VT-501

MAINBOARD
MANUAL

Handling Precautions

Warning :
1. Static electricity may cause damage to the integrated circuits on the mainboard.
   Before handling any mainboard outside of its protective packaging, ensure that there is no static electric charge in your body**.**
2. There is a danger of explosion if the battery is incorrectly replaced.
   Replace only with the same or an equivalent type recommended by the manufacturer.
3. Discard used batteries according to the manufacturer's instructions.

Observe the following basic precautions when handling the mainboard or other computer components:
■ Wear a static wrist strap which fits around your wrist and is connected to a natural earth ground.
■ Touch a grounded or anti-static surface or a metal fixture such as a water pipe.
■ Avoid contacting the components on add-on cards, boards and modules and with the "gold finger" connectors plugged into the expansion slot. It is best to handle system components by their mounting bracket.

The above methods prevent static build-up and cause it to be discharged properly.

Trademark

All trademarks mentioned in this manual are registered properly of the respective owners.

Copyright

This manual may not, in whole or in part, be photocopied, reproduced, transcribed, translated, or transmitted in whatsoever form without the written the consent of the manufacturer, except for copies retained by the purchaser for personal archival purposes.

Chapter 3   Award BIOS Setup

This Page Intentionally Left Blank

Overview

The VT-501 mainboard combines the advanced capabilities of the Intel 82430VX PCIset with a 321-pin ZIF socket and voltage regulator which support the full range of Intel Pentium®, Cyrix 6x86™ and AMD-K5™ processors as well as the future MMX™ processors to provide the ideal platform for building the next generation of high performance Microsoft Windows multimedia systems.

The VT-501 archieves the highest level of system responsiveness using up to 128 MB high-speed EDO DRAM or 64MB lightning-fast SDRAM coupled with an onboard 256/512KB Pipeline Burst SRAM Level II cache.

Built on the highly concise Baby AT form factor, the VT-501 integrates a full set of I/O features onboard, including two 16550A UART compatible serial ports, one EPP/ECP capable parallel port and support fur state-of-the-art Universal Serial Bus (USB) through the optional USB riser card providing ease-of-use and high-speed Plug & Play connections to future USB complaint peripheral devices. System I/O connectivity is further enhanced by an IrDA complaint serial port, an optional PS/2 Keyboard & PS/2 Mouse port and optional onboard SIR support.

Ample expansion is provided for with four 16-bit ISA slots and four 32-bit PCI slots. The VT-501 also comes with a built-in Enhanced PCI Bus Master PCI IDE controller that provides high speed connections to a full range of IDE devices including HDD, CD-ROM and Tape-Drives, and delivers ultra fast data transfer up to 20MB/sec through its support for PIO Mode3, Mode4 and DMA Mode 2.

This chapter gives a you a brief overview of the VT-501 mainboard. In addition to basic information on the board's main components and features, it also provides advice on how to upgrade and expand it. For updated BIOS, drivers, or product release information, please visit FIC's home page at: http://www.fic.com.tw. Congratulations on your decision to adopt the VT-501 mainboard. With its high-speed PCI local bus architecture and ultra-fast I/O connections, the VT-501 provides the ultimate solution for optimizing the performance of your high-end system.

Main Features

The VT-501 mainboard comes with the following high-performance features:

■ Easy Installation
Award BIOS with support for Plug and Play, auto detection of Hard Drive and IDE features, MS Windows 95, and Windows NT compatible.

■ Flexible Processor Support
The onboard 321-pin ZIF socket supports Intel Pentium (P54C) CPU speed 75/90/100/120/133/150/166/200 MHz processors/ P54CTB / P55C (optional by splitting the voltage regulator).
Cyrix 6x86-P120+ (100 MHz) / 6x86-P133+ (110 MHz) / 6x86-P150+ (120 MHz) / 6x86-P166+ (133 MHz) processors.
IBM 6x86-P120+ (100 MHz) / 6x86-P133+ (110 MHz) / 6x86-P150+ (120 MHz) / 6x86-P166+ (133 MHz) processors.
AMD K5-PR75 (75 MHz) / K5-PR90 (90 MHz) / K5-PR100 (100 MHz) / K5-PR120 (90 MHz) / K5-PR133 (100 MHz) / K5-PR150 (120 MHz) / K5-PR166 (133 MHz) processors.

■ Leading Edge Chipset
Intel 82430VX chipset, including a CPU interface controller, advanced cache controller, integrated DRAM controller, synchronous ISA bus controller, PCI local bus interface, integrated power management unit.

■ Ultra-fast Level II Cache
Supports onboard 256KB/512KB synchronous PBSRAM direct-mapped write-back cache memory.

■ Versatile Main Memory Support
Accepts up to 128MB RAM in two banks using 72-pin SIMMs of 4, 8, 16, 32MB or using a 168-pin DIMM with support for SDRAM or EDO memory.

■ ISA & PCI Expansion Slots
Four 16-bit ISA and four 32-bit PCI expansion slots provide all the room you need to install a full range of add-on cards.

■   USB Support
     Two Universal Serial Bus connectors integrated into rear I/O panel.

■   Enhanced PCI Bus Master IDE Controller
    Integrated Enhanced PCI local bus IDE controller with two connectors
    supports up to four IDE devices such as Hard Disk, CD-ROM or Tape
    Backup drives via two channels for high speed data throughput. This
    controller supports PIO Modes 3 and 4, and DMA Mode 2 for optimized
    system performance.

■   Super Multi I/O
    Integrated UMC669/LGS Prime 3C Plug and Play Super I/O chipset
    features two 16550A UART compatible serial ports, one EPP/ECP capable
    parallel port, one IR port, and one Floppy Disk Drive connector.

This User Manual

This manual is designed to guide you and facilitate your use of the VT-501 mainboard. It contains a description of the design and features of the mainboard, and also includes useful information for changing the configuration of the board and the system it is installed in. The manual is divided into three chapters:

■ Chapter 1 - Overview
gives an overview of the mainboard and describes its major components and features.

■ Chapter 2 - Installation Procedures
gives instructions on how to set up the mainboard, including jumper settings and CPU installation guides.

■ Chapter 3 - Award BIOS Setup
briefly explains the mainboard's BIOS system setup in general and tells you
how to run it and change the system configuration settings.

NOTE : The material in this manual is for information only and is subject to change without notice. We reserve the right to make changes in the product design without reservation and without notification to its users. We shall not be liable for technical or editorial omissions made herein; nor for incidental or consequential damages resulting from the furnishing, performance, or use of this material.

Something Interesting

This section provides useful information that you will need to know should you decide to modify or upgrade the configuration of the mainboard and the system it is installed in. If you do not have the confidence to upgrade the mainboard yourself, we advise that you consult a qualified service technician for assistance.

The BIOS Setup Utility

The BIOS (Basic Input Output System) is the basic firmware that instructs the computer how to operate. For the BIOS to work properly, there must be a record of the computer's hardware and configuration settings for it to refer to. This record is created using the Setup Utility, a program that is stored permanently in the BIOS ROM chip on the mainboard.

The system configuration record created by the Setup Utility is also stored on the mainboard, but not permanently. This section of the memory it is stored is in the NVRAM.

When you buy your computer, the system configuration record will already be set and may in some cases differ from the basic defaults. The first time you use your computer or when you need to re-configure your system, you should run the Setup Utility and write down the settings.

IRQ Functionality

As you read through this manual, you will see the term IRQ on a number of occasions. It is important for you to know what this term means, particularly if you intend to upgrade your system.

IRQ stands for Interrupt Request, the process in which an input or output device tells the processor to temporarily interrupt its current task and immediately process something from the source of the interrupt. When it has completed this, the processor returns to the task it was already processing. Devices that need an
IRQ line to operate sometimes need to have exclusive use of that line.

A large number of add-on cards, such as sound cards and LAN cards, require the use of an IRQ line to function. Some no. of IRQs may already be in use by components in the system such as the keyboard and mouse. Add-on cards that need to use an IRQ draw from the unused group of IRQs. When installing a card that uses an IRQ, it will have a default IRQ setting which you might have to change if that IRQ is already in use and cannot be shared.

Both ISA and PCI add-on cards may need to use IRQs. System IRQs are available to add-on cards installed on the ISA bus first; the remaining ones can be used by cards installed on the PCI bus. There are two categories of ISA add-on cards: so-called Legacy ISA cards, which need to be configured manually and then installed in any available ISA slot; and Plug and Play (PnP) ISA cards, which are configured automatically by the system. As a result, when you install Legacy ISA cards, you have to carefully configure the system to ensure that the installed cards do not conflict with each other by having the same IRQ. With PnP cards, on the other hand, IRQs are assigned automatically from the ones available in the system. In the case of PCI add-on cards, the BIOS automatically assigns an IRQ card to the PCI slot the card is installed in.

DMA Channels of ISA Cards

Some Legacy and PnP ISA add-on cards may also need to use a Direct Memory Access (DMA) channel. DMA assignments for this mainboard are handled in the same way as the IRQ assignment process outlined above. For more information, please refer to Chapter 3 of this manual.

Enhanced IDE

This mainboard features an integrated Enhanced IDE controller that provides convenient, high-speed connections with up to four IDE devices, such as Hard Disk, CD-ROM and Tape Backup Drives. Enhanced IDE is an upgrade of the original IDE specification and provides increased capabilities and performance in a number of areas, including support for Hard Disk Drives of over 1.2GB and faster data transfer rates utilizing the PIO Mode 4 timing scheme.

With the integrated IDE controller you can connect up to four IDE peripheral devices to your system. All devices are categorized in the same way that IDE Hard Disks were configured in the past, with one device set as the Master device and the other as the Slave device. We recommend that Hard Disk Drives use the Primary IDE connector and that CD-ROM drives utilize the Secondary IDE connector for improved system performance.

Serial Infrared (SIR) Connections

This mainboard features support for highly-sophisticated SIR technology, which allows bi-directional and cordless data transactions with other IrDA compliant computers and peripheral devices using infrared as a medium. This transmission is carried out in either Full Duplex Mode or Half Duplex Mode. The former allows simultaneous data transmission and reception, while the latter disables the reception when transmission occurs.

The I/O chipset on this mainboard features a SIR interface that is fully compliant with the IrDA standard. An IrDA device can be installed via a 9-pin D-SUB connector in the rear panel of the computer which is linked by a cable to the onboard IrDA pinhead, as shown in the illustration below.
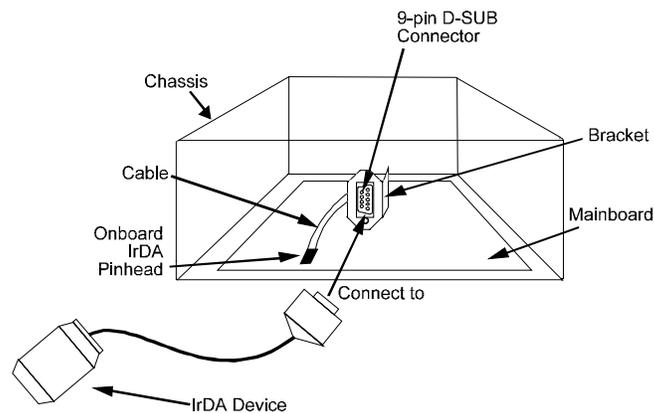
The serial port COM2 on this mainboard is designed to be an SIR compliant port. If you wish to install the SIR connection feature, you need to adjust the BIOS option for high-speed performance.

Highly Convenient Integrated I/O Connectors

This mainboard features has an integrated rear I/O panel that incorporates a full set of I/O ports to allow simple and convenient connections to a complete selection of external peripheral devices.

In addition to two 16550A UART compatible serial ports and one EPP/ECP capable parallel port, the panel features two USB connectors that provide high speed connection to the next generation of USB devices. PS/2 keyboard and PS/2 mouse connectors provide additional I/O connectivity.
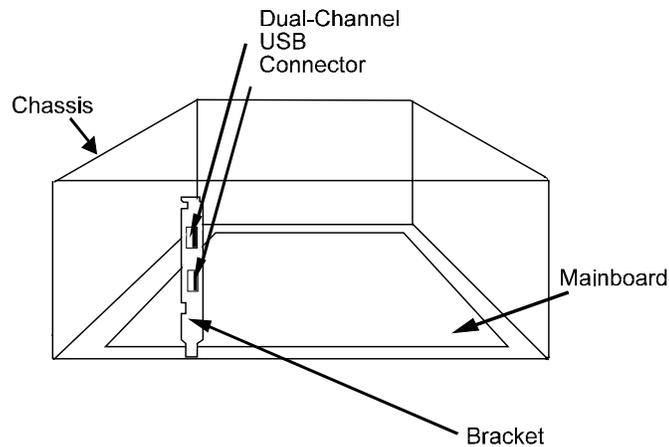
This Page Intentionally Left Blank

Installation Procedures

The VT-501 has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

To set up your computer, you should follow these installation steps:

■ Step 1 -
   Set system jumpers

■ Step 2 -
    Install DRAM and SDRAM modules

■ Step 3 -
   Install the CPU

■ Step 4 -
   Install expansion cards

■ Step 5 -
   Connect cables and power supply

■ Step 6 -
   Set up BIOS feature (Please read Chapter Three.)

Mainboard Layout
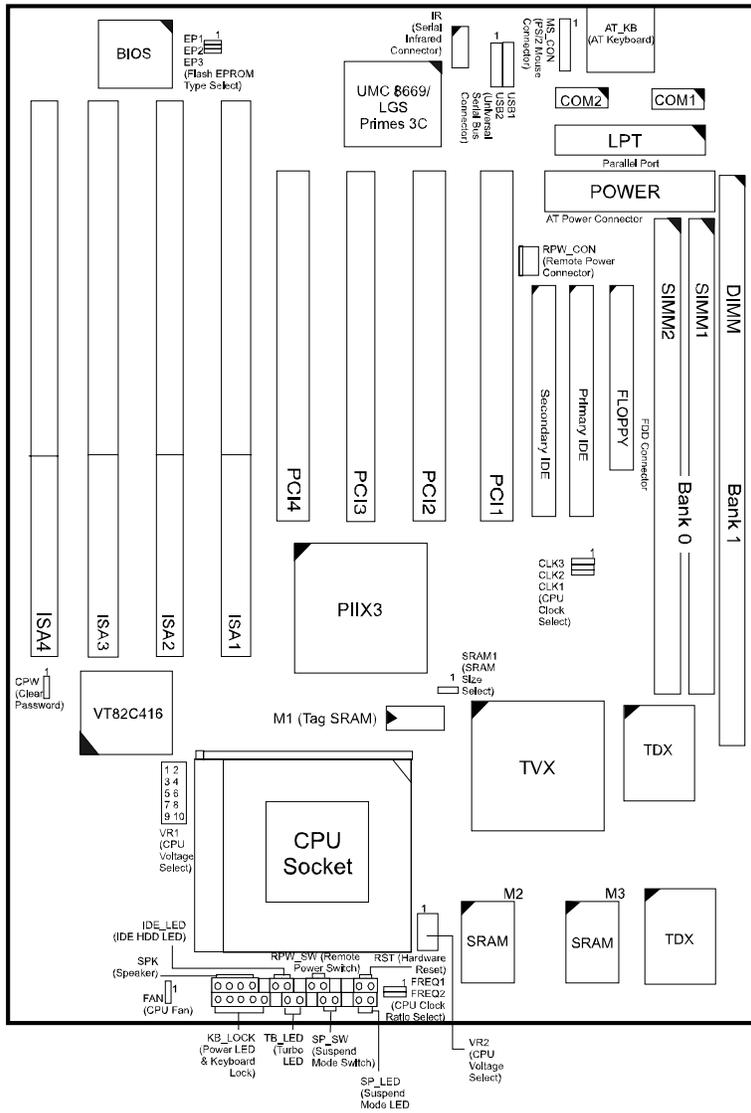
1). Set System Jumpers

Jumpers

Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. To "set" a jumper, a black cap containing metal contacts is placed over the jumper pin/s according to the required configuration. A jumper is said to be "shorted" when the black cap has been placed on one or two of its pins. The types of jumpers used in this manual are shown below:

Jumper Cap **3-pin Jumper** **2-pin Jumper** **Jumper Block**

2 1   3 2 1   **stands for pin 1**
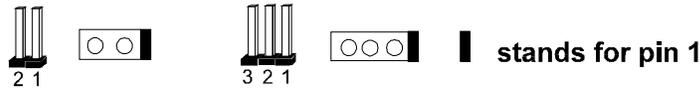
Jumpers are shown as above

3 2 1
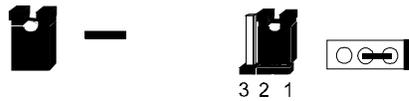
Jumper cap is shown as above

stands for pin 1

Jumpers in a Block

NOTE : Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.

Clear Password: CPW

This jumper allows you to set the password configuration to "Enabled" or "Disabled". You may need to enable this jumper if you forget your password.
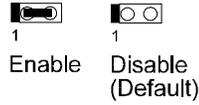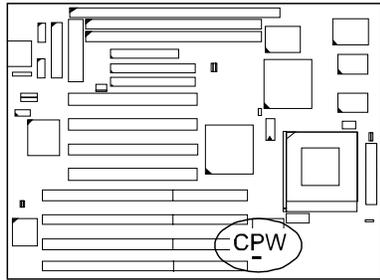
Flash EPROM Type: EP1, EP2 and EP3

These three jumpers allows you to configure the mainboard when using the MXIC 28F1000, Intel 28F001, SST 29EE010 (default), ATMEL 29C0101A, MXIC 28F2000, SST 29EE0202 Flash EPROM chip.

	EP1	EP2	EP3
MXIC 28F1000			
Intel 28F001			
SST 29EE010			
ATMEL 29C010A			
MXIC 28F2000			
SST 29EE020			

2). Install System Memory

DRAM and SDRAM

The working space of the computer is the Random Access Memory (RAM). The system cannot act upon data unless it is loaded into RAM. When more memory is added, the working memory of the computer is larger, thereby increasing total performance.

The VT-501's RAM is comprised of two industry standard 72-pin Single In-line Memory Modules (SIMMs) and one 168-pin Dual In-line Memory Module (DIMM). The SIMM socket is able to support from 8 to 128MB FPM (Fast Page Mode) and EDO (Extended Data Out) DRAM. Its DIMM socket is able to support 64MB SRAM (Synchronous DRAM).

SDRAM is an advanced new memory technology that boosts overall system performance with its ability to synchronize all operations with the processor clock signal. This makes the implementation of control interfaces easier, and speeds up column access time. SDRAM features an on-chip burst counter that can be utilized to increment column addresses for very fast burst accesses, which means that SDRAM allows new memory accesses to be initiated before the preceding access has been finished.

Before making DRAM upgrades you should verify the type and speed of the RAM currently installed from your dealer. Installing mixtures of RAM types other than those described in this manual will have up unpredictable results.

DRAM and SDRAM Configuration

TOTAL MEMORY	SIMM BANK0 (72-PIN X 2)	DIMM BANK1 (168-PIN X 1)
8MB	4MB & 4MB	
		8MB
16MB	8MB & 8MB	
	4MB & 4MB	8MB
24 MB	8MB & 8MB	8MB
32 MB	8MB & 8MB	16MB
	16MB & 16MB	
40MB	16MB & 16MB	8MB
48MB	16MB & 16MB	16MB
64MB	16MB & 16MB	32MB*
	32MB & 32MB	
72MB	32MB & 32MB	8MB
80MB	32MB & 32MB	16MB
96MB	32MB & 32MB	32MB*
128MB	32MB & 32MB	64MB*

Note : * A DIMM of this size was not available for testing when this book was printed.

Install SIMMs

Complete the following procedures to install SIMMs:

CAUTION : Always turn the system power off before installing or removing any device; and see "Handling Precautions" at the start of this manual.

1. Locate the SIMM slots on the mainboard. (See figure below.)
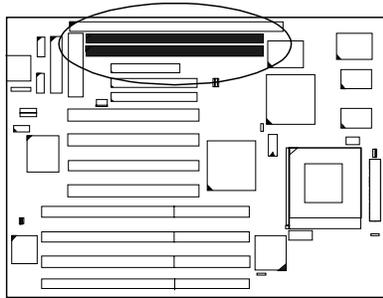
NOTE : BANK 0 and BANK 1 can use different type SIMMs - but you must populate each memory bank with the same type of SIMM. The BIOS will automatically configure the memory size.

2. Carefully fit a SIMM at a 45 degree angle into each empty sockets to be populated. All the SIMMs must face the same direction.

3. Swing each SIMM into its upright, locked position. When locking a SIMM in place, push on each end of the SIMM - do not push in the middle, as shown above.
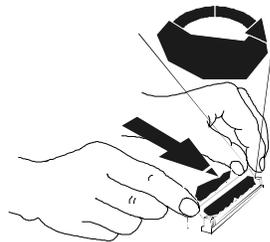
Remove SIMMs

To remove the SIMMs, pull the retaining latch on both ends of the socket and reverse the procedure above.

Install DIMM

Complete the following procedures to install DIMMs:

1. Locate the DIMM slot on the mainboard. (See figure below.)
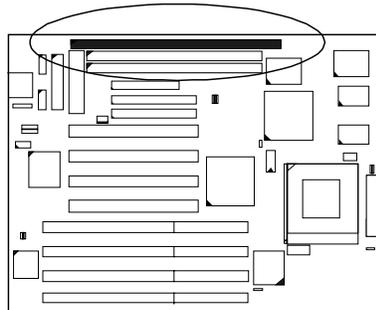
2. Insert the DIMM straight down onto the DIMM slot with both hands carefully until the clips on the ends of the slot close up to hold the DIMM firmly.

Remove DIMM

Press the clips on the ends of the slot simultaneously. The DIMM will spring out easily.

Cache Memory

The VT-501 comes with onboard 256KB/512KB synchronous 3V Pipeline Burst SRAM.

Please note that for 256KB secondary cache, M2 and M3 should be mounted with 32Kx32 Pipeline Burst SRAM. (Please refer to your dealer for the 512KB cache upgrade and the appropriate SRAM type.)
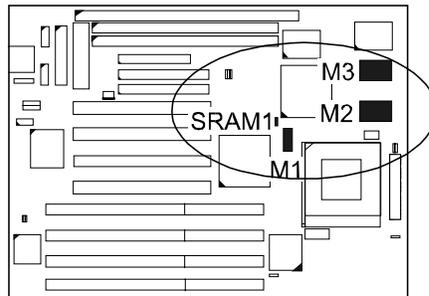
256/512KB Cache SRAM

NOTE : Use the correct chips for the amount of cache memory you want to add. Install both the correct Cache and Tag SRAM.

256KB

M3

SRAM1

1

32Kx32

M2

M1 (TAG)

32Kx32

16Kx8/32Kx8

512KB

M3

SRAM1

1

64Kx32

M2

M1 (TAG)

64Kx32

16Kx8/32Kx8
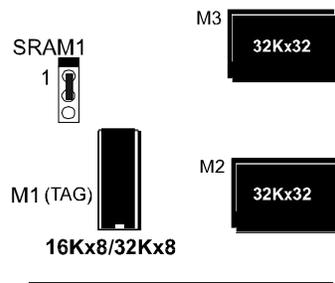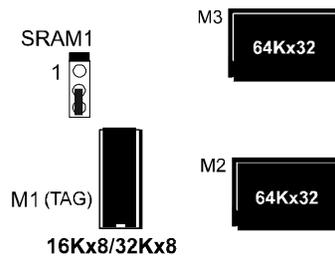
3). Install the CPU

The CPU module resides in the Zero Insertion Force (ZIF) socket on the mainboard.

CAUTION :
1. Always turn the system power off before installing or removing any device.
2. Always observe static electricity precautions. See "Handling Precautions" at the start of this manual.
3. Inserting the CPU chip incorrectly may damage the chip.

To install the CPU, do the following:
1. Lift the lever on the side of the CPU socket.
2. Handle the chip by its edges and try not to touch any of the pins.
3. Place the CPU in the socket. The chip has a notch to correctly orientate the chip. Align the notch with pin one of the socket. Pin one locates around the triangular blank area. Do not force the chip. The CPU should slide easily into the socket.
4. Swing the lever to the down position to lock the CPU in place.
5. See the following sections for information on the CPU jumpers settings.

CPU External Clock (BUS) Frequency: CLK1, CLK2, and CLK3

The table below shows the jumper settings for the different CPU speed configurations.
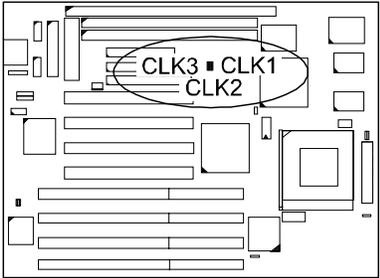
CPU Speed	CLK1	CLK2	CLK3
66 MHz			
60 MHz			
55 MHz			
50 MHz			

CPU to Bus Frequency Ratio: FREQ1 and FREQ2

These two jumpers are used in combination to decide the ratio of the internal frequency of the CPU to the bus clock.
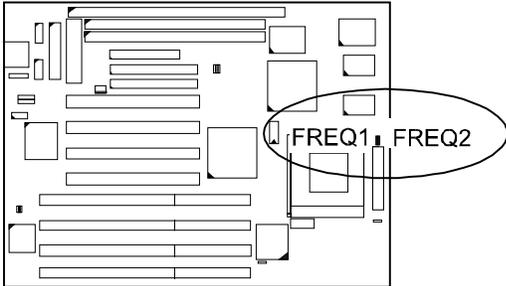
	FREQ1	FREQ2
3 x		
2.5 x		
2 x		
1.5 x		

Intel Pentium CPUs

Frequency

CPU Speed	External (CPU/CLK)	CLK1	CLK2	CLK3	CPU Clock Rate		
					Internal	FREQ1	FREQ2
200 MHz	66 MHz				3 x		
166 MHz	66 MHz				2.5 x		
150 MHz	60 MHz				2.5 x		
133 MHz	66 MHz				2 x		
120 MHz	60 MHz				2 x		
100 MHz	66 MHz				1.5 x		
90 MHz	60 MHz				1.5 x		
75 MHz	50 MHz				1.5 x		

Voltage

VR1   VR2

2 4 6 8 10   2 4 6 8
1 3 5 7 9   1 3 5 7
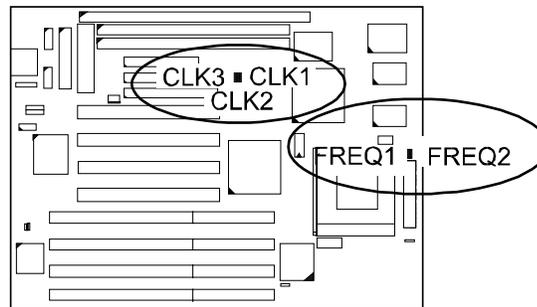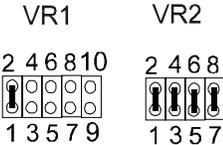
Core : 3.4V-3.6V
IO   : Same
P54C VRE

2 4 6 8 10   2 4 6 8
1 3 5 7 9   1 3 5 7
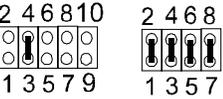
Core : 3.3V
IO   : Same
P54C STD

2 4 6 8 10   2 4 6 8
1 3 5 7 9   1 3 5 7
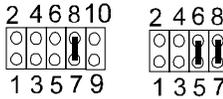
Core : 2.8V
IO   : 3.3V
P55C

Intel Pentium CPU
Bottom Side Marking

xxxxxxxxx
xxxxxxxxx
BP80502-SSS
SXXXX/RSS
XXX
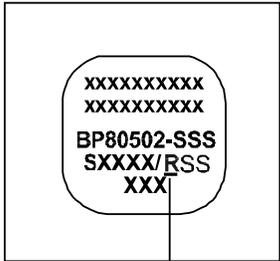
R (Identifier for Voltage Range) :

V for VRE Voltage Range
  or
S for Standard Voltage Range

VR2
VR1
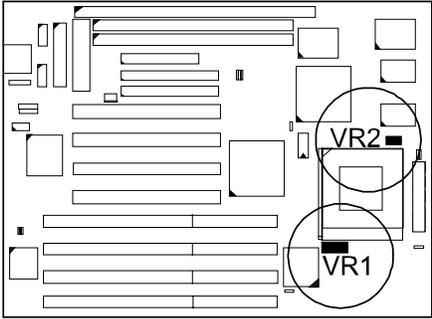
AMD-K5 CPUs

Frequency

Model Name	CPU Speed	External (CPU/CLK)	CLK1	CLK2	CLK3	CPU Clock Rate Internal	FREQ1	FREQ2
K5-PR166 *	133 MHz	66 MHz				2 x		
K5-PR150 *	120 MHz	60 MHz				2 x		
K5-PR133 *	100 MHz	66 MHz				1.5 x		
K5-PR120	90 MHz	60 MHz				1.5 x		
K5-PR100	100 MHz	66 MHz				1.5 x		
K5-PR90	90 MHz	60 MHz				1.5 x		
K5-PR75	75 MHz	50 MHz				1.5 x		

Note : * This CPU had not been tested when this manual was printed.

Voltage

VR1   VR2

2 4 6 8 10   2 4 6 8
1 3 5 7 9   1 3 5 7
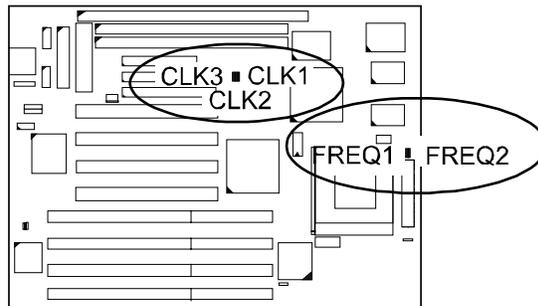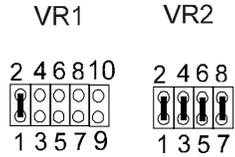
Core : 3.4V-3.6V
IO   : Same
AMD-K5 - B

2 4 6 8 10   2 4 6 8
1 3 5 7 9   1 3 5 7
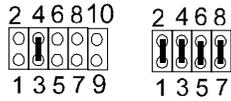
Core : 3.3V
IO   : Same
AMD-K5 - C, F

2 4 6 8 10   2 4 6 8
1 3 5 7 9   1 3 5 7
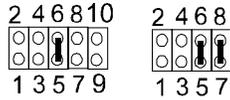
Core : 2.9V
IO   : 3.3V
AMD-K5 - H

2 4 6 8 10   2 4 6 8
1 3 5 7 9   1 3 5 7
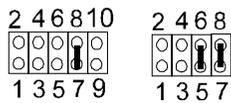
Core : 2.8V
IO   : 3.3V
AMD-K5 - J

2 4 6 8 10   2 4 6 8
1 3 5 7 9   1 3 5 7
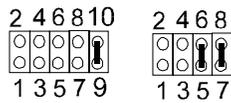
Core : 2.5V
IO   : 3.3V
AMD-K5 - K

AMD-K5 CPU
Top Side Marking

AMD-K5
AMD-K5-PRXXXA<u>V</u>Q
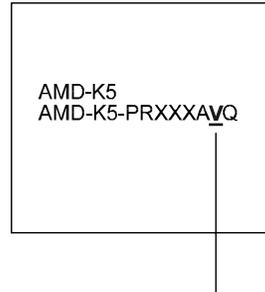
V (Identifier for Operation Voltage) :

B
C
F   Please refer to
H   the left-hand-side table
J
K

VR2 ■
VR1

Cyrix 6x86 CPUs

Frequency

Model Name	CPU Speed	External (CPU/CLK)	CLK1	CLK2	CLK3	CPU Clock Rate Internal	FREQ1	FREQ2
6x86-P166+ 6x86L-P166+ *	133 MHz	66 MHz	1	1	1	2 x	1	1
6x86-P150+ 6x86L-P150+ *	120 MHz	60 MHz	1	1	1	2 x	1	1
6x86-P133+ 6x86L-P133+ *	110 MHz	55 MHz	1	1	1	2 x	1	1
6x86-P120+ 6x86L-P120+ *	100 MHz	50 MHz	1	1	1	2 x	1	1

Note : * This CPU had not been tested when this manual was printed.

CLK3 ▪ CLK1
CLK2

FREQ1 ▪ FREQ2

Voltage

VR1   VR2

2 4 6 8 10   2 4 6 8

1 3 5 7 9   1 3 5 7

Core : 3.4V-3.6V
IO   : Same
Cryix 6x86-028

2 4 6 8 10   2 4 6 8

1 3 5 7 9   1 3 5 7

Core : 3.3 V
IO   : Same
Cyrix 6x86-016

2 4 6 8 10   2 4 6 8

1 3 5 7 9   1 3 5 7
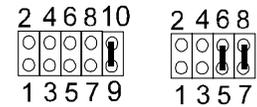
Core : 2.5V
IO   : 3.3 V
Cyrix 6x86L *

Cyrix 6x86 CPU
Top Side Marking

6x86-P166$^+$GP
133 MHz
3.52V **(028)**

(016) : 3.3V

(028) : 3.52V

Note : * This CPU had not been tested when this manual was printed.

VR2

VR1

IBM 6x86 CPUs

Frequency

Model Name	CPU Speed	External (CPU/CLK)	CLK1	CLK2	CLK3	CPU Clock Rate		
						Internal	FREQ1	FREQ2
6x86-P166+ 6x86L-P166+ *	133 MHz	66 MHz	1	1	1	2 x	1	1
6x86-P150+ 6x86L-P150+ *	120 MHz	60 MHz	1	1	1	2 x	1	1
6x86-P133+ 6x86L-P133+ *	110 MHz	55 MHz	1	1	1	2 x	1	1
6x86-P120+ 6x86L-P120+ *	100 MHz	50 MHz	1	1	1	2 x	1	1

Note : * This CPU had not been tested when this manual was printed.

Voltage

VR1   VR2

2 4 6 8 10   2 4 6 8

1 3 5 7 9   1 3 5 7

Core : 3.4V-3.6V
IO   : Same
IBM 6x86-028

2 4 6 8 10   2 4 6 8

1 3 5 7 9   1 3 5 7
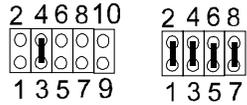
Core : 3.3 V
IO   : Same
IBM 6x86-016

2 4 6 8 10   2 4 6 8

1 3 5 7 9   1 3 5 7
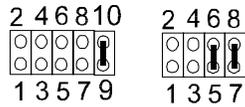
Core : 2.5V
IO   : 3.3 V
IBM 6x86L*

IBM 6x86 CPU
Top Side Marking

6x86-P166$^+$GP
133 MHz
3.52V **(028)**
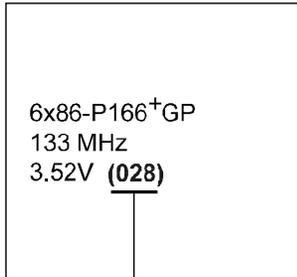
(016) : 3.3V

(028) : 3.52V

Note : * This CPU had not been tested when this manual was printed.
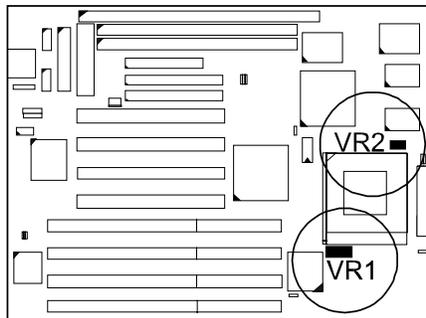
Installation of Cyrix (or IBM) 6x86 CPU Fan

CAUTION : When you install a Cyrix (or IBM) 6x86 CPU fan, please pay attention to the direction of the air flow. Make sure the air flow is in the direction of the regulator; otherwise, the system may overheat.

We recommended that you use one of the following two CPU fans for the Cyrix (or IBM) 6x86 CPU when install the fan on the mainboard.

1). Supplier : BIRCHTECK, Taiwan (Phone : 886-2-7935677).
        Model Number - BEC6x86B1.
2). Supplier : Thermalloy, USA (Phone : 214-243-4321).
        Model Number : 20832 (customer should request NMB-B50 Fan).
           This is a 90-degree rotated fan and is recommended for installation
        on the mainboard.
For further information, please contact your local dealer. For stable system performance, make sure that the air flow blows directly, two options as shown below, toward the regulator so as to lower the temperature of the regulator.
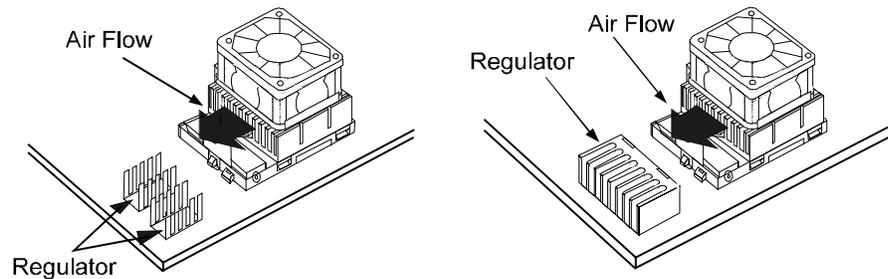
4). Install Expansion Cards

Your VT-501 features four 16-bit ISA Bus and four 32-bit PCI Bus expansion slots.
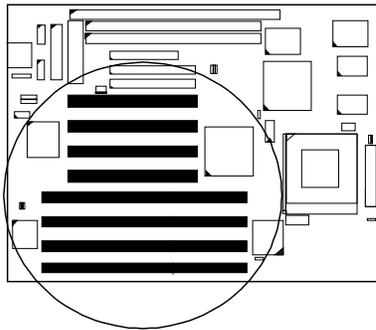
This section describes how to connect an expansion card to one of your system's expansion slots. Expansion cards are printed circuit boards that, when connected to the mainboard, increase the capabilities of your system. For example, expansion cards can provide video and sound capabilities.

CAUTION :
1. Always turn the system power off before installing or removing any device.
2. Always observe static electricity precautions.
See "Handling Precautions" at the start of this manual.

To install an expansion card, do the following:
 1. Remove the chassis cover and select an empty expansion slot.
 2. Remove the corresponding slot cover from the chassis.
      Unscrew the mounting screw that secures the slot cover and pull the slot cover out from the chassis. Keep the slot cover mounting screw nearby.

3.   Holding the edge of the peripheral card, carefully align the edge connector
     with the expansion slot. (See figure below.)
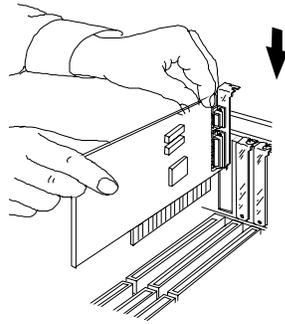
4.   Push the card firmly into the slot. Push down on one end of the
     expansion card, then the other. Use this "rocking" motion until the add-in
     card is firmly seated inside the slot.
5.   Secure the board with the mounting screw removed in Step 2.
     Make sure that the card has been placed evenly and completely into the
     expansion slot.

5). Connect Cables and Power Supply

Keyboard Connector: AT_KB
This 5-pin female connector is connected to your keyboard.
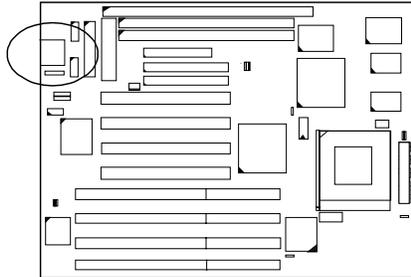
Serial Port Connector: COM1 and COM2
These two 10-pin male connectors allow you to connect with your devices that take serial ports, such as a serial mouse or a modem. The COM2 Port on the mainboard can also be used as another IR Port. Usually, your serial mouse is attached to COM1. Your modem is linked to COM2. When you do not use the modem, you can set the BIOS to let COM2 be an IR port to save a dedicated SIR port.
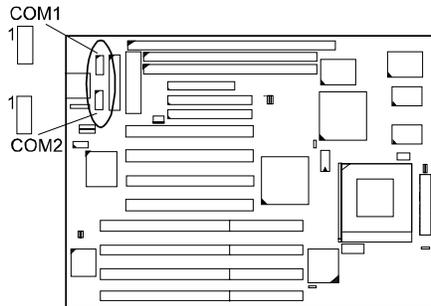
PS/2 Mouse Connector: MS_CON
This connector is connected to your PS/2 mouse.
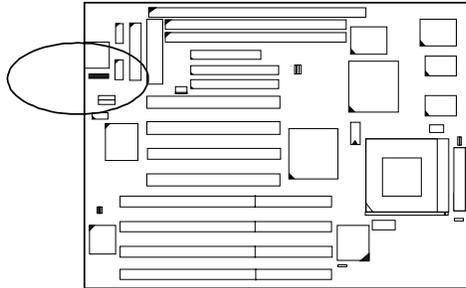
CPU Fan Connector: FAN
This connector is linked to the CPU fan.
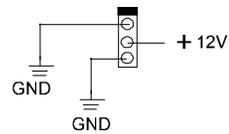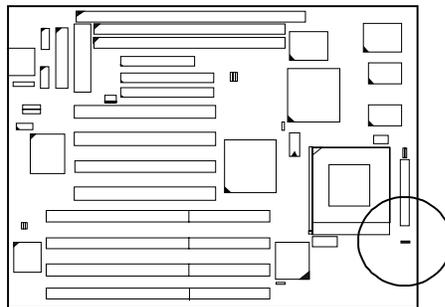
Floppy Diskette Drive Connector: FLOPPY

This 34-pin block connector connects to your floppy diskette drive (FDD) using the cable that is provided with this mainboard.

Block Connector

This block connector concludes : PW_LED, KB_LOCK, TB_LED, SP_SW, SPK, SP_LED, IDE_LED, RPW_SW, and RST connectors.

Item	Connector	Pin Type	Feature
A	PW_LED	2-pin male	indicates the system power status
B	KB_LOCK	2-pin male	allows the keyboard to access the system
C	TB_LED	2-pin male	indicates the system speed is in normal or turbo speed
D	SP_SW	2-pin male	Suspend Mode switch
E	SP_LED	2-pin male	indicates the system into Suspend Mode when LED lit
F	SPK	4-pin male	connects to speaker
G	IDE_LED	2-pin male	indicates the IDE HDD I/O access LED lit
H	RPW_SW	2-pin male	Remote Power switch
I	RST	2-pin male	allows you to reset the system

Infrared Connector: IR

This 10-pin male connector is used for connecting to the serial infrared (SIR) port and allows transmission of data to another system which also supports the SIR feature.
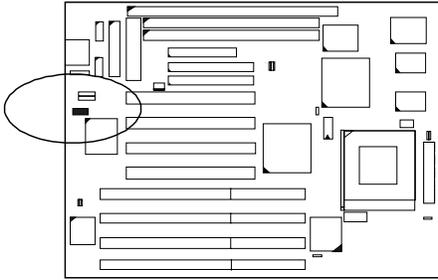
Power Block Connector: POWER

This 12-pin block connector is used for connecting to your standard 5V power supply. In the picture below, notice that, in most cases, there are two marks "P8" and "P9" on the surface of the connector. You have to insert the "P8" plug into the "P8" section of the connector, and so forth for "P9". Two black wires must be in the middle.

Red	+5V
Red	+5V
Red	+5V
White	-5V
Black	GND
Black	GND
Black	GND
Black	GND
Blue	-12V
Yellow	+12V
Red	+5V
Orange	PG

Power Plugs of Power Supply

Power Connector
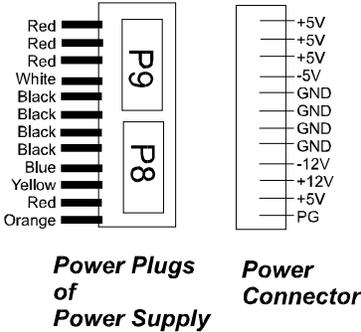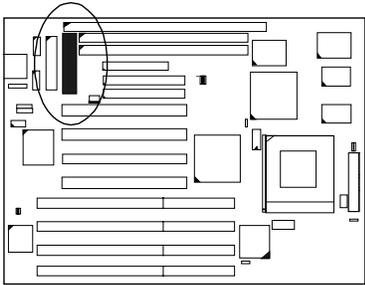
IDE HDD Device Connector: PRIMARY and SECONDARY

This two 40-pin block connectors are used for your IDE hard disks. It you have one IDE hard disk, connect it to the PRIMARY connector using the IDE HDD flat cable provided with the mainboard. The BIOS auto detection sets it to be a "Primary Master" disk. If you want to install another IDE hard disk or CD-ROM, please use the SECONDARY connector. If two hard disks are connected to the PRIMARY connector using the same cable, one of them is the master drive, the other one is the slave drive. You may need to set jumpers for the slave drive; please refer to the HDD manual for details.
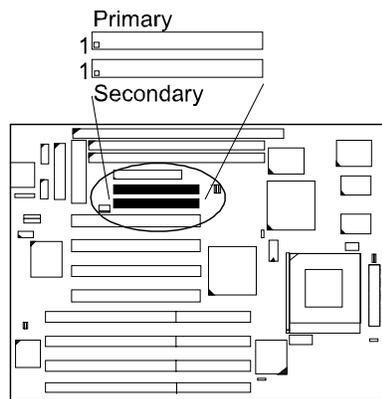
Printer Block Connector: PRINTER

This 26-pin male block connector is attached to your printer via a cable. When inserting the cable, please be sure that the red line is always on the same side as pin 1 of this connector.
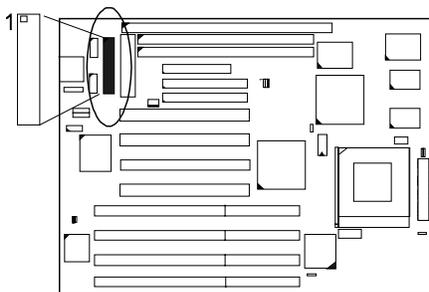
Remote Power Connector: RPW_CON

This 3-pin male connector allows you to enable or disable the system power if the RPW_SW is on or off. (This allows you to adapt the remote power switch feature. Please contact your dealer for further information.)
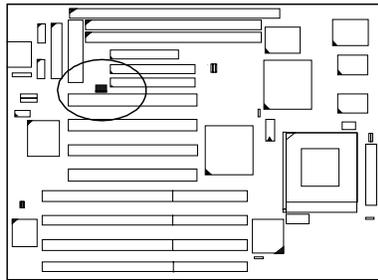
Universal Serial Bus Connectors: USB1 and USB2

This connects to the port that allows you to attach a USB hub. The USB connectors are built-in for future upgrade of devices or peripherals that support Universal Serial Bus features.
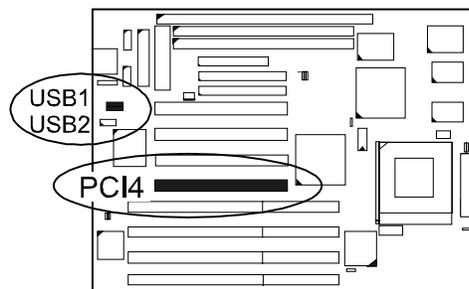
Note : If the USB riser card is installed and the USB feature is enabled, the PCI4 Slot will be utilized by the USB function; in such a case, no add-on card is allowed at PCI4 Slot, since PCI4 Slot is dedicated to the USB function.

Award BIOS Setup

The mainboard comes with the Award BIOS chip that contains the ROM Setup information of your system. This chip serves as an interface between the processor and the rest of the mainboard's components. This chapter explains the information contained in the Setup program and tells you how to modify the settings according to your system configuration.

CMOS Setup Utility

```
                    ROM PCI/ISA BIOS  (2A59GF09)
                        CMOS SETUP UTILITY
                      AWARD SOFTWARE,   INC.
 ┌──────────────────────────────┬──────────────────────────────┐
 │ STANDARD CMOS SETUP          │ INTEGRATED PERIPHERALS        │
 │ BIOS FEATURES SETUP          │ SUPERVISOR PASSWORD           │
 │ CHIPSET FEATURES SETUP       │ USER PASSWORD                 │
 │ POWER MANAGEMENT SETUP       │ IDE HDD AUTO DETECTION        │
 │ PNP/PCI CONFIGURATION        │ SAVE & EXIT SETUP             │
 │ LOAD BIOS DEFAULTS           │ EXIT WITHOUT SAVING           │
 │ LOAD SETUP DEFAULTS          │                               │
 ├──────────────────────────────┴──────────────────────────────┤
 │ ESC : Quit                    ↑ ↓ → ←    : Select Item       │
 │ F10 : Save & Exit Setup      (Shift) F2  : Change Color      │
 ├──────────────────────────────────────────────────────────────┤
 │              Time, Date, Hard Disk Type...                    │
 └──────────────────────────────────────────────────────────────┘
```

A Setup program, built into the system BIOS, is stored in the CMOS RAM. This Setup utility program allows changes to the mainboard configuration settings. It is executed when the user changes system configuration; user changes system backup battery; or the system detects a configuration error and asks the user to run the Setup program. Use the arrow keys to select and press Enter to run the selected program.

Standard CMOS Setup

```
                    ROM PCI/ISA BIOS (2A59GF09)
                       STANDARD CMOS SETUP
                       AWARD SOFTWARE, INC.

  Date (mm:dd:yy)  : Mon, Jan 24 1994
  Time (hh:mm:ss)  : 15 : 38 : 55

  HARD DISKS           TYPE  SIZE   CYLS   HEAD  PRECOMP  LANDZ   SECTOR   MODE

  Primary Master   :   Auto    0      0      0       0       0        0    - - - - - -
  Primary Slave    :   Auto    0      0      0       0       0        0    - - - - - -
  Secondary Master :   Auto    0      0      0       0       0        0    - - - - - -
  Secondary Slave  :   Auto    0      0      0       0       0        0    - - - - - -

  Drive A  : 1.44M, 3.5 in.
  Drive B  : None                           Base Memory:     640K
                                        Extended Memory:   7168K
  Video    : EGA/VGA                       Other Memory:     384K
  Halt On : All Errors
                                           Total Memory:    8192K

  ESC : Quit                  ↑↓→← : Select Item        PU/PD/+/- : Modify
  F1    : Help              (Shift)F2 : Change Color
```

The Standard CMOS Setup screen is displayed above. Each item may have one or more option settings. The system BIOS automatically detects memory size, thus no changes are necessary. 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.

Hard Disk Configurations

TYPE:
Select from 1 to 45 to fill remaining fields with predefined values of disk drives. Select User to fill the remaining fields. Select Auto to detect the HDD type automatically.

SIZE:
The hard disk size. The unit is Mega Bytes.

CYLS:
The cylinder number of the hard disk.

HEAD:
The read/write head number of hard disk. The range is from 1 to 16.

PRECOMP:
The cylinder number at which the disk drive changes the write timing.

LANDZ:
The cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.

SECTOR:
The sector number of each track defined on the hard disk.

MODE:
Select Auto to detect the mode type automatically. If your hard disk supports the LBA mode, select LBA or Large. However, if your hard disk cylinder is more than 1024 and does not support the LBA function, you have to set at Large.
Select Normal if your hard disk supporting cylinders is below 1024.

Software Turbo Speed
The BIOS supports Software Turbo Speed feature. Instead of pressing the Turbo Speed Button on the front panel, simply press the **Alt, Ctrl, and** + keys at the same time to enable the Turbo Speed feature; and press the **Alt, Ctrl, and -** keys at the same time to disable the feature.

BIOS Features Setup

```
                    ROM PCI/ISA BIOS (2A59GF09)
                       BIOS FEATURES SETUP
                      AWARD SOFTWARE, INC.
  Virus Warning          : Disabled    Video BIOS Shadow : Enabled
  CPU Internal Cache     : Enabled     C8000 - CBFFF     : Disabled
  External Cache         : Enabled     CC000 - CFFFF     : Disabled
  Quick Power On Self Test : Disabled  D0000 - D3FFF     : Disabled
  Boot Sequence          : A, C        D4000 - D7FFF     : Disabled
  Swap Floppy Drive      : Disabled    D8000 - DBFFF     : Disabled
  Boot Up Floppy Seek    : Enabled     DC000 - DFFFF     : Disabled
  Boot Up NumLock Status : On
  Boot Up System Speed   : High
  Gate A20G Option       : Fast
  Typematic Rate Setting : Disabled
  Typematic Rate (Chars/Sec) : 6
  Typematic Delay (Msec) : 250       ESC : Quit      ↑↓→←      : Select Item
  Security Option        : Setup     F1  : Help      PU/PD/+/- : Modify
  PS/2 mouse function control : Disabled  F5 : Old Values  (Shift) F2 : Color
                                      F6  : Load BIOS Defaults
  OS Select For DRAM > 64MB : Non-OS2  F7 : Load Setup Defaults
```

Virus Warning

When enabled, assigns the BIOS to monitor the master boot sector and the DOS boot sector of the first hard disk drive.

The options are: Enabled, Disabled (Default).

CPU Internal Cache

When enabled, improves the system performance. Disable this item when testing or trouble-shooting.

The options are: Enabled (Default), Disabled.

External Cache

When enabled, supports an optional cache SRAM.

The options are: Enabled (Default), Disabled.

Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test.

The options are: Enabled, Disabled (Default).

Boot Sequence

Allows the system BIOS to first try to boot the operating system from the selected disk drive.

The options are: A, C (Default); C, A; C, CDROM, A; CDROM, C, A.

Swap Floppy Drive

Allows you to switch the order in which the operating system accesses the floppy drives during boot up.

The options are: Enabled, Disabled (Default).

Boot Up Floppy Seek

When enabled, assigns the BIOS to perform floppy diskette drive tests by issuing the time-consuming seek commands.

The options are: Enabled (Default), Disabled.

Boot Up Numlock Status

When set to On, allows the BIOS to automatically enable the Num Lock Function when the system boots up.

The options are: On (Default), Off.

Boot Up System Speed

Allows you to adjust the system speed when the system boots up.

The options are: High (Default), Low.

Gate A20 Option

When set at Fast, allows a faster access response under Protected mode.

The options are: Fast (Default), Normal.

Typematic Rate Setting

The term typematic means that when a keyboard key is held down, the character is repeatedly entered until the key is released. When this item is enabled, you may change the typematic repeat rate.

The options are: Disabled (Default), Enabled.

Typematic Rate (Chars/Sec)

Sets the rate of a character repeat when the key is held down.

The options are: 6 (Default), 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

Sets the delay time before a character is repeated.

The options are: 250 (Default), 500, 750, 1000 millisecond.

Security Option

Allows you to set the security level of the system.

The options are: Setup (Default), System.

PS/2 Mouse Function Control

When enabled, allows you to release IRQ12 for using the PS/2 mouse.
The options are: Enabled, Disabled (Default).

OS Select For DRAM 64MB

If your operating system (OS) is OS2, MS Windows NT, or MS Windows
95, select the option OS2. Otherwise, stay with the default setting Non-OS2.
The options are: Non-OS2 (Default), OS2.

Video BIOS Shadow

Allows the BIOS to copy the video ROM code of the add-on video card to
the system memory for faster access.
The options are: Enabled (Default), Disabled.

C8000-CBFFF to DC000-DFFFF Shadow

Allows the BIOS to copy the BIOS ROM code of the add-on card to system
memory for faster access. It may improve the performance of the add-on
card.

Some add-on cards will not function properly if its BIOS ROM code is
shadowed. To use these options correctly, you need to know the memory
address range used by the BIOS ROM of each add-on card.
The options are: Enabled, Disabled (Default).

Chipset Features Setup

```
                    ROM PCI/ISA BIOS (2A59GF09)
                      CHIPSET FEATURES SETUP
                        AWARD SOFTWARE, INC.
┌──────────────────────────────────────────────────────────────────────┐
│ Auto Configuration        : Enabled                                    │
│ DRAM Timing               : 60 ns                                      │
│                                                                        │
│ Fast RAS To CAS Delay     : 3                                          │
│ DRAM Read Burst (EDO/FP)  : x222/x333                                  │
│ DRAM Write Burst Timing   : x222                                       │
│ Fast MA to RAS# Delay CLK : 1                                          │
│ Fast EDO Path Select      : Enabled                                    │
│ Refresh RAS# Assertion    : 4 Clks                                     │
│                                                                        │
│ SDRAM (CAS Lat/RAS-to-CAS): 3|3/5/8                                    │
│ System BIOS Cacheable     : Disabled   ┌──────────────────────────────┐│
│ Video BIOS Cacheable      : Enabled    │           ↑ ↓ → ← : Select Item││
│ 8 Bit I/O Recovery Time   : 1          │ ESC : Quit  PU/PD/+/- : Modify ││
│ 16 Bit I/O Recovery Time  : 1          │ F1  : Help  (Shift) F2 : Color ││
│ Memory Hole At 15M-16M    : Disabled   │ F5  : Old Values               ││
│ Peer Concurrency          : Enabled    │ F6  : Load BIOS Defaults        ││
│                                        │ F7  : Load Setup Defaults       ││
└──────────────────────────────────────────────────────────────────────┘
```

Auto Configuration

When set at Enabled, it allows you to configure the features that from the third one, Fast RAS To CAS Delay, to the eighth one, Refresh RAS# Assertion.

The options are: Enabled (Default), Disabled.

DRAM Timing

Allows you to select the speed of data access to EDO DRAM.

The options are: 60 ns (Default), 70 ns.

Fast RAS To CAS Delay

Allows you to define the delay time that from DRAM RAS# active to CAS# active.

The options are: 3, 2. Unit: Clock T.

DRAM Read Burst (EDO/FP)

Allows you to define DRAM read burst timing.

The options are: x222/x333, x332/x333, x444/x444, x333/x444.

DRAM Write Burst Timing

Allows you to define DRAM write burst timing.

The options are: X-3-3-3, X-2-2-2, X-4-4-4.

Fast MA to RAS# Delay CLK

Allows you to select the clock of the memory address (MA) to RAS# delay. This feature is for technician use. The options are: 1, 2.

Fast EDO Path Select

When enabled, it allows you to select a fast path for CPU to DRAM read cycles for the leadoff. This is valid for EDO DRAMs only. The options are: Disabled, Enabled.

Refresh RAS# Aassertion

This feature allows you to control the number of clocks RAS# is asserted for Refresh cycles. The options are: 4 Clks, 5 Clks.

SDRAM (CAS Lat/RAS-to-CAS)

If you install a DIMM, this feature allows you to select the ratio of CAS Latency to RAS-to-CAS. The default setting is slowest. The 2|3/4/7 is fastest. The second one is 2|3/5/8, then is 3|3/4/7. The options are: 3|3/5/8 (Default), 3|3/4/7, 2|3/5/8, 2|3/4/7.

System BIOS Cacheable

When enabled, allows the ROM area F000H-FFFFH to be cacheable when cache controller is activated. The options are: Disabled (Default), Enabled.

Video BIOS Cacheable

When enabled, allows the system to use the video BIOS codes from SRAMs, instead of the slower DRAMs or ROMs. The options are: Enabled (Default), Disabled.

.8 Bit I/O Recovery Time

Allows you to set the 8-bit ISA I/O recovery time. The options are: 1 (Default), 2, 3, 4, 5, 6, 7, 8. Unit: Bus clock.

16 Bit I/O Recovery Time

Allows you to set the 16-bit ISA I/O recovery time. The options are: 1 (Default), 2, 3, 4. Unit: Bus clock.

Memory Hole At 15M-16M

> When enabled, the memory hole at the 15MB address will be relocated to the 15~16MB address range of the ISA cycle when the processor accesses the 15~16MB address area.
> When disabled, the memory hole at the 15MB address will be treated as a DRAM cycle when the processor accesses the 15~16MB address area.
> The options are: Enabled, Disabled (Default).

Peer Concurrency

> Enable this item to allow the processor to continue its operation while another PCI Bus is active.
> The options are: Enabled (Default), Disabled.

Power Management Setup

```
            ROM PCI/ISA BIOS (2A59GF09)
            POWER MANAGEMENT SETUP
               AWARD SOFTWARE, INC.

                                ** Power Down & Resume Events **
Power Management     : Disable    IRQ3    (COM 2)        : ON
PM Control by APM    : Yes        IRQ4    (COM 1)        : ON
Video Off Method     : DPMS       IRQ5    (LPT 2)        : OFF
MODEM Use IRQ        : NA         IRQ6    (Floppy Disk)  : OFF
                                  IRQ7    (LPT 1)        : OFF
Doze Mode            : Disable    IRQ8    (RTC Alarm)    : OFF
Standby Mode         : Disable    IRQ9    (IRQ2 Redir)   : OFF
Suspend Mode         : Disable    IRQ10   (Reserved)     : OFF
HDD Power Down        : Disable    IRQ11   (Reserved)     : OFF
                                  IRQ12   (PS/2 Mouse)   : ON
** Wake Up Events In Doze & Standby **  IRQ13 (Coprocessor) : OFF
IRQ3    (Wake-Up Event) : ON       IRQ14   (Hard Disk)    : ON
IRQ4    (Wake-Up Event) : ON       IRQ15   (Reserved)     : OFF
IRQ8    (Wake-Up Event) : OFF
IRQ12   (Wake-Up Event) : ON     ESC : Quit      ↑↓→←     : Select Item
                                 F1   : Help     PU/PD/+/- : Modify
                                 F5   : Old Values  (Shift) F2  : Color
                                 F6   : Load BIOS Defaults
                                 F7   : Load Setup Defaults
```

Power Management

This item allows you to adjust the power management features. Select Disable for disabling global power management features. Select User Defined for configuring your own power management features. MIN Saving initiates all predefined timers in their minimum values. MAX Saving, on the other hand, initiates maximum values.

The options are: Disable (Default), User Defined, MIN Saving, MAX Saving.

PM Control by APM

The option No allows the BIOS to ignore the APM (Advanced Power Management) specification. Selecting Yes will allow the BIOS wait for APM's prompt before it enters Doze mode, Standby mode, or Suspend mode.

If the APM is installed, it will prompt the BIOS to set the system into power saving mode when all tasks are done.

The options are: No, Yes (Default).

Video Off Method

> The option V/H SYNC+Blank allows the BIOS to blank off screen display by turning off the V-Sync and H-Sync signals sent from add-on VGA card. DPMS Supported allows the BIOS to blank off screen display by your add-on VGA card which supports DPMS (Display Power Management Signaling function). Blank Screen allows the BIOS to blank off screen display by turning off the red-green-blue signals.
> The options are: V/H SYNC+Blank, DPMS (Default), Blank Screen.

MODEM Use IRQ

> This feature allows you to select the IRQ# of the system that is the same IRQ# as the modem use.
> The options are: NA (Default), 3, 5, 7, 9, 10, 11.

Doze Mode

> When disabled, the system will not enter Doze mode. The specified time option defines the idle time the system takes before it enters Doze mode.
> The options are: Disabled(Default), 1, 2, 4, 6, 8, 10, 20, 30, 40 Min, 1 Hr.

Standby Mode

> When disabled, the system will not enter the Standby mode. The specified time option defines the idle time the system takes before it enters Standby mode.
> The options are: Disabled (Default), 1, 2, 4, 6, 8, 10, 20, 30, 40 Min, 1 Hr.

Suspend Mode

> When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode.
> The options are: Disabled (Default), 1, 2, 4, 6, 8, 10, 20, 30, 40 Min, 1 Hr.

HDD Power Down

Selecting Disable will turn off the hard disk drive (HDD) motor. Selecting 1 Min..15 Min allows you define the HDD idle time before the HDD enters the Power Saving Mode. The option When Suspend lets the BIOS turn the HDD motor off when system is in Suspend mode.

The options 1 Min..15 Min and When Suspend will not work concurrently. When HDD is in the Power Saving Mode, any access to the HDD will wake the HDD up.

The options are: Disable (Default), 1 Min..15 Min, When Suspend.

IRQ3, 4, 8, 12 (Wake-Up Event)

Selecting OFF allows the BIOS to refrain from waking up the system. Selecting ON allows the BIOS to wake up the system from Doze mode, Standby mode, or Suspend mode.

The options are: OFF, ON.

The default of IRQ3, 4, 12 (Wake-Up Event): ON.

The default of IRQ8 (Wake-Up Event): OFF.

Power Down Activities / IRQ3 - IRQ15

Selecting ON will enable the power management timers when a no activity event is detected in the specified I/O port or component.

Selecting OFF will disable the PM timer even if a no activity event is detected.

The options are: ON, OFF.

The default value of IRQ3 (COM2), IRQ4 (COM1), IRQ12 (PS/2 Mouse), IRQ14 (Hard Disk) : ON.

The default setting of other IRQs: OFF.

PNP/PCI Configuration Setup

```
                    ROM PCI/ISA BIOS (2A59GF09)
                       PNP/PCI CONFIGURATION
                       AWARD SOFTWARE, INC.
 PNP OS Installed        : No      PCI IRQ Actived By      : Level
 Resource Controlled By  : Auto
 Reset Configuration Data : Disabled




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

PNP OS Installed

> If your operating system is a Plug-and-Play one, such as Windows NT, Windows 95, select Yes.
>
> The options are: No (Default), Yes.

Resources Controlled By

> If you set at Auto, the BIOS automatically arranges all system resources for you. If there exists conflict or you are not satisfy with the configuration, simply set all the resources listed in the above figure by selecting Manual.
>
> The options are: Auto (default), Manual. The manual options of IRQ- / DMA- assigned to are: Legacy ISA, PCI/ISA PnP.

Reset Configuration Data

> When enabled, allows the system to clear the last BIOS configuration data and reset them with the default BIOS configuration data.
>
> The options are: Enabled, Disabled (default).

PCI IRQ Actived By

> We suggest that you set this to its default configuration unless you are a qualified technician.
>
> The options are: Level (Default), Edge.

Load BIOS Defaults

BIOS defaults contain the most appropriate values of the system parameters that allow minimum system performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burns into the ROM.

Load Setup Defaults

Selecting this field loads the factory defaults for BIOS and Chipset Features which the system automatically detects.

Integrated Peripherals

```
                    ROM PCI/ISA BIOS (2A59GF09)
                       INTEGRATED PERIPHERALS
                        AWARD SOFTWARE. INC.

   IDE HDD Block Mode        : Enabled
   IDE Primary Master PIO    : Auto
   IDE Primary Slave PIO     : Auto
   IDE Secondary Master PIO  : Auto
   IDE Secondary Slave PIO   : Auto
   On-Chip Primary    PCI IDE  : Enabled
   On-Chip Secondary  PCI IDE  : Enabled
   USB Controller           : Disabled

   Onboard FDD Controller   : Enabled
   Onboard Serial Port 1    : 3F8/IRQ4
   Onboard Serial Port 2    : 2F8/IRQ3
   UART 2 Mode              : Standard

   Onboard Parallel Port    : 378H/IRQ7   ESC : Quit        ↑↓→←    : Select Item
   Onboard Parallel Mode    : Normal      F1  : Help       PU/PD/+/- : Modify
                                          F5  : Old Values  (Shift) F2  : Color
                                          F6  : Load BIOS Defaults
                                          F7  : Load Setup Defaults
```

IDE HDD Block Mode

When enabled, allows the system to execute read/write requests to hard disk in block mode.
The options are: Enabled (Default), Disabled.

IDE Primary Master PIO

Allows an automatic or a manual configuration of the PCI primary IDE hard disk (master) mode.
The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary Slave PIO

Allows an automatic or a manual configuration of the PCI primary IDE hard disk (slave) mode.
The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Secondary Master PIO

Allows an automatic or a manual configuration of the PCI secondary IDE hard disk (master) mode.
The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Secondary Slave PIO

Allows an automatic or a manual configuration of the PCI secondary IDE hard disk (slave) mode.

The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

On-Chip Primary PCI IDE

When enabled, allows you to use the onboard primary PCI IDE.

The options are: Enabled (Default), Disabled.

On-Chip Secondary PCI IDE

When enabled, allows you to use the onboard secondary PCI IDE.

The options are: Enabled (Default), Disabled.

USB Controller

If you do not use the onboard USB feature, it allows you to disable it.

The options are: Enabled, Disabled (Default).

Onboard FDD Controller

When enabled, the floppy diskette drive (FDD) controller is activated.

The options are: Enabled (Default), Disabled.

Onboard Serial Port 1

If the serial port 1 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed.

The options are: 3F8/IRQ4 (Default), 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Disabled.

Onboard Serial Port 2

If the serial port 2 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed.

The options are: 2F8/IRQ3 (Default), 3E8/IRQ4, 2E8/IRQ3, 3F8/IRQ4, Disabled.

Onboard Parallel Port

Allows you to select from a given set of parameters if the parallel port uses the onboard I/O controller.

The options are: 378H/IRQ7 (Default), 278H/IRQ5, 3BCH/IRQ7, Disabled.

UART 2 Mode

Allows you to select the IR modes if the serial port 2 is used as an IR port. Set at Standard, if you use COM2 as the serial port as the serial port, instead as an IR port.
The options are: HPSIR, ASKIR, Standard (Default).

IR Function Duplex

This feature allows you to select the infrared data transaction way.
The options are: Half (Default), Full.

Onboard Parallel Port

Select from a given set of parameters if the parallel port uses the onboard I/O controller.
The options are: Disabled, 278H/IRQ5, 3BCH/IRQ7, 378H/IRQ7 (Default).

Onboard Parallel Mode

Allows you to connect with an advanced printer.
The options are: Nomral (Default), Extended, EPP Mode, ECP Mode, ECP/EPP Mode.

ECP Mode Use DMA

If your select ECP mode to be the parallel port mode, this feature allows you to select Direct Memory Access (DMA) channel.
The options are: 3 (Default), 1.

Parallel Port EPP Type

If you select EPP/SPP mode to be the parallel port mode, this feature allows you to select the EPP type version.
The options are: EPP1.9 (Default), EPP1.7.

Supervisor/User Password

To enable the Supervisor/User passwords, select the item from the Standard CMOS Setup. You will be prompted to create your own password. Type your password up to eight characters and press Enter. 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 password, press Enter when you are prompted to enter password. A message appears, confirming the password is disabled.

Under the BIOS Feature Setup (refer to page 44) if System is selected under the Security Option field and the Supervisor Password is enabled, you will be prompted for the Supervisor Password every time you try to enter the CMOS Setup Utility. If System is selected and the User Password is enabled,
you will be requested to enter the User Password every time you reboot the system. If Setup is selected under the Security Option field and the User Password is enabled, you will be prompted only when you reboot the system.

IDE HDD Auto Detection

```
                        ROM PCI/ISA BIOS (2A5L9F09)
                          STANDARD CMOS SETUP
                          AWARD SOFTWARE, INC.


HARD DISKS       TYPE  SIZE  CYLS  HEAD PRECOMP  LANDZ  SECTOR  MODE
Primary Master    :


              Select Primary Master  Option (N=Skip) : N
     OPTIONS          SIZE   CYLS  HEAD  PRECOMP LANDZ SECTOR   MODE
      2 (Y)           851    825    32        0   1650    63      LBA
      1               852   1651    16    65535   1650    63   NORMAL
      3               851    825    32    65535   1650    63    LARGE

      Note : Some OSes (like SCO-UNIX) must use "NORMAL" for Installation
```

The IDE Hard Disk Drive Auto Detection feature automatically configures your new hard disk. Use it for a quick configuration of new hard drives. This feature allows you to set the parameters of up to four IDE HDDs. The option with (Y) are recommended by the system BIOS. You may also keys in your own parameters instead of setting by the system BIOS. After all settings, press Esc key to to return the main menu. For confirmation, enter the Standard CMOS Setup feature.

Save and Exit Setup

```
                 ROM PCI/ISA BIOS  (2A59GF09)
                      CMOS SETUP UTILITY
                    AWARD SOFTWARE,   INC.

  STANDARD CMOS SETUP          INTEGRATED PERIPHERALS
  BIOS FEATURES SETUP          SUPERVISOR PASSWORD
  CHIPSET FEATURES SETUP       USER PASSWORD
  POWER MANAGEMENT SETUP       IDE HDD AUTO DETECTION
  PNP/PCI CONFIGURATION        SAVE & EXIT SETUP
  LOAD BIOS     SAVE to CMOS and EXIT (Y/N)? Y
  LOAD SETUP DEFAULTS

  ESC : Quit              ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup  (Shift) F2  : Change Color

              SAVE DATA TO CMOS and EXIT SETUP
```

After you have made changes under Setup, press Esc to return to the main menu. Move cursor to Save and Exit Setup or press F10 and then press Y to change the CMOS Setup. If you did not change anything, press Esc again or move cursor to Exit Without Saving and press Y to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility:

SAVE to CMOS and EXIT (Y/N)?

Exit without Saving

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications:

Quit Without Saving (Y/N)?

Note Default values of the various Setup items on this chapter may not necessarily be the same ones shown on your screen.