OnChip Modem

This item allows you to control the onboard MC 97 Modem.

CPU to PCI Write Buffer

When this field is Enabled, writes from the CPU to the PCI bus are buffered, to compensate for the differences between the CPU and the PCI bus. When Disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another cycle. The default setting is Enabled.

PCI Dynamic Bursting

This item allows you to Enable or Disable the PCI dynamic bursting function. The settings are Enabled or Disabled.

PCI Master 0 WS Write

When Enabled, writes to the PCI bus and are executed with zero wait states. The settings are Enabled or Disabled.

PCI Delay Transaction

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

PCI#2 Access #1 Retry
    When Disabled, PCI#2 will not be disconnected until access finishes (default). When Enabled, PCI#2 will be disconnected if max retries are attempted without success. The default setting is Enabled.

AGP Master 1 WS Write
    When Enabled, writes to the AGP (Accelerated Graphics Port) are executed with one wait states. The default setting is Enabled.

AGP Master 1 WS Read
    When Enabled, reads to the AGP (Accelerated Graphics Port) are executed with one wait states. The default setting is Enabled.

Memory Parity/ECC Check
    This item when Enabled detects the memory parity and Error Checking & Correction. The settings are Enabled or Disabled.

3.7 Integrated Peripherals

CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
Integrated Peripherals

```
Onchip IDE Channel0        Enabled
Onchip IDE Channel1        Enabled          Item Help
IDE Prefetch Mode          Enabled
Primary Master PIO         Auto
Primary Slave PIO          Auto
Secondary Master PIO       Auto         Menu Level    >
Secondary Slave PIO        Auto
Primary Master UDMA        Auto
Primary Slave UDMA         Auto
Secondary Master UDMA      Auto
Secondary Slave UDMA       Auto
Init Display First         PCI Slot
IDE HDD Block Mode         Enabled
Onboard FDD Controller     Enabled
Onboard Serial Port 1      Auto
Onboard Serial Port 2      Auto
UART 2 Mode                Standard
X IR Function Duplex       Half
X TX,RX inverting enable   No, Yes
Onboard Parallel Port      378/IRQ7
Onboard Parallel Mode      Normal
ECP Mode Use DMA           3
Parallel Port EEP Type     EEP 1.9
Onboard Legacy Audio       Enabled
Sound Blaster              Disabled
SB I/O Base Address        220H
SB IRQ Select              IRQ 5
SB DMA Select              DMA1
MPU-401                    Disabled
MPU-4-1 I/O Address        330-333H
Game Port (200-207H)       Enabled
```

↑↓→←Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
   F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults

OnChip IDE Channel0/Onchip IDE Channel1

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately. The settings are: Enabled and Disabled.

IDE Prefetch Mode

This item is used to Enabled or Disabled the IDE Read/Write Prefetch buffer. This buffer is used to store data for faster performances.

Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The settings are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33 and Ultra DMA/66, select Auto to enable BIOS support. The settings are: Auto, Disabled.

Init Display First

This item allows you to decide to activate whether PCI Slot or AGP Slot. The settings are: PCI Slot, AGP Slot.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support. The settings are: Enabled, Disabled.

Onboard FDD Controller

Select Enabled if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field. The settings are: Enabled and Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports. The settings are: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART 2 Mode

This item allows you to select which mode for the Onboard Serial Port 2. The settings are: Standard, HPSIR, ASKIR.

IR Function Duplex

This item allows you to select the IR half/full duplex function.

TX, RX inverting enable

This item allows you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system.

Onboard Parallel Port

There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

> **Disable**
> 3BCH/IRQ7   Line Printer port 0
> 278H/IRQ5   Line Printer port 2
> 378H/IRQ7   Line Printer port 1

Onboard Parallel Mode

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the ECP and SPP modes simultaneously, choose "ECP/SPP." By choosing "ECP", the onboard parallel port will operate in ECP mode only. Choosing "ECP/EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA" At this time the user can choose between DMA channels 3 or 1. The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "EPP Mode Select." At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

ECP Mode Use DMA

Select a DMA channel for the parallel port for use during ECP mode. The settings are 3 or 1. The default setting is 3.

Parallel Port EEP Type

Select EPP port type 1.7 or 1.9.

Onboard Legacy Audio

This fields controls the onboard legacy audio.
- Sound Blaster
- SB I/O Base Address
- SB IRQ Select
- SB DMA Select
- MPU-401
- MPU-401 I/O Address
- Game Port (200-207H)

3.8 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

```
           CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
                          Power Management Setup
┌─────────────────────────────────────────────┬──────────────────────────┐
│ ACPI  Function            Enabled            │                          │
│ Power  Management         Press Enter        │       Item Help          │
│ ACPI Suspend Type         S1(POS)            │                          │
│ PM Control by APM         Yes                ├──────────────────────────┤
│ Video Off Option          Suspend->Off       │                          │
│ Video Off Method          V/H SYNC+Blank     │  Menu Level   >          │
│ MODEM Use IRQ             3                   │                          │
│ Soft-Off by PWRBTN        Instant-Off        │                          │
│ State After Power Failure Off                │                          │
│ LED In Suspend            Single             │                          │
│ Wake Up Events            Press Enter        │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
├─────────────────────────────────────────────┴──────────────────────────┤
│ ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help│
│    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults        │
└─────────────────────────────────────────────────────────────────────────┘
```

ACPI Function

This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI). The Settings are Enabled and Disabled.

Power Management

```
 Power Management        User Define  ┌─────────────────────┐
 HDD Power Down          Disable      │       Item Help     │
 Doze Mode               Disable      │                     │
 Suspend Mode            Disabled     ├─────────────────────┤
                                      │ Menu Level   >      │
                                      │                     │
                                      │                     │
                                      │                     │
                                      │                     │
                                      │                     │
                                      │                     │
 ─────────────────────────────────── └─────────────────────┘
 ↑↓→←  Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults
```

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

There are four selections for Power Management, three of which have fixed mode setting.

Disable (Default)	No power management. Disables all four modes.
Min. Power Saving	Minimum power management. Doze Mode=1hr. Standby Mode=1hr., Suspend Mode=1hr., and HDD Power Down=15min.
Max. Power Saving	Maximum power management. -- Only Available For SL CPU's. Doze Mode=1 min., Standby Mode=1min., Suspend Mode=1min., and HDD Power Down=1min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disabled.

ACPI Suspend Type

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

S1 (POS)   The S1 sleeping state is low wake-up latency
                        sleeping state. In this state, no system context is
                        lost(CPU or chip set) and hardware maintains all
                        system context.

PM Control by APM

No   System BIOS will ignore APM when
                        power managing the system.

Yes   System BIOS will wait for APM's
                        prompt before it enter any PM mode

Note : Enable this for O.S. with APM like Windows® 98, Windows® NT, etc.

Video Off Option

The settings are N/A, Standby, Doze, or Suspend. This option is for
choosing the setting in which the monitor will turn off.

N/A   Always turn on.

Doze   During Doze mode, the monitor will be turned
                        off.

Standby   During Standby mode, the monitor will be turned
                        off.

Suspend   During Suspend mode, the monitor will be turned
                        off.

The default setting is Standby.

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.

Modem Use IRQ

This determines the IRQ in which the MODEM can use. The settings are: 3, 4, 5, 7, 9, 10, 11, NA.

Soft-Off by PWR-BTTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state. The settings are: Delay 4 Sec, Instant-Off.

State After Power Failure

This option will determine how the system will power on after a power failure.

LED In Suspend

This item determines which state the Power LED will use. The settings are Blink, Dual color, and Single color.

Blink	Power LED will blink when the system enters the suspend mode.
Dual Color	Power LED will change its color when the system enters the suspend mode.
Single Color (default)	Power LED will always remain lit.

Wake Up Events

```
VGA                    Off
LPT & COM              LPT/COM                      Item Help
HDD & FDD              On
PCI Master             Off
Power On by PCI Card   Disabled          Menu Level   >
Wake Up On LAN/Ring    Disabled
RTC Alarm Resume       Disabled
Date (of Month)        0
Resume Time            0:0:0
Primary INTR           On
IRQs Activity Monitoring   Press Enter
```

```
↑↓→←Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
   F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults
```

VGA

> When Enabled, you can set the VGA to awaken the system.

LPT & COM

> When LPT & COM is On, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

HDD & FDD

> When HDD & FDD is On, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

PCI Master

> When PCI Master is On, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

Power On by PCI Card

> This item allows the user to Enabled/Disabled the Power On by PCI card.

Wake Up On LAN/Ring

　　　　To use this function, you need a LAN add-on card or Modem which supports power on functions. During Disabled, the system cannot be boot up through LAN and ignores any incoming call from the modem. During Enabled, the system can be boot up through LAN and modem.

RTC Alarm Resume

　　　　This function is for setting date and time for your computer to boot up. During Disabled, you cannot use this function. During Enabled, choose the Date and Time Alarm:

Date(of month) Alarm	You can choose which month the system will boot up. Set to 0, to boot every day.
Time(hh:mm:ss) Alarm	You can choose what hour, minute and 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, before this function will work.

Primary INTR

　　　　When this is set to On, any event occuring will awaken a system which has been powered down.

IRQs Activity Monitoring

```
 Primary  INTR              On
 IRQ3  (COM 2)              Primary              ┌─────────────────┐
 IRQ4  (COM 1)              Primary              │    Item Help    │
 IRQ5  (LPT 2)              Primary              │                 │
 IRQ6  (Floppy Disk)        Primary              ├─────────────────┤
 IRQ7  (LPT 1)              Primary              │ Menu Level   >  │
 IRQ8  (RTC Alarm)          Disabled             │                 │
 IRQ9  (IRQ2 Redir)         Secondary
 IRQ10 (Reserved)           Secondary
 IRQ11 (Reserved)           Secondary
 IRQ12 (PS/2 Mouse)         Primary
 IRQ13 (Coprocessor)        Primary
 IRQ14 (Hard Disk)          Primary
 IRQ15 (Reserved)           Disabled




↑↓→←Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
   F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults
```

The following is a list of IRQ's, **I**nterrupt **R**e**Q**uests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

When set On, activity will neither prevent the system from going into a power management mode nor awaken it.

- IRQ3 (COM 2)
- IRQ4 (COM 1)
- IRQ5 (LPT 2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocesssor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

3.9 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
          CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
                        PnP/PCI Configuration Setup
┌──────────────────────────────────────────────────────────────────────┐
│ PnP OS Installed           No                                          │
│ Reset Configuration Data   Disabled              Item Help             │
│                                                                        │
│ Resources Controlled By    Auto (ESCD)                                 │
│ IRQ Resources              Press Enter       Menu Level  >             │
│ DMA Resources              Press Enter                                 │
│                                                                        │
│ PCI/VGA Palette Snoop      Disabled                                    │
│ Assign IRQ for VGA         Enabled                                     │
│ Assign IRQ for USB         Enabled                                     │
│ INT Pin 1 Assignment       Auto                                        │
│ INT Pin 2 Assignment       Auto                                        │
│ INT Pin 3 Assignment       Auto                                        │
│ INT Pin 4 Assignment       Auto                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
├──────────────────────────────────────────────────────────────────────┤
│ ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help│
│    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults      │
└──────────────────────────────────────────────────────────────────────┘
```

PnP OS Installed

When set to YES, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 95 or 98. When set to NO, BIOS will initialize all the PnP cards. So, for non-PnP operating system (DOS, Netware®), this option must set to Yes.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.
The settings are: Enabled and Disabled .

Resource Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95/98. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➤"). The settings are: Auto(ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

DMA Resources

This sub menu can let you control the DMA resource.

PCI/VGA Palette Snoop

Leave this field at *Disabled*. The settings are Enabled, Disabled.

Assign IRQ for VGA

Leave this field at *Enabled*. The settings are Enabled, Disabled.

Assign IRQ for USB

Leave this field at *Enabled*. The settings are Enabled, Disabled.

3.10 PC Health Status (Optional)

This section helps you to get more information about your system including CPU temperature, FAN speed and voltages. It is recommended that you contact with your motherboard supplier to get proper value about your setting of the CPU temperature.

```
           CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
                              PC Health Status
 ┌─────────────────────────────────────────────┬─────────────────────────┐
 │ Current  CPU1 Temp.         40°C/104°F        │                         │
 │ Current  CPU2 Temp.         30C/ 86F          │       Item Help         │
 │ Current  CPUFAN1 Speed      0RPM              │                         │
 │ Current  CPUFAN2 Speed      0RPM              ├─────────────────────────┤
 │ CPU1 Vcore                  1.64V             │                         │
 │ CPU2 Vcore                  1.98V             │ Menu Level   >          │
 │ 3.3V                        3.31V             │                         │
 │ 5V                          4.95V             │                         │
 │ 12V                         11.64V            │                         │
 │ Case  Open  Message         Disabled          │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 ├───────────────────────────────────────────────┴─────────────────────────┤
 │ ↑↓→← Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
 │    F5:Previous  Values  F6:Fail-safe  defaults  F7:Optimized  Defaults    │
 └───────────────────────────────────────────────────────────────────────────┘
```

Current CPU1 Temp.

> This item shows the current CPU1 temperature.

Current CPU2 Temp.

> This item shows the current CPU2 temperature.

Current CPUFAN1 Temp.

> This item shows the current CPUFAN1 speed.

Current CPUFAN2 Temp.
        This item shows the current CPUFAN2 speed.

CPU1 Vcore/CPU2 Vcore
        This item shows the current system voltage.

Case Open Message
        This item allows the user to Enabled/Disabled or Reset the Case
Open Message. When set to Reset, a warning sign will appear everytime the
case is opened. To disabled this function, reset your system and the BIOS
will automatically set the value to Enabled.

3.11 Frequency/Voltage Control

This section is for setting CPU Frequency/Voltage Control.

```
        CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
                        Frequency/Voltage Control
┌────────────────────────────────────────┬───────────────────────────┐
│ Auto Detect DIMM/PCI Clk    Enabled     │                           │
│ CPU Host Clock (CPU/PCI)    Default     │       Item Help           │
│ CPU1 Clock Ratio            x 3         │                           │
│ CPU2 Clock Ratio            x 3         ├───────────────────────────┤
│ CPU1 Vcore Select           Default     │                           │
│ CPU2 Vcore Select           Default     │ Menu Level  >             │
│                                         │                           │
│                                         │                           │
│                                         │                           │
│                                         │                           │
│                                         │                           │
│                                         │                           │
│                                         │                           │
│                                         │                           │
│                                         │                           │
│                                         │                           │
│                                         │                           │
├─────────────────────────────────────────┴───────────────────────────┤
│ ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help│
│    F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults      │
└───────────────────────────────────────────────────────────────────────┘
```

Auto Detect DIMM/PCI CLK
This item allows you to enable/disable auto detect DIMM/PCI Clock. The settings are: Enabled, Disabled.

CPU Host/PCI Clock
This item allows you to select the CPU Host/PCI Clock.

CPU1/CPU2 Clock Ratio
This item allows you to set the CPU1/CPU2 Clock Ratio.

CPU1/CPU2 Vcore Select
This item allows you to select the CPU1/CPU2 system voltage .

3.11 Load Fail-Safe/Optimized Defaults

Load Fail-Safe Defaults
When you press <Enter> on this item, you get a confirmation dialog box
with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-
performance system operations.

Load Optimized Defaults
When you press <Enter> on this item, you get a confirmation dialog box
with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal
performance system operations.

3.12 Set Supervisor/User Password

You can set either supervisor or user password, or both of them. The differences are:

Supervisor password :   can enter and change the options of the setup menus.

User password   :   Can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

Chapter 4

VIA CHIPSET DRIVER

1. Overview

The 694D PRO (MS-6321) is installed with the VIA VT82C686A south bridge. Highly advanced, the south bridge combines an integrated 2D/3D engine with DVD hardware acceleration, AC-97 audio support for SoundBlaster Pro and FM synthesis legacy audio.

1.1 Audio Features

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

1.2 System Requirements

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

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

2. Driver Setup & Usage Procedures for Windows® 98

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

2.1 VIA Chipset Drivers installation procedure:

Step 1:   Insert the provided CD_ROM disk into the CD-ROM drive.

Step 2:   Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.

Step 3:   Click on "Via Chipset Drivers" icon and the screen will show "VIA Service Pack 4.19".

Step 4:   Click "Next" and the screen will show four drivers "VIA Atapi Vendor Support Driver", "AGP VxD Driver", "VIA Chipset Function's Registry" and "IRQ Routing Miniport Driver". Select all four drivers and click on "Next".

Step 5:   The setup program will request you to choose "Install VIA Atapi Vendor Support Driver". Please select "Install" and click "Next" to continue.

Step 6:   Click to enabled DMA Mode, Please select "Install" and click "Next" to continue.

Step 7:   The setup program will request you to choose "Install VIA AGP VxD in turbo mode", "Install VIA AGP VxD in normal mode" or "Uninstall VIA AGP VxD". Please select "Install VIA AGP VxD in turbo mode" and click on "Next".

Step 8: The setup program will let you choose between "Install VIA
 Chipset Functions Registry" or "Uninstall VIA Chipset Functions
 Registry". Please select "Install VIA Chipset Functions Registry"
 and then click "Next".

Step 9: The setup program will let you choose between "Install VIA IRQ
 Routing Miniport Driver" or "Uninstall VIA IRQ Routing Miniport
 Driver". Please select "Install VIA IRQ Routing Miniport Driver"

Step 10: The setup program will request you to choose whether to restart
 the computer or not. Please select "Yes, I want to restart my
 computer now" and click Finish. The computer will restart and
 finish the VIA Chipset Drivers installation.

2.2   VIA AC97 PCI Sound Drivers installation procedure:

Step 1:   Insert the provided CD_ROM disk into the CD-ROM drive.

Step 2:   Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.

Step 3:   Click on "VIA AC97 PCI Sound Drivers" icon and the screen will show "VIA AC97 PCI Sound Drivers".

Step 4:   Click "Next" to proceed and the screen will show "Install", or "Remove". Select "Install" and then click on "Next".

Step 5:   The setup program will request you to choose whether to restart the computer or not. Please select "Yes, I want to restart my computer now" and click Finish. The computer will restart and finish the AC97 Audio Drivers Installation.

3. Windows® NT 4.0

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

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

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

3.2 VIA AC97 PCI Sound Drivers Installation Procedure:

Step 1: Insert the provided CD_ROM disk into the CD-ROM drive.

Step 2: Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.

Step 3: Click on "VIA AC97 PCI Sound Drivers" icon and the screen will show the "VIA PCI Audio Drivers" setup screen. Click "Next" to continue

Step 4: The setup program will show "Install" or "Remove" in the screen. Select "Install" and click "Next"

Step 5: The setup program will show the following on the screen:

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

   Then click "OK".

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

Chapter 5

ULTRA100 DRIVER

5.1 Introduction

The Ultra100 controller provides two IDE hard drive connectors that support Ultra ATA/100 protocols, perfect for such demanding applications as real-time video, multimedia, and high-performance operating systems.

Ultra100's two IDE connectors each support a master/slave combination of any IDE devices, including IDE, EIDE, Fast-ATA, and Ultra-ATA standards. Devices of different standards can be connected to Ultra100 without performance degradation, due to the independent programmable timing registers in the controller's design.

5.2   Software Installation

This section details the Ultra100 driver installation procedure when used with various operating systems as follows:

· Windows 2000
· Microsoft Millenium
· Windows 98
· Windows NT 4.x

 You can install from CDROM drive or **copy it to disk from CDROM**.

5.2-1 Windows 2000

5.2-1-1 Installing Driver during New Windows 2000 Installation
1a. Floppy Install: Boot the computer with the Windows 2000 installation diskettes.
1b. Floppyless Install: Boot from floppy and type "WINNT". After files have been copied, the system will reboot. On the reboot, press <F6> after the message "Setup is inspecting your computer's hardware configuration..." appears.
1c. CD-ROM Install: Boot from the CD-ROM. Press <F6> after the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the "Windows 2000 Setup" window is generated, press "S" to Specify an Additional Device(s)
3. Press "O" to select "Other" and press the "Enter" key.
4. Insert the Promise Technology driver diskette into drive A: and press "Enter" key.
5. Choose "Win2000 Promise Ultra100 Controller" from the list that appears on screen, then press the "Enter" key.
6. The Windows 2000 Setup screen will appear again saying "Setup

will load support for the following mass storage devices:" The list will include "Win2000 Promise Ultra100 controller"..
NOTE: If you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, continue to step 7.

From the Windows 2000 Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows 2000 installation.

5.2-1-2 Installing Driver in Existing Windows 2000 System

WARNING: If you will be moving the boot drive containing the existing Windows 2000 operating system to the Ultra100 card, the Ultra100 driver MUST be loaded on to this hard drive while it is still attached to your existing hard drive controller. Do not attach this drive or any other hard drive to the Ultra100 controller card before completing this step.

After installing the Ultra100 card and rebooting your system, Windows 2000 setup will show a "New Hardware Found" dialog box.

1. In the dialog box, choose "Driver from disk provided by hardware manufacturer" button.
2. In the A: drive, insert the Ultra100 driver diskette.
3. Type "A:\WIN2000" in the text box. Press "Enter".
4. Choose "Win2000 Promise Ultra100 IDE Controller" from the list that appears on screen, then press the "Enter" key.
5. The Windows 2000 Setup screen will appear again saying "Setup will load support for the following mass storage devices – Win2000 Promise Ultra100 IDE controller". The Ultra100 driver will now be copied on to the system and entered into the Windows 2000 driver database.
6. When the "System Settings Change" dialog box appears, remove the floppy diskette and click on "Yes" to restart the system. Windows 2000 will then restart for the driver installation to take effect.

7.   Power off your system, then attach your hard drive to the Ultra100 controller card.

Confirming Windows 2000 Installation

1.   From Windows 2000, open the Control Panel from "My Computer" followed by the System icon.
2.   Choose the "Hardware" tab, then click the "Device Manager" tab.
3.   Click the "+" in front of "SCSI controllers." "Promise Technology, Inc. ULTRA100 IDE controller" should appear.

5.2-2   Microsoft Millennium

5.2-2-1 Installing Drivers During Millennium Installation

The following details the installation of the Ultra100 drivers while installing Microsoft's Millennium (with the Ultra100 controller card already in place). If you're installing the Ultra100 drivers on a system with Millennium already installed, see "Installing Drivers with Existing Millennium System."

1. Install Microsoft Millenium fully.
2. After installation, go the "Start" menu and choose "Settings."
3. From the "Settings" menu, choose "Control Panel."
4. In the "Control Panel" window, double-click on the "System" icon.
5. In the "System" window, choose the "Device Manager" tab.
6. In the hierarchical display under "Other Devices" is a listing for "PCI Mass Storage Controller." Choose it and then press the "Properties" button.
7. Choose the "Driver" tab in the "Properties" window, choose "Update Driver," and then press "Next."
8. Choose "Search for a better driver than the one your device is using now (recommended)," then press "Next."
9. Choose "Specify Location," then type "A:\WINMILL" in the text box.
10. Insert the "Ultra100 Driver" diskette into the A: drive.
11. Press the "Next" button. A message informing you that Millennium has found "Windows Millennium Promise ULTRA100 (tm) IDE Controller" should appear.
12. Press "Next," then "Finish," then "Yes" when asked if you want to restart your computer. Be sure to remove the diskette from drive A:.

5.2-2-2 Installing Drivers with Existing Millenium System

The following section details the installation of Ultra100 drivers on a system that has Millenium already installed and running. If you're installing the Ultra100 drivers on a system during an installation of Millenium, see "Installing Drivers During Millenium Installation."

1. After installing the Ultra100 controller card and configuring the hard drives, power up the system and boot.
2. The "Add New Hardware Wizard" will appear, informing you that it has found a "PCI Mass Storage Controller."
3. Click on "Next," and from the generated list box, choose "Search for a better driver than the one your device is using now."
4. Click on "Next," and from the generated choices, choose "Specify a location."
5. Insert the "Ultra100 Driver" diskette in drive A:.
6. Type "A:\WINMILL" in the text box that appears.
7. Click on "Next." A message informing you that Millennium has found "Windows Millennium Promise ULTRA100 (tm) IDE Controller" should appear.
8. Click on "Next," and then on "Finish."
9. Choose "Yes" when asked if you want to restart your computer. Be sure to eject the diskette from drive A:.

Confirming Driver Installation in Millennium

To confirm that the driver has been properly loaded in Millennium, perform the following steps:

1. Choose "Settings" from the "Start" menu.
2. Choose "Control Panel," and then double-click on the "System" icon.

Choose the "Device Manager" tab, and then click the "+" in front of "SCSI controllers." "Windows Millennium Promise ULTRA100 (tm) IDE controller" should appear.

5.2-3 Windows 98

5.2-3-1 Installing Drivers During Windows 98 Installation

The following details the installation of the Ultra100 drivers while installing Windows 98 (with the Ultra100 controller card already in place). If you're installing the Ultra100 drivers on a system with Windows 98 already installed, see "Installing Drivers with Existing Windows 98."

1. After installing the Ultra100 controller card and configuring the hard drive(s), partition and format your hard drive(s), if necessary.
2. Install Windows 98 normally.
3. After installation, go the "Start" menu and choose "Settings."
4. From the "Settings" menu, choose "Control Panel."
5. In the "Control Panel" window, double-click on the "System" icon.
6. In the "System" window, choose the "Device Manager" tab.
7. In the hierarchical display under "Other Devices" is a listing for "PCI Mass Storage Controller." Choose it and then press the "Properties" button.
8. Choose the "Driver" tab in the "Properties" window, choose "Update Driver," and then press "Next."
9. Choose "Search for a better driver than the one your device is using now (recommended)," then press "Next."
10. Choose "Specify Location," and then type "A:\WIN95-98" in the text box.
11. Insert the "Ultra100 Driver" diskette into the A: drive.
12. Press the "Next" button. A message informing you that Windows has found "Win95-98 Promise ULTRA100 (tm) IDE Controller" should appear.
13. Press "Next," then "Finish," then "Yes" when asked if you want to restart your computer. Be sure to remove the diskette from drive A:.

5.2-3-2 Installing Drivers with Existing Windows 98

The following section details the installation of Ultra100 drivers on a system that has Windows 98 already installed. If you're installing the Ultra100 drivers on a system during a Windows 98 installation, see "Installing Drivers During Windows 98 Installation."

1. After installing the Ultra100 controller card and configuring the hard drives, power up the system and boot Windows.
2. The "Add New Hardware Wizard" will appear, informing you that it has found a "PCI Mass Storage Controller."
3. Click on "Next," and from the generated list box, choose "Search for a better driver than the one your device is using now."
4. Click on "Next," and from the generated choices, choose "Specify a location."
5. Type "A:\WIN95-98" in the text box that appears.
6. Insert the "Ultra100 Driver" diskette in drive A:.
7. Click on "Next." A message informing you that Windows has found "Win95-98 Promise ULTRA100 (tm) IDE Controller" should appear.
8. Click on "Next," and then on "Finish."
9. Choose "Yes" when asked if you want to restart your computer. Be sure to eject the diskette from drive A:.

Confirming Driver Installation in Windows 98

To confirm that the driver has been properly loaded in Windows 98, perform the following steps:

1. Choose "Settings" from the "Start" menu.
2. Choose "Control Panel," and then double-click on the "System" icon.
3. Choose the "Device Manager" tab, and then click the "+" in front of "SCSI controllers." "Win95-98 Promise ULTRA100 (tm) IDE controller" should appear.

5.2-4   Windows NT 4.x

5.2-4-1 Installing Drivers During New Windows NT 4.0 Installation

1. Start the system installation by booting from the Windows NT disk:
    a) Floppy install: boot the system with the Windows NT installation diskettes.
    b) Floppyless install: boot from floppy and type "WINNT /B". After files have been copied, the system will reboot. On the reboot, press the "F6" key when the message "Setup is in specting your computer's hardware configuration…" appears.
    c) CD-ROM disk install: boot from the CD-ROM disk and press the "F6" key when the message "Setup is inspecting your computer's hardware configuration…" appears.
2. When the "Windows NT Setup" window is generated, press "S" to Specify an Additional Device(s).
3. Press "O" to select "Other" and press the "Enter" key.
4. Insert the Promise Technology driver diskette into drive A: and press the "Enter" key.
5. Choose "Win NT Promise Ultra100 (tm) Controller" from the list that appears on screen, then press the "Enter" key.
6. The Windows NT Setup screen will appear again saying "Setup will load support for the following mass storage devices:" The list will include "Win2000 Promise Ultra100 (tm) controller".
    NOTE: If you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, continue to step 6.

7. From the Windows NT Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows NT installation.
8. After a successful installation, the "SCSI Adapter Setup" box will show that the "Win NT Promise ULTRA100 (tm) Controller" driver has been installed.

5.2-4-2 Installing Drivers with Existing Windows NT 4.0

WARNING: If you wish to use your current bootable drive with the Windows NT4 operating system on the Ultra100, perform the steps below while the boot drive is still attached to your existing onboard IDE controller. Do not attach any drives to your Ultra100 until the steps below are complete.

1. Choose "Settings" from the "Start" menu.
2. Choose "Control Panel" from the "Settings" menu.
3. Double-click on the "SCSI Adapters" icon, which generates the "SCSI Adapters" dialog box.
4. Choose "Drivers," and then press "Add."
5. In the "Install Drivers" dialog box, press "Have Disk…"
6. When the "Install From Disk" appears, insert the "Ultra100 Driver" diskette in drive A:.
7. Type "A:\NT4" in the text box, then choose "OK."
8. When the "Install Driver" dialog box appears, select "Win NT Promise ULTRA100 (tm) Controller" and then press "OK."
9. When the "Select SCSI Adapter Option" dialog box appears, press "Install."
10. After a successful installation, the "SCSI Adapter Setup" box will show that the "Win NT Promise ULTRA100 (tm) Controller" driver has been installed.
11. Power off your system, and then attach your hard drive(s) (see page 7 for more details) to the Ultra100 controller card.