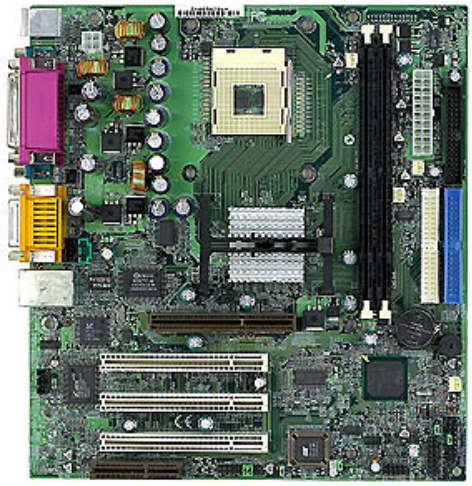
MSI

MICRO-STAR INTERNATIONAL

MS-6532 (v1.X) Micro ATX Mainboard



Version1.0
G52-MA00409

Manual Rev: 1.0
Release Date: July 2001

CE N1996

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

Micro-Star International MS-6532

FC **Tested to comply with FCC Standard**

For Home or Office Use

Edition
July 2001

Revision History

Revision	Revision History	Date
V1.0	First release	July 2001

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged
    - Liquid has penetrated into the equipment
    - The equipment has been exposed to moisture
    - The equipment has not work well or you can not get it work according to User's Manual.
    - The equipment has dropped and damaged
    - If the equipment has obvious sign of breakage
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^0C (140^0F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

CONTENTS

Introduction 1

The MS-6532 (v1.X) Micro ATX mainboard is a high-performance computer mainboard based on **Intel® 82845 & 82801BA** chipsets. It is optimized to support Intel® Pentium® 4 processor in the 478 pin package that delivers a high performance and professional desktop platform solution.

The Intel® 82845 Memory Controller Hub (MCH) provides the processor interface, SDRAM interface, AGP interface and hub interface. It supports: a single processor with a data transfer rate of 400MHz, SDRAM at 133MHz operation (PC133), AGTL+ host bus with integrated termination supporting 32-bit host addressing, 1.5V AGP interface with 4x data transfer and 4x fast write capability, and 8-bit, 66MHz 4x hub interface to the Intel ICH2.

The 82801BA I/O Controller Hub 2 (ICH2) provides the I/O subsystem with access to the rest of the system and additionally integrates many I/O functions. It supports: upstream hub interface for access to the Intel MCH, 2-channel Ultra ATA/100 bus master IDE controller, USB controller 1.1 (expanded capabilities for 4 ports), I/O APIC, SMBus controller, FWH interface, LPC interface, AC'97 2.1 interface, PCI 2.2 interface, integrated system management controller, and integrated LAN controller.

This chapter includes the following topics:

Mainboard Specifications

CPU

- Supports Intel® Pentium® 4 processor in the 478 pin package
- Supports 1.3GHz, 1.4GHz, 1.5GHz, 1.6GHz, 1.7GHz, 1.8GHz and up

Chipset

- Intel® 845 chipset (593 FC-BGA)
  - Supports a single processor with a data transfer rate of 400MHz
  - Supports SDRAM at 133MHz operation (PC133)
  - AGTL+ host bus with integrated termination supporting 32-bit host addressing
  - 1.5V AGP interface with 4x data transfer and 4x fast write capability
  - 8-bit, 66MHz 4x hub interface to the Intel ICH2
- Intel® ICH2 chipset (360 EBGA)
  - Upstream hub interface for access to the Intel MCH
  - 2-channel Ultra ATA/100 Bus Master IDE controller
  - USB controller 1.1 (expanded capabilities for 4 ports)
  - I/O APIC
  - SMBus controller
  - FWH interface
  - LPC interface
  - AC'97 2.1 interface
  - PCI 2.2 interface
  - Integrated LAN controller

Main Memory

- Supports two SDRAM slots.
- Supports up to 2GB memory size.

Slots

- One AGP (Accelerated Graphics Port) 4x slot
- Three PCI 2.2 32-bit master PCI bus slots (support 3.3v/5v PCI bus interface)
- One CNR (Communication Network Riser) slot

Note: *The AGP slot* ***does NOT support 3.3V AGP 2x card****. Use of 3.3V AGP 2x card may cause damages to the mainboard.*

On-Board IDE

- An IDE controller on the ICH2 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA66/100 operation modes.
- Can connect up to four IDE devices.

On-Board Peripherals

- On-Board Peripherals include:
  - 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
  - 2 serial ports (COM A + COM B)
  - 1 parallel port supports SPP/EPP/ECP mode
  - 4 USB ports (Rear * 2/ Front * 2)
  - 1 LAN RJ45 jack
  - 1 audio/game port

Audio

- ICH2 chip integrated
- Support 2 channel audio

BIOS

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

Dimension

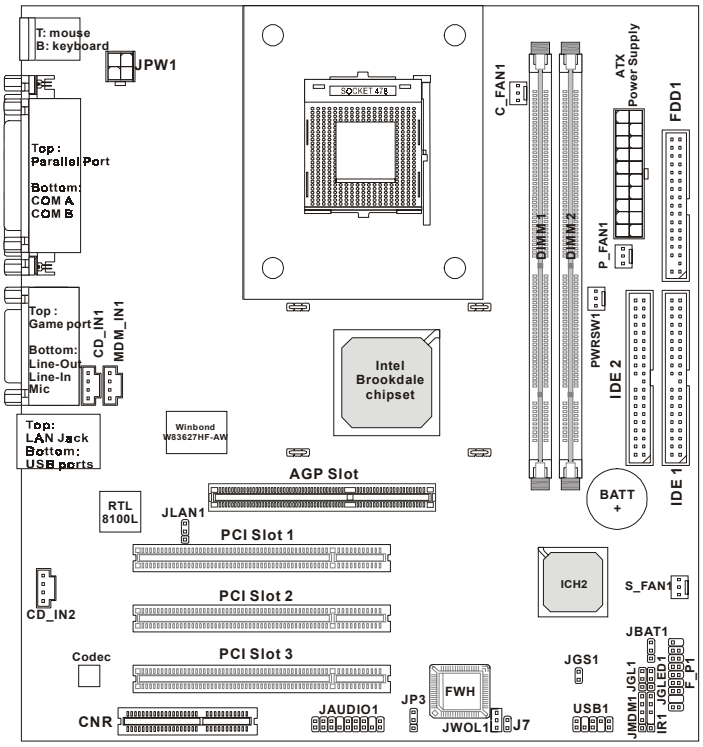
- Micro ATX Form Factor 24.3cm x 22.5cm

Mounting

- 6 mounting holes

Chapter 1

Mainboard Layout



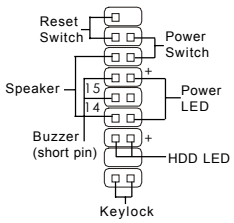
MS-6532 (v1.X) Micro ATX Mainboard

Quick Components Guide

Component	Function
JWR1	ATX 20-pin power connector
JPW1	ATX 12V power connector
JKBMS1	Mouse connector
JKBMS1	Keyboard connector
USB Connectors	Connecting to USB devices
COM A & COM B	Serial port connector
LPT1	Parallel port connector
FDD1	Floppy disk drive connector
IDE1~ IDE2	Hard disk connectors
CD_IN1/2	CD-in connector
MDM_IN1	Modem-in connector
JGL1	Power saving LED connector
JGLED1	Power saving LED connector
JGS1	Power saving switch connector
JMDM1	Wake on ring connector
JWOL1	Wake on LAN connector
CPU/PS/SYS FAN	Fan power connectors
USB1	USB front pin header
PWRSW1	Independent power switch socket
JLAN1	LAN enable/disable jumper
JBAT1	Clear CMOS jumper
J7	BIOS flash jumper
JP3	Onboard audio codec jumper
JAUDIO1	Front panel audio connector
F_P1	Case connector
IR1	Infrared Module Connector
AGP Slot	Connecting to AGP cards
PCI Slots	Connecting to expansion cards
CNR Slot	Connecting to expansion cards

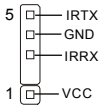
Connectors & Jumpers

JFP1



The Keylock, Power Switch, Reset Switch, Power LED, Speaker, and HDD LED are all connected to the JFP1 connector block.
If Onboard Buzzer is available, then:
Short pin 14-15: Onboard Buzzer Enabled
Open pin 14-15: Onboard Buzzer Disabled

IR1

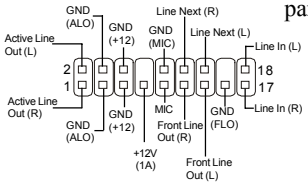


This connector is for optional wireless transmitting and receiving infrared module.

J7

Use the jumper to lock or unlock the boot block area on BIOS. When unlocked, the BIOS boot block area can be updated.

JAUDIO1



This connector allows you to connect to the front panel audio.

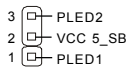
JBAT1

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

JGL1

This connector is used to connect the power saving LED.

JGLED1



This connector is used to connect the power saving LED.

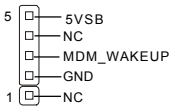
JGS1

Attach a power saving switch to JGS1. When the switch is pressed, the system immediately enters the suspend/ sleep mode.

JLAN1

This connector is used to disable/enable the onboard LAN port.

JMDM1



This connector allows you to connect to a modem card with Wake On Ring function. The connector will power up the system when a signal is received through the modem card.

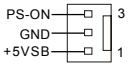
JP3

Use the jumper to enable or disable the onboard software audio codec.

JWOL1

This connector allows you to connect to a LAN card with Wake On LAN function. You can wake up the computer via remote control through a local area network.

PWRSW1

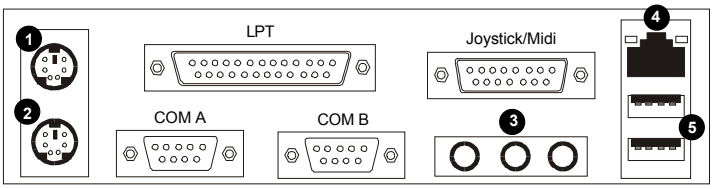


The connector is connected to an independent power switch on the case. Touch the power switch's touch pad will turn on/off the computer.

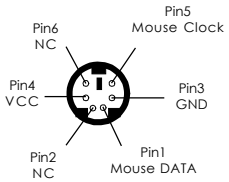
USB1

The connector allows you to connect regular USB ports.

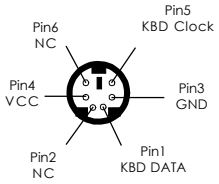
Back Panel



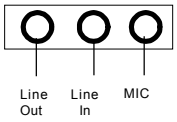
1 Mouse Connector



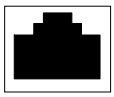
2 Keyboard Connector



3 Audio Ports



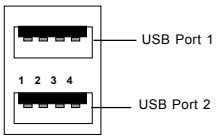
4 LAN Jack (RJ-45)



Pin Definition

PIN	SIGNAL	DESCRIPTION
1	RDN	Receive Differential Pair
2	RDP	Receive Differential Pair
3	GND	Ground
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	TDN	Transmit Differential Pair
8	TDP	Transmit Differential Pair

5 USB Ports



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

AWARD® BIOS Setup 2

The mainboard uses AWARD® BIOS ROM that provides a Setup utility for users to modify the basic system configuration. The information is stored in a battery-backed CMOS RAM so it retains the Setup information when the power is turned off.

This chapter provides you with the overview of the BIOS Setup program. It contains the following topics:

Entering Setup

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.

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 by turning it OFF then On or pressing the RESET button to try again. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the default CMOS value from Fail-Safe default table, only for Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

Getting Help

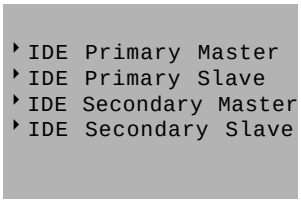
After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the control keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu containing additional options can be launched from this field. You can use control keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press <Esc >.



General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

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) 1984-2001 Award Software

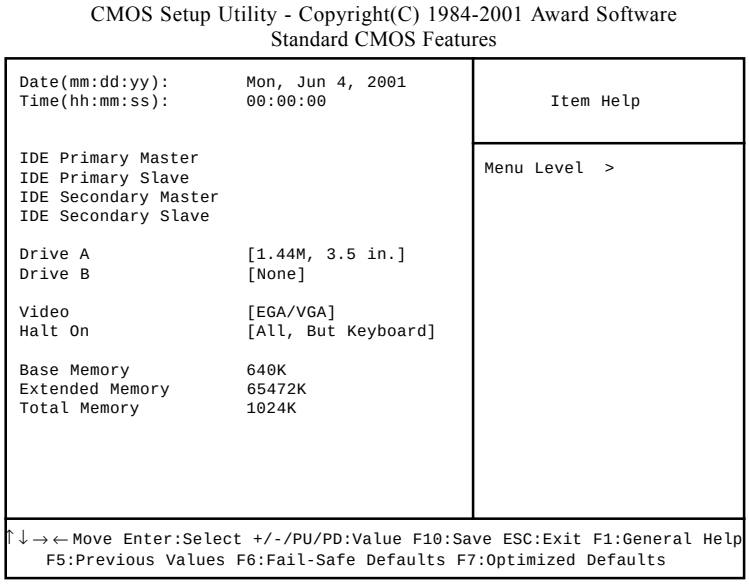
Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving

Esc : Quit F9: Menu in BIOS ↑↓→← : Select Item
F10 : Save & Exit Setup

Time, Date, Hard Disk Type...

Standard CMOS Features

The items in Standard CMOS Features 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.



Advanced BIOS Features

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software
Advanced BIOS Features

Anti-Virus Protection	[Disabled]	Item Help
CPU L1 & L2 Cache	[Enabled]	
Compatible FPU OPCODE	[Disabled]	
CPU Fast-Strings	[Disabled]	
Quick Power On Self Test	[Disabled]	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	[Disabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	[Setup]	
OS Select For DRAM > 64MB	[Non-OS2]	
HDD S.M.A.R.T. Capability	[Disabled]	
Report No FDD For WIN95	[Yes]	

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

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) 1984-2001 Award Software
Advanced Chipset Features

DRAM Timing Selectable		Item Help
CAS Latency Time	[1.5]	
Active to Precharge Delay	[7]	
DRAM RAS# to CAS# Delay	[3]	Menu Level >
DRAM RAS# Precharge	[3]	
DRAM Data Integrity Mode	[Non-ECC]	
Memory Frequency For		
System BIOS Cacheable	[Disabled]	
Video BIOS Cacheable	[Disabled]	
Video RAM Cacheable	[Disabled]	
Memory Hole At 15M-16M	[Disabled]	
Delayed Transaction	[Enabled]	
AGP Aperture Size (MB)	[64]	
Delay Prior to Thermal	[16 Min]	

↑↓→← 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.

Integrated Peripherals

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software
Integrated Peripherals

On-Chip Primary PCI IDE	[Enabled]	Item Help
On-Chip Secondary PCI IDE	[Enabled]	
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	Menu Level >
IDE Secondary Master PIO	[Auto]	
IDE Secondary Slave PIO	[Auto]	
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	
IDE Secondary Master UDMA	[Auto]	
IDE Secondary Slave UDMA	[Auto]	
USB Controller	[Enabled]	
USB Keyboard Support	[Disabled]	
Init Display First	[AGP]	
AC97 Audio	[Auto]	
AC97 Modem	[Auto]	
Onboard/CNR LAN Selection	[Auto]	
IDE HDD Block Mode	[Enabled]	
POWER ON Function	[BUTTON ONLY]	
KB Power On Password	[Enter]	
Hot Key Power On	[Ctrl-F1]	
Onboard FDC Controller	[Enabled]	
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	
UART Mode Select	[Normal]	
RxD, TxD Active	[Hi,Lo]	
IR Transmission Delay	[Enabled]	
UR2 Duplex Mode	[Half]	
Use IR Pins	[IR-Rx2Tx2]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[ECP]	
EPP Mode Select	[EPP1.7]	
ECP Mode Use DMA	[3]	
PWRON After PWR-Fail	[Off]	
Game Port Address	[201]	
Midi Port Address	[330]	
Midi Port IRQ	[10]	
Power Status LED	[Single]	

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

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) 1984-2001 Award Software
Power Management Setup

ACPI Function	[Enabled]	Item Help
ACPI Suspend Type	[S1(POS)]	
Power Management	[User Define]	
Video Off Method	[DPMS]	Menu Level >
Video Off In Suspend	[Yes]	
Modem Use IRQ	[3]	
Suspend Mode	[Disabled]	
HDD Power Down	[Disabled]	
Soft-Off by PWR-BTTN	[Instant-Off]	
Wake-Up by PCI Card	[Disabled]	
Power On by Ring	[Enabled]	
Wake Up On LAN	[Enabled]	
USB KB Wake-Up From S3	[Disabled]	
CPU THRM-Throttling	[50.0%]	
Resume by Alarm	[Disabled]	
x Date(of Month) Alarm	0	
x Date(hh:mm:ss) Alarm	0 : 0 : 0	
Reload Global Timer Events		
Primary IDE 0	[Disabled]	
Primary IDE 1	[Disabled]	
Secondary IDE 0	[Disabled]	
Secondary IDE 1	[Disabled]	
FDD,COM,LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

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

PNP/PCI Configurations

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) 1984-2001 Award Software
PnP/PCI Configurations

PNP OS Installed	[No]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto<ESCD>]	
x IRQ Resources	Press Enter	Menu Level >
x DMA Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	

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

PC Health Status

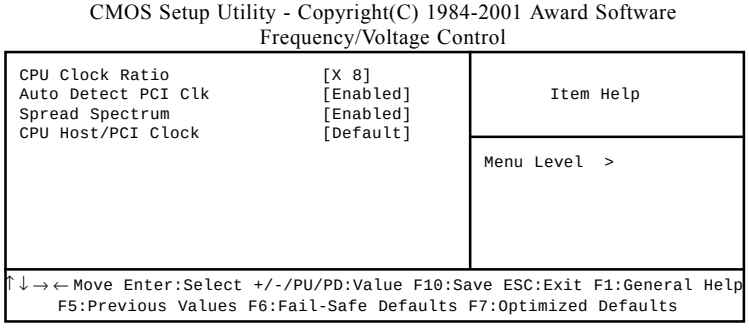
This section shows the status of your CPU, fan, warning for overall system status.

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software
PC Health Status

CPU Warning Temperature [Disabled] Current System Temp. Current CPU Temperature CPU fan SYSTEM fan POWER fan Vcore VTT 3.3V +5V +12V -12V -5V VBAT(V) 5VSB(V) Shutdown Temperature [Disabled]	Item Help 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

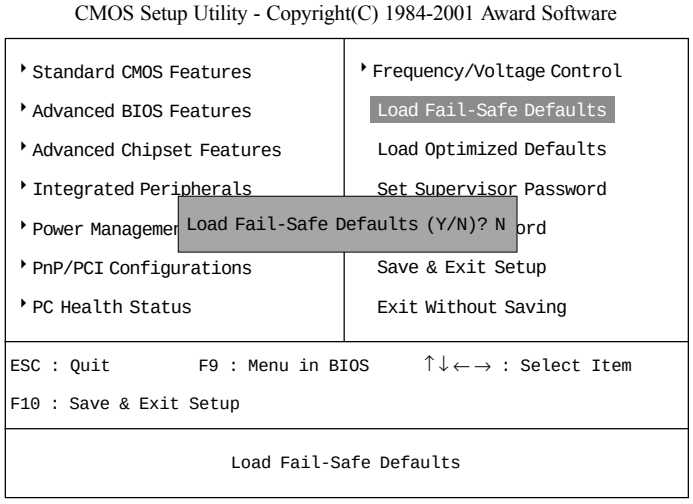
Frequency/Voltage Control



Load Fail-Safe/Optimized Defaults

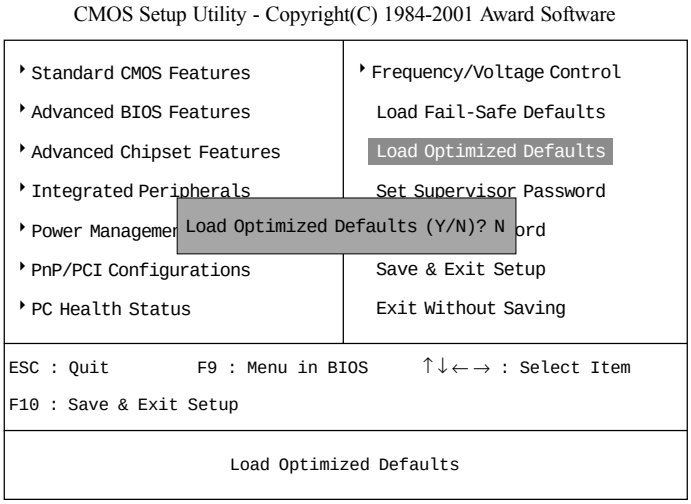
The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for the optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for the stable system performance.

When you select Load Fail-Safe Defaults, a message as below appears:



Pressing *Y* loads the BIOS default values for the most stable, minimal system performance.

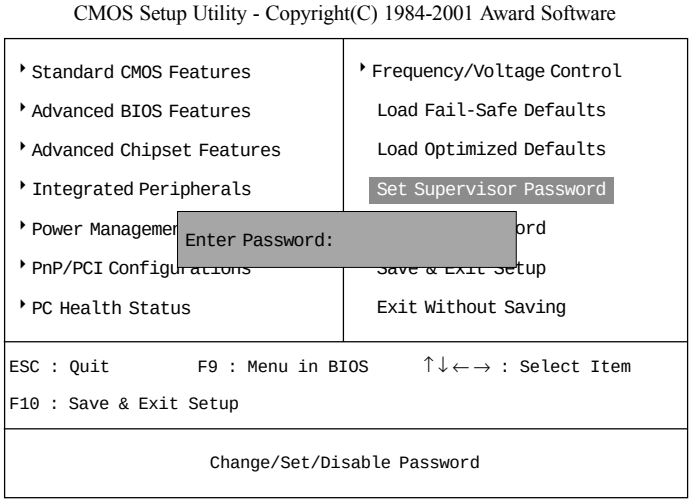
When you select Load Optimized Defaults, a message as below appears:



Pressing *Y* loads the default factory settings for optimal system performance.

Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:



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

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, 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 have BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is

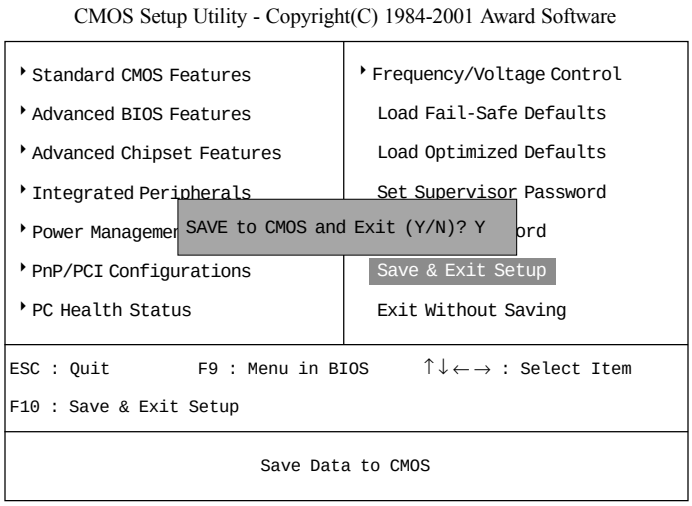
required is the Security Option of the Advanced BIOS Features menu. If the Security Option is set to *System*, the password is required both at boot and at entry to Setup. If set to *Setup*, password prompt only occurs when trying to enter Setup.

About Supervisor Password & User Password:

Supervisor password :	*Can enter and change the settings of the setup menus.*
User password:	*Can only enter but do not have the right to change the settings of the setup menus*

Save & Exit Setup

When you want to quit the Setup menu, you can select this option to save the changes and quit. A message as below will appear on the screen:

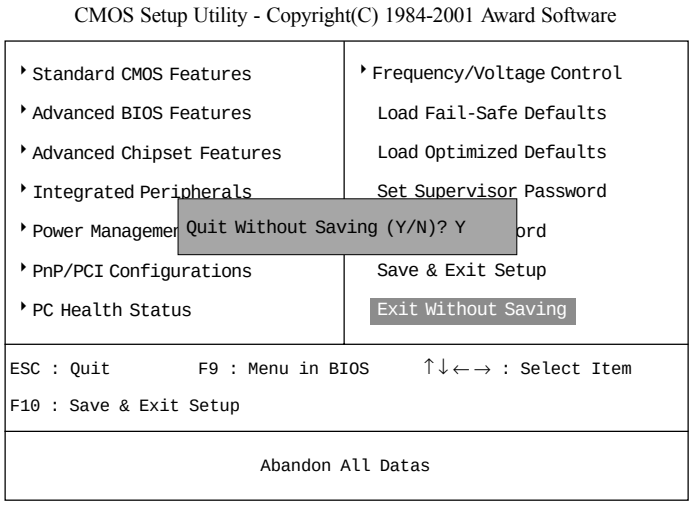


Typing "Y" will allow you to quit the Setup Utility and save the user setup changes to RTC CMOS.

Typing "N" will return to the Setup Utility.

Exit Without Saving

When you want to quit the Setup menu, you can select this option to abandon the changes. A message as below will appear on the screen:



Typing "Y" will allow you to quit the Setup Utility without saving any changes to RTC CMOS.

Typing "N" will return to the Setup Utility.