Notice to End Users

This User's Guide & Technical Reference is for assisting system manufacturers and end users in setting up and installing the mainboard.

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Contents

Chapter 1
Introduction

Features

CPU

1. Supports Intel Pentium II (or Celeron) CPU using SLOT1 at 166 ~ 533 MHz
2. Supports CPU voltage autodetect circuit
3. Supports 50/60/66/68/75/83MHz CPU clock.

Chipset

1. Intel 82440EX chipset
2. PCI Rev 2.1 compliant
3. Supports 66/133MHz, 3.3V AGP (Accelerated Graphics Port) slot

L2 Cache

1. CPU Card supports 256K/512k write back cache with Pipelined Burst SRAMs

Main Memory

1. Memory range from 8MB (minimum) to 256MB (EDO) or 256MB (SDRAM) (maximum) with DRAM Table Free configurations
2. Supports 3.3V EDO with 50ns/60ns/70ns DRAM speed
3. **Supports 2 pcs 168pin DIMM sockets (3.3V Unbuffered type, 4 clock)**

BIOS

1. AWARD Plug and Play BIOS
2. Supports Advanced Power Management Function
3. Flash Memory for easy upgrade

Super I/O Function

1. Integrated USB (Universal Serial Bus) controller with two USB ports.
2. Supports 2 IDE channels with 4IDE devices (including 120MB IDE floppy)
3. Provides PCI IDE Bus Master function and supports Ultra DMA33 function
4. One floppy port
5. Two high speed 16550 FIFO UART ports
6. One parallel port with EPP/ECP/SPP capabilities
7. PS/2 mouse connector
8. Built-in RTC, CMOS, keyboard controller on single I/O chip
9. Peripherals boot function

Other Functions

1. AT size 22cm x 22cm
2. 3 PCI Master slots, 3 ISA slots, and 1 AGP slot
3. Supports SCSI/CD-ROM Boot function
4. **Jumperless CPU setting.**

Mainboard Layout with Default Settings

The default settings of the following figure is for the Pentium II (or Celeron) 233MHz.

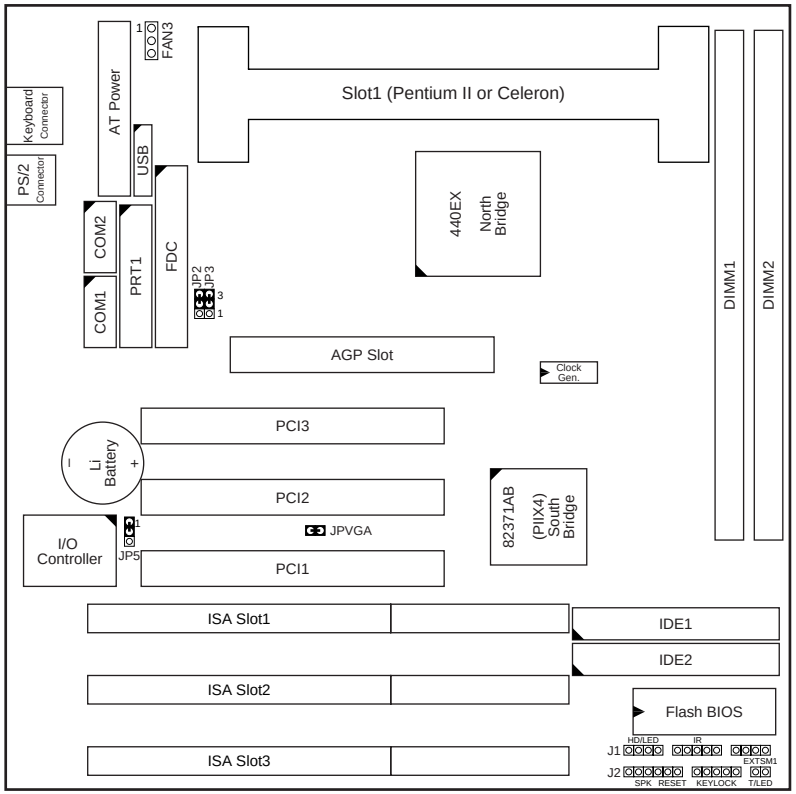


Figure 1–1. Motherboard Layout

Chapter 2
Hardware Setup

The CPU clock and ratio setting must set from BIOS and the setting procedures are:

1. Choose “CHIPSET FEATURES SETUP” from the BIOS Main Menu and a screen with a list of options appears. Refer to Chapter 3 for more instruction.
2. Use the arrow key to select the option named “CPU Clock Ratio.” Use the PaUp/PgDn/+/– key to change the value in order to meet the CPU specifications.
3. The default CPU clock frequency is 66MHz.
4. Press <Esc> key to go back to the main menu.
5. Select “SAVE AND EXIT SETUP” in the main menu to save your changes and then reboot your system, or, choose “EXIT WITHOUT SAVING” to ignore the changes you made and exit the program.

CPU Configuration (by BIOS)

CPU 3.5X Clock Setting

Pentium II (or Celeron) – 233/66MHz

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	SDRAM CAS Latency Time	: 2
		CPU Clock Ratio	: **3.5-233MHz**
MA Wait State	: Slow	Spread Spectrum	: Disabled
EDO RAS# To CAS# Delay	: 3	CPU Clock Frequency	: 66MHz
EDO RAS# Precharge Time	: 4	CPU Warning Temperature	: Disabled
EDO DRAM Read Burst	: x333	Current CPU Temperature	:
EDO DRAM Write Burst	: x333		
DRAM Data Integrity Mode	: Non-ECC		
CPU To-PCI IDE Posting	: Disabled		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 3		
16 Bit I/O Recovery Time	: 2		
Memory Hole At 15M-16M	: Disabled		
AGP Aperture Size (MB)	: 64	ESC : Quit	↑ ↓ → ←: Select Item
SDRAM RAS-to-CAS Delay	: Slow	F1 : Help	PU/PD/+/– : Modify
SDRAM RAS Precharge Time	: Slow	F5 : Old Values (Shift)F2	: Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 2–1. CPU Type Configuration

CPU 4.0X Clock Setting

Pentium II (or Celeron) – 266/66 MHz

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	SDRAM CAS Latency Time	: 2
		CPU Clock Ratio	: **4.0-266MHz**
MA Wait State	: Slow	Spread Spectrum	: Disabled
EDO RAS# To CAS# Delay	: 3	CPU Clock Frequency	: 66MHz
EDO RAS# Precharge Time	: 4	CPU Warning Temperature	: Disabled
EDO DRAM Read Burst	: x333	Current CPU Temperature	:
EDO DRAM Write Burst	: x333		
DRAM Data Integrity Mode	: Non-ECC		
CPU To-PCI IDE Posting	: Disabled		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 3		
16 Bit I/O Recovery Time	: 2		
Memory Hole At 15M-16M	: Disabled		
AGP Aperture Size (MB)	: 64	ESC : Quit	↑ ↓ → ←: Select Item
SDRAM RAS-to-CAS Delay	: Slow	F1 : Help	PU/PD/+/– : Modify
SDRAM RAS Precharge Time	: Slow	F5 : Old Values (Shift)F2	: Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 2–2. CPU Type Configuration

CPU 4.5X Clock Setting

Pentium II (or Celeron) – 300/66 MHz

```
                    ROM PCI/ISA BIOS
                CHIPSET FEATURES SETUP
                 AWARD SOFTWARE, INC.

Auto Configuration        : Enabled      SDRAM CAS Latency Time   : 2
                                         CPU Clock Ratio          : 4.5-300MHz
MA Wait State             : Slow         Spread Spectrum          : Disabled
EDO RAS# To CAS# Delay    : 3            CPU Clock Frequency      : 66MHz
EDO RAS# Precharge Time   : 4            CPU Warning Temperature  : Disabled
EDO DRAM Read Burst       : x333         Current CPU Temperature  :
EDO DRAM Write Burst      : x333
DRAM Data Integrity Mode  : Non-ECC
CPU To-PCI IDE Posting    : Disabled
System BIOS Cacheable     : Disabled
Video BIOS Cacheable      : Disabled
Video RAM Cacheable       : Disabled
8 Bit I/O Recovery Time   : 3
16 Bit I/O Recovery Time  : 2
Memory Hole At 15M-16M    : Disabled     ESC : Quit       ↑ ↓ → ←: Select Item
AGP Aperture Size (MB)    : 64           F1  : Help       PU/PD/+/- : Modify
SDRAM RAS-to-CAS Delay    : Slow         F5  : Old Values (Shift)F2 : Color
SDRAM RAS Precharge Time  : Slow         F6  : Load BIOS Defaults
                                         F7  : Load Setup Defaults
```

Figure 2–3. CPU Type Configuration

CPU 5.0X Clock Setting

Pentium II (or Celeron) – 333/66 MHz

```
                    ROM PCI/ISA BIOS
                CHIPSET FEATURES SETUP
                 AWARD SOFTWARE, INC.

Auto Configuration        : Enabled      SDRAM CAS Latency Time   : 2
                                         CPU Clock Ratio          : 5.0-333MHz
MA Wait State             : Slow         Spread Spectrum          : Disabled
EDO RAS# To CAS# Delay    : 3            CPU Clock Frequency      : 66MHz
EDO RAS# Precharge Time   : 4            CPU Warning Temperature  : Disabled
EDO DRAM Read Burst       : x333         Current CPU Temperature  :
EDO DRAM Write Burst      : x333
DRAM Data Integrity Mode  : Non-ECC
CPU To-PCI IDE Posting    : Disabled
System BIOS Cacheable     : Disabled
Video BIOS Cacheable      : Disabled
Video RAM Cacheable       : Disabled
8 Bit I/O Recovery Time   : 3
16 Bit I/O Recovery Time  : 2
Memory Hole At 15M-16M    : Disabled     ESC : Quit       ↑ ↓ → ←: Select Item
AGP Aperture Size (MB)    : 64           F1  : Help       PU/PD/+/- : Modify
SDRAM RAS-to-CAS Delay    : Slow         F5  : Old Values (Shift)F2 : Color
SDRAM RAS Precharge Time  : Slow         F6  : Load BIOS Defaults
                                         F7  : Load Setup Defaults
```

Figure 2–4. CPU Type Configuration

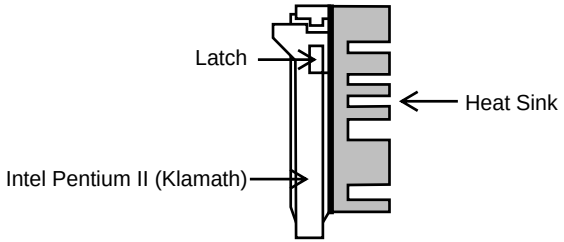
System Memory Configuration

This 82440EX motherboard supports 168 pin DIMM of 4MB, 8MB, 16MB, 32MB, 64MB to form a memory size between 8MB to 256MB (EDO) or 256MB (SDRAM). 82440EX chipsets provide "Table-Free" function. It means that users can install DRAM with any configuration and in any bank, and that is why the DRAM table is not needed but do remember that the DRAM must be 3.3V Unbuffered type.

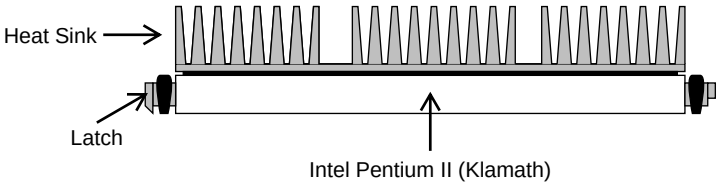
CPU Installation

Follow the following steps in order to install your Intel Pentium II (or Celeron) properly.

Step 1:
Be sure you are in contact with heat sink vendors for attaching the heat sink on to the CPU.



CPU Side View



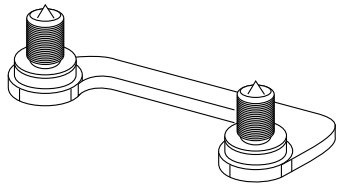
CPU Top View

Notice that the heat sink may be different from the drawings shown here.

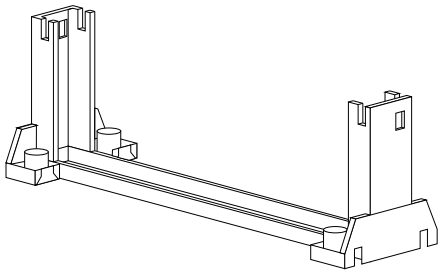
Step 2:
Install the 2 pairs of screws, which are shown in the following drawing, onto the mainboard under the SLOT1 socket.

Two of the screws are right around the SLOT1 socket and the other pair of screws should be inserted opposite the first pair.

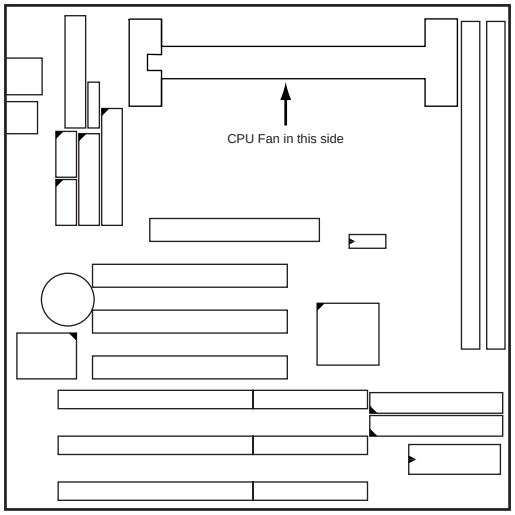
The screws should be inserted from the bottom of the motherboard upward.



Step 3:
Retention clip is shown in the following figure:



Set the board according to the following diagram before installing the retention clip.



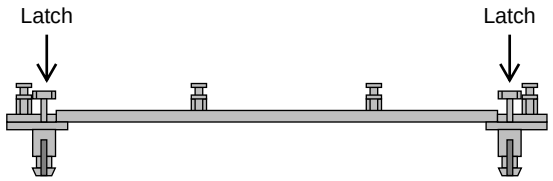
The retention clip should be inserted so that the small rectangle window is more toward to the right hand side of the board.

If installed incorrectly, you will not be able to insert the CPU into the retention clip and in this situation you might need to rotate the retention clip by 180°.

Tighten the 4 screws on the retention clip till the neck of the screws can not be seen from the bottom of the board

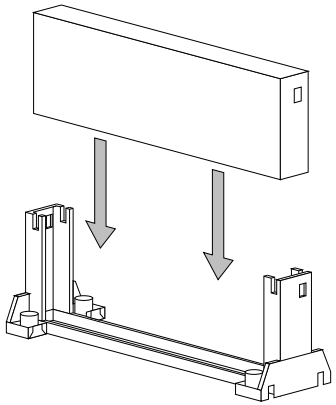
Step 4:
Pull the latches up on the base of the CPU supporter and insert it into the two holes directly to the left of the retention clip so that the larger hole is on the bottom.

Press the base of the CPU supporter down in to the holes and lock the latches.

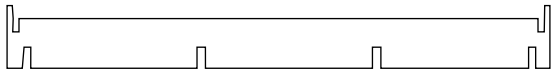


Side View of CPU Supporter Base

Step 5:
Flatten the two latches on the side of CPU. Insert the CPU into the retention clip and notice that the heat sink is on the right hand side of the board. Lock the two latches to secure the CPU.



Step 6:
Insert the clip portion of the CPU supporter so that the heat sink can sit on the top of the whole CPU supporter.



Top View of CPU Support Clip

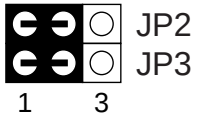
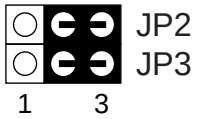
Notice that the base and the clip of CPU Supporter may be different from the figures shown here.

Jumper Settings

FAN 3: Onboard FAN (12V) Connector

FAN#	Function
FAN3	CPU FAN

JP2, JP3: USB Port Select

USB Port	JP2/JP3
Redirect USB1 to AGP port	
Redirect all USB ports to USB connector (default)	

JPVGA: VGA Card

	JPVGA
For Special VGA Card*	
Normal (default)	

Note: This jumper is set for the special VGA card. Open this jumper when the systme isn't able to boot

JP5: Clear CMOS Data

Clear the CMOS memory by shorting this jumper momentarily; then remove the cap to retain new settings.

COMS Data	JP5
Clear Data	
Retain Data (default)	

IDE LED Activity Light: (J1 pin1–4)

This connector connects to the hard disk activity indicator light on the case.

Infrared Port Module Connector (J1 pin6–10)

The system board provides a 5-pin infrared connector—IR1 as an optional module for wireless transmitting and receiving. **Pin 6 through 10 are Transmit, GND, Receive (low speed), Receive (high speed), and Vcc, respectively.**

J1 pin12, 13: PWR Switch

Power Switch: Toggle this pin for turnning on/off of the power supply (for ATX power only).

SLEEP Switch (J1 pin14, 15)

Toggle this jumper forces the system to sleep and the system won't wake up until the hardware event is coming. (The BIOS Power Management setting muse be Enabled.)

Speaker Connector (J2 pin1–4)

The speaker connector is a 4-pin connector for connecting the system and the speaker. (See the following drawing for jumper position.)

Reset Switch (J2 pin5, 6)

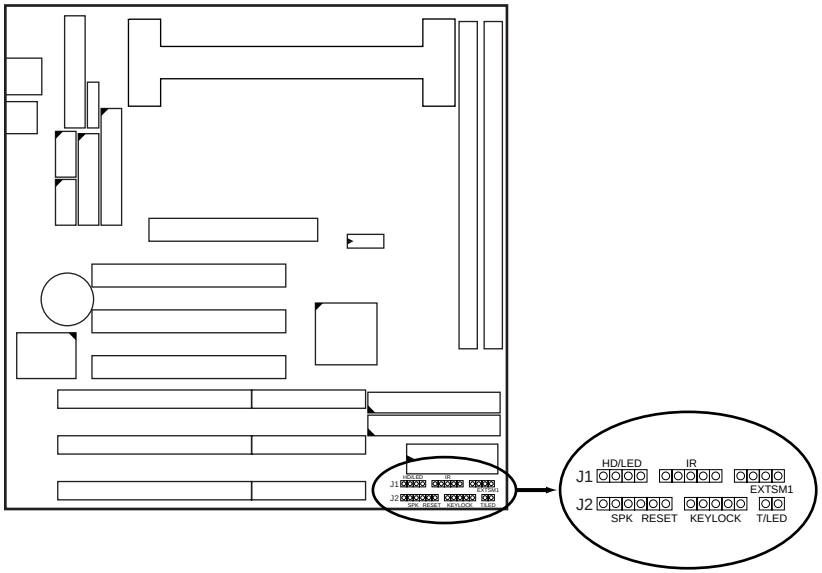
The system board has a 2-pin connector for rebooting your computer without having to turn off your power switch. This prolongs the life of the system's power supply.

Power LED and Keylock Switch (J2 pin8–12)

The keylock switch is a 5-pin connector for locking the keyboard for security purposes. (See the following drawing for jumper position, and pin1~3 is connected to power LED and pin 4~5 is connected to keylock switch.)

Turbo LED (J2 pin14, 15)

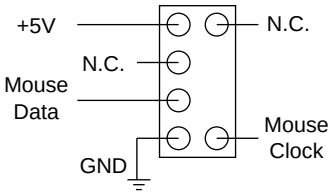
Connect the case's turbo LED to this connector.



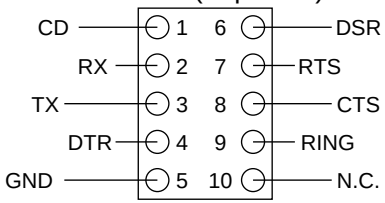
J1 Switch Signal Summary

J1	Pin	Signal Description
HDD LED Connector	1	+5V
	2	HDD LED Signal
	3	HDD LED Signal
	4	+5V
N.C.	5	No Connection
Infrared Connector	6	Infrared Transmit Signal
	7	GND
	8	Infrared Receive Signal (low speed)
	9	Infrared Receive Signal (high speed)
	10	+5V
N.C.	11	No Connection
PWR	12	GND
	13	Power Switch (for ATX Power)
SLEEP	14	GND
	15	Sleep Signal

MS1 Top View



COM1/2 (Top View)



J2 Switch Signal Summary

J2	Pin	Signal Description
Speaker Connector	1	Speaker Signal
	2	No Connection
	3	Ground
	4	+5V
Reset Switch	5	Reset Signal
	6	Ground
N.C.	7	No Connection
Power LED Connector	8	+5V
	9	No Connection
	10	Ground
Keylock Connector	11	Keylock Signal
	12	GND
N.C.	13	No Connection
Turbo LED Connector	14	Turbo LED Connector
	15	Ground

Chapter 3
Award BIOS Setup

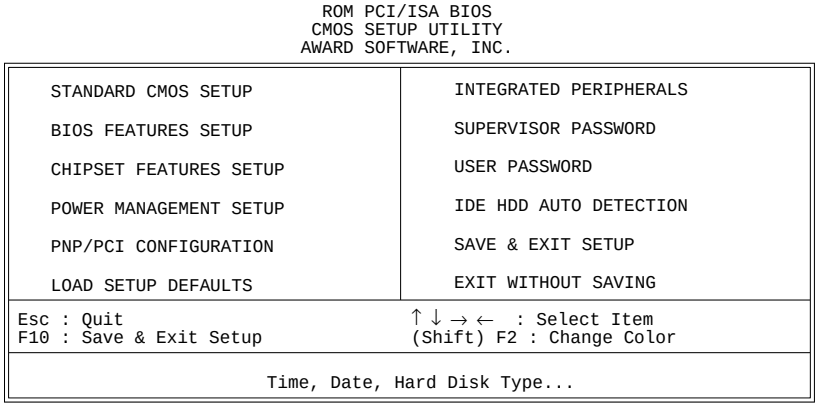
This 82440EX motherboard comes with the AWARD BIOS from AWARD Software Inc. Enter the Award BIOS program's Main Menu as follows:

1. Turn on or reboot the system.

   After a series of diagnostic checks, the following message will appear:

   PRESS <DEL> TO ENTER SETUP

2. Press the <DEL> key and the main program screen appears as in the following page.



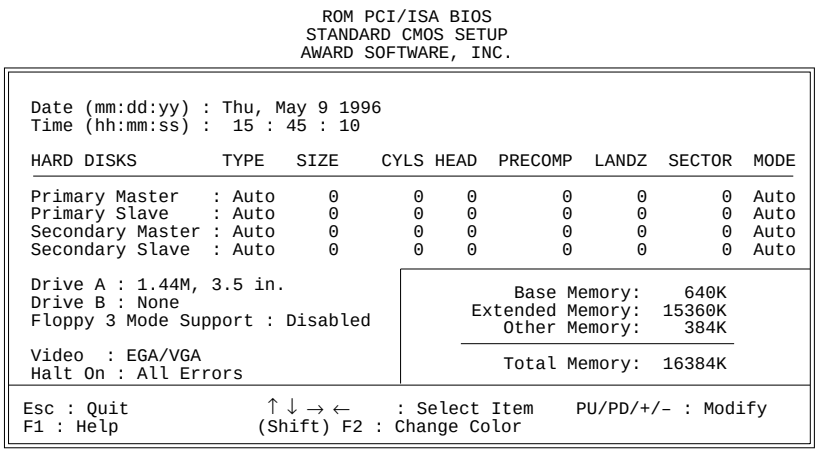
3. Using one of the arrows on your keyboard to select an option and press <Enter>. Modify the system parameters to reflect the options installed in the system.
4. You may return to the Main Menu anytime by press <ESC> .
5. In the Main Menu, "SAVE AND EXIT SETUP" saves your changes and reboots the system, and "EXIT WITHOUT SAVING" ignores your changes and exits the program.

Standard CMOS Setup

Standard CMOS Setup allows you to record some basic system hardware configuration and set the system clock and error handling. You only need to modify the configuration values of this option when you change your system hardware configuration or the configuration stored in the CMOS memory got lost or damaged.

Run the Standard CMOS Setup as follows:

1. Choose "STANDARD CMOS SETUP" from the Main Menu and a screen with a list of options appears.



2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options follows:

Date (mm:dd:yy) **Time (hh:mm:ss)**	Set the current date and time.
Primary **(Secondary)** **Master/Slave**	This field records the specifications for all non-SCSI hard disk drives installed in your system. Refer to the respective documentation on how to install the drivers.
Drive A/B	Set this field to the types of floppy disk drives installed in your system. The choices are: 360KB, 5.25 in., 1.2MB, 5.25 in., 720KB, 3.5 in., 1.44M, 3.5 in. (default), 2.88MB, 3.5 in., or None
Floppy 3 Mode Support	Drive A/B, Both: Enabled 3.5-inch, 1.2MB function. Disabled (default): Disabled 3.5-inch, 1.2MB function.
Video	Set this field to the type of video display card installed in the system. The choices are: Monochrome; Color 40x25; VGA/EGA (default); or Color 80x25
Halt On	Set this filed to the type of errors that will cause the system to halt. The choices are: All Errors (default); No Errors; All, But Keyboard; All, But Diskette; or All, But Disk/Key

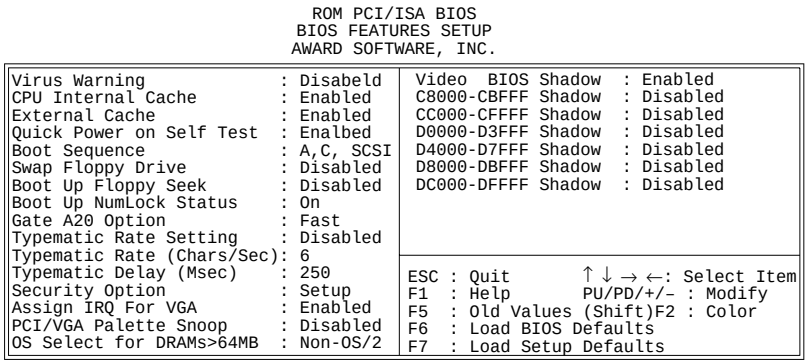
3. Press <ESC> to return to the Main Menu when you finish setting up in the “Standard CMOS Setup”.

BIOS Features Setup

BIOS Features Setup allows you to improve your system performance or set up some system features according to your preference.

Run the BIOS Features Setup as follows:

1. Choose "BIOS FEATURES SETUP" from the Main Menu and a screen with a list of options appears.



2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys. An explanation of the <F> keys follows:

   <F1>: "Help" gives options available for each item.

   Shift <F2>: Change color.

   <F5> : Get the previous values. These values are the values with which the user started the current session.

   <F6>: Load all options with the BIOS default values.

   <F7>: Load all options with the Setup default values.

A short description of screen options follows:

Virus Warning

Enabled: Activates automatically when the system boots up causing a warning message to appear if there is anything attempts to access the boot sector or hard disk partition table.

Disabled: No warning message will appear when there is something attempts to access the boot sector or hard disk partition table

Note: Many diagnostic (or boot manager) programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you disable the virus protection first.

CPU Internal Cache

Choose Enabled (default) or Disabled. This option allows you to enable or disable the CPU's internal cache.

External Cache

Choose Enabled (default) or Disabled. This option allows you to enable or disable the external cache memory.

Quick Power On Self Test

Choose Enabled (default)or Disabled. This option allows you to speed up the Power On Self Test routine.

Boot Sequence	Default is "A, C, SCSI". This option determines which drive to look for first for an operating system.
Swap Floppy Drive	Choose Enabled or Disabled (default). This option swaps floppy drive assignments when it is enabled.
Boot Up Floppy Seek	Enabled: During POST, BIOS checks the track number of the floppy disk drive to see whether it is 40 or 80 tracks. Disabled (default): During POST, BIOS will not check the track number of the floppy disk drive.
Boot Up NumLock Status	Choose On (default) or Off. This option lets user to activate the NumLock function at boot-up.
Gate A20 Option	Choose Normal or Fast (default). This option allows the RAM to access the memory above 1MB by using the fast gate A20 line.
Typematic Rate Setting	Choose Enabled or Disabled (default). Enable this option to adjust the keystroke repeat rate.
Typematic Rate (Chars/Sec)	Range between 6 (default) and 30 characters per second. This option controls the speed of repeating keystrokes.
Typematic Delay (Msec)	Choose 250 (default), 500, 750, and 1000. This option sets the time interval for displaying the first and the second characters.

Security Option Choose System or Setup (default). This option is to prevent unauthorized system boot-up or use of BIOS Setup.

Assign IRQ for VGA Choose Enabled (default) or Disabled.
Enabled: Add one IRQ to VGA controller.
Deisabled: Remove IRQ from VGA controller. The system will have extra IRQ for other devices but the VGA controller will still not disabled (only IRQ was removed.)

PCI/VGA palette Snoop Choose Enabled or Disabled (default). It determines whether the MPEG ISA cards can work with PCI/VGA or not.

Video BIOS Shadow Enabled (default): Map the VGA BIOS to system RAM.
Disabled: Don't map the VGA BIOS to system RAM.

C8000-CBFFF to DC000-DFFF Shadow These options are used to shadow other expansion card ROMs.

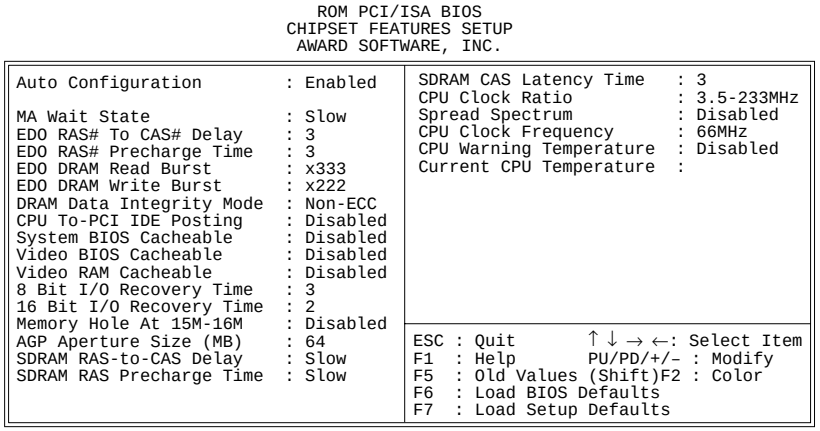
3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Chipset Features Setup

Chipset Features Setup changes the values of the chipset registers. These registers control the system options.

Run the Chipset Features Setup as follows:

1. Choose "CHIPSET FEATURES SETUP" from the Main Menu and a screen with a list of options appears.



2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options follows:

Auto Configuration — Choose Enabled (default) or Disabled. The system sets all options on the left side of the screen automatically when choose Enabled.

DRAM Speed Selection — Choose 60ns or 70ns (default). Do not change this setting unless you know the DRAM access time spec.

MA Wait State Use the default setting.

EDO RAS# to CAS# Delay Use the default setting. This setup option allows you to determine the delay time in completing the transition from RAS to CAS.

EDO RAS# Precharge Time Use the default setting. This option allows you to determine the number of the CPU clocks allocated for the RAS to accumulate/charge it before the DRAM is refreshed.

EDO DRAM Read Burst
EDO DRAM Write Burst Use the default setting. Burst read/write requests are generated by the CPU in four separate parts. The 1st part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing number is, the faster the system memory will be addressed.

DRAM Data Integrity Mode Choose Non-ECC (default) or ECC depending on the DRAM type. ECC stands for Error Check and Correct.

Non-ECC: Disabled ECC check function.

ECC: Enabled ECC check function.

CPU-To-PCI IDE Posting Choose Enabled (default) or Disabled.

System BIOS Cacheable Choose Enabled or Disabled (default). When Enabled, the access to the system BIOS ROM addressed at F0000H-FFFFFH is cached.

Video BIOS Cacheable	Choose Enabled or Disabled (default). When Enabled, the access to the VGA BIOS ROM addressed at C0000H-C7FFFH is cached.
Video RAM Cacheable	Choose Enabled or Disabled (default). When Enabled, the access to the VGA RAM addressed is cached.
8 Bit I/O Recovery Time; **16 Bit I/O Recovery Time**	This delay happens when the CPU is running so much faster than the I/O bus that the CPU must be delayed to allow for the completion of the I/O. The choices for 8 bit I/O are NA, 1 to 8 CPU clock. Default is 3. The choices for 16 bit I/O are NA, 1 to 4 CPU clock. Default is 2.
Memory Hole At 15M-16M	Choose Enabled or Disabled (default). In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory's space below 16MB.
AGP Aperture Size (MB)	Choose 4 , 8, 16, 32, 64 (default), 128, or 256 MB. Memory mapped and graphics data structures can reside in a Graphics Aperture. This area is like a linear buffer. BIOS will auto report the starting address of this buffer to the O.S.
SDRAM RAS-To CAS Delay	Use the default setting.

SDRAM RAS Precharge Time	Use the default setting.
SDRAM CAS Latency Time	Use the default setting.
CPU Clock Ratio	Choose 2.0-133MHz, 2.5-166MHz, 3.0-200MHz, 3.5-233MHz (default), 4.0-266MHz, 4.5-300MHz, or 5.0-333MHz. **This value is based on the CPU clock at 66.6MHz and should be the same as the user's CPU spec.**
Spread Spectrum Modulated	Choose Disabled (default), 1.8% (CNTR), 0.6% (CNTR), 1.8% (DOWN), 0.6% (DOWN, or Enabled. **This function is designed only for EMI test.**
CPU Clock Frequency	Choose Disabled (same as 66MHz), 50, 60, 66 (default), 68, 75, 83MHz.
CPU Warning Temperature*	Choose Disabled (default), 60°C/140°F, 65°C/149°F, 70°C/158°F, 75°C/167°F, 80°C/176°F, 85°C/185°F, 90°C/194°F. When CPU temperature is over the setting value, the speaker will sound an alarm and the clock will drop until the temperature is within optimum the temperature range.
Current CPU Temperature*	BIOS will auto displays CPU temperature.

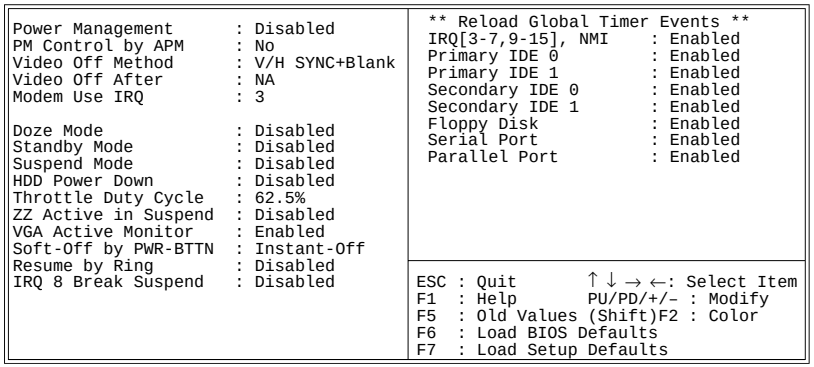
*: Theses options won't work unless the chip is installed.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Power Management Setup

Power Management Setup sets the system's power saving functions.

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of options appears.



2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options follows:

Power Management	Choose Max. Saving, User Define, Disabled (default), or Min Saving.
PM Control by APM	Choose Yes or No (default). You need to choose Yes when the operating system has the APM functions, choose No otherwise.

Video Off Method	Choose Blank , DPMS, or V/H Sync+Blank (default). You can chose either DPMS or V/H Sync+Blank when the monitor has the Green function. You need to choose Blank when the monitor has neither the Green function.
Video Off After	Use the default setting.
MODEM Use IRQ	Assign the IRQ number to the modem which is being used so that the ring signal can wakeup the system. The default setting is 3 (COM2).
Doze Mode	This option sets the CPU speed down to 33MHz during this mode.
Standby Mode **Suspend Mode**	These two options allow you to choose the mode for the different timers. The Standby Mode turns off the VGA monitor, and the Suspend Mode turns off the CPU and saves the energy of the system.
HDD Power Down	Time is adjustable from 1 to 15 minutes. When the set time has elapsed, the BIOS sends a command to the HDD to power down, which turns off the motor.
Throttle Duty Cycle	Choose the duty cycle time: 12.5%, 25%, 37.5%, 50%, 62.5% (default), 75%, or 87.5%. The bigger of the percentage, the more saving power it gets.

ZZ Active in Suspend	Enabled:	PB SRAM (cache) still consumes power when entering the power management mode.
	Disabled:	(default) PB SRAM (cache) will not consume power when entering the power management mode.
VGA Active Monitor	Enabled:	the system can not enter the power saving mode when monitor is on.
	Disabled:	the system can enter the power saving mode when monitor is on.
Soft-Off by PWR-BTTN	Instant-off:	(default) turns off the system power at once after pushing the power button.
	Delay 4 Sec:	turns off the system power 4 seconds after pushing the power button (to meet PC97 spec.)
Resume by Ring	Enabled:	Wake up the system from ring signal.
	Disabled:	(default) Ring signal can not wake up the system.

IRQ (#), NMI; **Primary IDE 0** **Primary IDE 1;** **Secondary IDE 0** **Secondary IDE 1;** **Floppy Disk;** **Serial Port;** **Parallel Port**	Enabled: Disabled:	(default) The system can not enter the power saving mode when I/O ports or IRQ# is activated. The system still can enter the power saving mode when I/O ports or IRQ# is activated.

Note: These functions can only be activated when the power management option is Enabled.

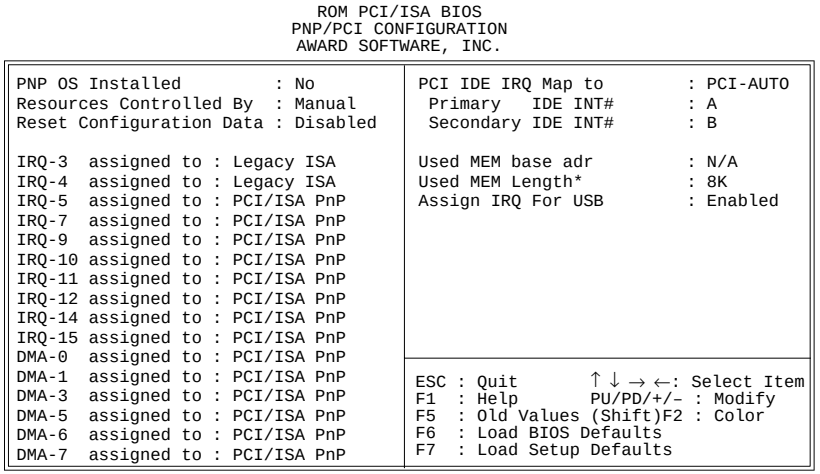
3. Press <ESC> and follow the screen instructions to save or disregard your settings.

PnP/PCI Configuration Setup

PnP/PCI Configuration Setup configures the PCI bus slots.

Run the Chipset Features Setup as follows:

1. Choose "PnP/PCI CONFIGURATION SETUP" from the Main Menu and a screen with a list of options appears.



2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options follows:

PNP OS Installed Yes: OS supports Plug and Play function.
No (default): OS doesn't support Plug and Play function.

Note: BIOS will automaticaly disable all PnP resources except the boot device card when select Yes on Non-PnP OS.

Resources Controlled By	Choose Manual (default) or Auto. The BIOS checks the IRQ/DMA channel number on the ISA and PCI card manually if chose Manual and the IRQ/DMA channel number will be checked automatically if choose Auto.
Reset Configuration Data	Choose Enabled or Disabled (default). Disabled means to retain PnP configuration data in BIOS and Enabled means to reset PnP configuration data in BIOS.
IRQ-x assigned to DMA-x assigned to	Legacy ISA: Manually assigns IRQ/DMA to device. PCI/ISA PnP: BIOS assigns IRQ/DMA to device automatically.
PCI IDE IRQ Map To	Select PCI-AUTO (default), ISA, or assign a PCI SLOT number (depending on which slot the PCI IDE is inserted). If PCI-AUTO does not work, then assign an individual PCI SLOT number.
Primary/ IDE INT#	Choose A (default), B, C, or D.
Secondary IDE INT#	Choose A, B (default), C, or D.
Used MEM Base Addr	Choose N/A (default) or ISA legacy card requests to have memory start address.

Used MEM Length*

Choose 8K, 16K, 32K, or 64K.

With the above two functions, users can define where the used memory address is located and its corresponding length of the legacy area. BIOS will skip the UMB area which is used by the legacy device to avoid memory space conflict.

* This function actives only when the "Used MEM Base Addr" is chosen.

Assign IRQ for USB

Choose Enabled (default) or Disabled.

Enabled: Add one IRQ to USB controller.

Deisabled: Remove IRQ from USB controller. The system will have extra IRQ for other devices but the USB controller will still not disabled (only IRQ was removed.)

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Load Setup Defaults

Load Setup Defaults option loads the default system values to the system configuration fields. If the CMOS is corrupted the defaults are loaded automatically. Choose this option and the following message appears:

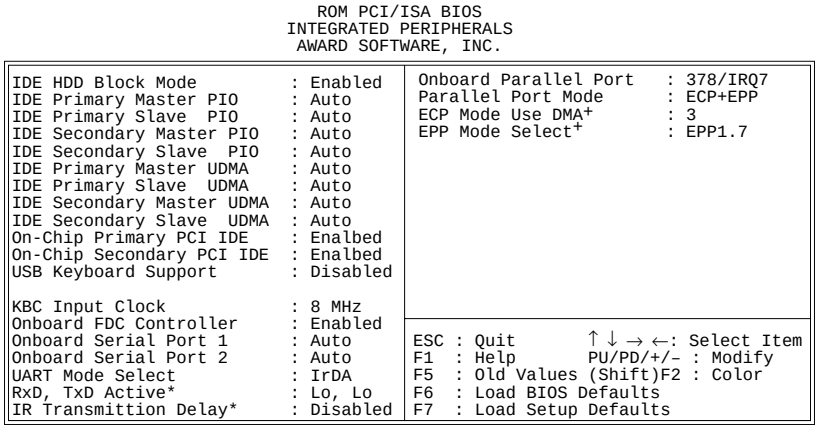
```
"Load Setup Defaults (Y/N)? N"
```

To use the Setup defaults, change the prompt to "Y" and press <Enter>.

Integrated Peripherals

Integrated Peripherals option changes the values of the chipset registers. These registers control system options in the computer.

1. Choose "INTEGRATED PERIPHERALS" from the Main Menu and a screen with a list of options appears.



*: These options will not be displayed unless ASKIR or IrDA is selected in UART Mode option.
+: These two options will not be displayed unless EPP/ECP function is selected.

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/– keys.

A short description of screen options follows:

IDE HDD Block Mode Choose Enabled (default) or Disabled. If your hard disk size is larger than 540MB, choose Enabled, and, if you are using the IDE HDD Auto Detection option, the BIOS will choose this option automatically. (Note: Some HDDs of old models don't provide this feature.)

IDE Primary Master/Slave PIO **IDE Secondary Master/Slave PIO**	Choose Auto (default) or Mode 0~4. The BIOS will detect the HDD Mode type automatically when you choose Auto. You need to set to a lower mode than Auto when your hard disk becomes unstable.
On-Chip Primary/ Secondary PCI IDE	Enabled: (default) Turn on the onboard IDE function. Disabled: Turn off the onboard IDE function.
USB Keyboard Support	Enabled: Enables function when the USB keyboard is being used. Disabled: (default) When the AT keyboard be used.
KBC Input Clock	Choose 6MHz, 8MHz (default), 12MHz, or 16MHz. There might be a compatible problem when is above 8MHz.
Onboard FDC Controller	Choose Enabled (default) or Disabled. Choose Disabled when you use an ISA card with FDD function, or , choose Enabled to use the onboard FDD connector.
Onboard Serial Port 1	Choose Auto (default), 3F8/IRQ4 , 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, or Disabled. Do no set port 1 & 2 to the same value except for Disabled.
Onboard Serial Port 2	Choose Auto (default), 3F8/IRQ4 , 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, or Disabled.
UART Mode Select	Choose Normal (default), IrDA, or ASKIR.

RxD, TxD Active* Choose Hi/Hi, Hi/Lo, Lo/Hi, or Lo/Lo (default).

IR Transmition Delay* Enabled: Enabled delay when transfers data.
Disabled: (default) Disabled delay when transfers data.
**: The above 2 options won't work unless UART Mode ASKIR/IrDA is selected.*

Onboard Parallel Port Choose the printer I/O address: 378H/IRQ7 (default), 3BCH/IRQ7, 278H/IRQ5

Parallel Port Mode Choose SPP (default), ECP + EPP EPP, or ECP mode. The mode depends on your external device that connects to this port.

ECP Mode Use DMA* Choose DMA3 (default) or DMA1. Most sound cards use DMA1. Check with your sound card configuration to make sure that there is no conflict with this function.
**: This option will not be displayed unless the EPP/ECP function is selected..*

EPP Mode Select Choose EPP1.7 (default) or EPP1.9. EPP1.9 supports hardware handshake. This setting is dependent on your EPP device.

Note: The above 2 options will not be displayed unless the EPP/ECP function is selected.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Supervisor/User Password

These two options allows you to set your system passwords. Normally, supervisor has a higher right to change the CMOS setup option than the user. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

   `"Enter Password:"`

2. The first time you run this option, enter your password up to only 8 characters and press <Enter>. The screen does not display the entered characters.
3. After you enter the password, the following message appears prompting you to confirm the password:

   `"Confirm Password:"`

4. Enter exact the same password you just typed again to confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password you entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.
7. Move the cursor to Save & Exit Setup to save the option you did, otherwise the old password will still be there when you turn on your machine next time.
8. Press <ESC> to exit to the Main Menu.

Note: If you forget or lose the password, the only way to access the system is to clear the CMOS RAM by setting JP5. All setup information will be lost and you need to run the BIOS setup program again.

IDE HDD Auto Detection

IDE HDD Auto Detection detects the parameters of an IDE hard disk drive and automatically enters them to the Standard CMOS Setup screen.

The screen will ask you to select a specific hard disk for Primary Master after you select this option. If you accept a hard disk detected by the BIOS, you can enter "Y" to confirm and then press <Enter> to check next hard disk. This function allows you to check four hard disks and you may press the <ESC> after the <Enter> to skip this function and go back to the Main Menu.

Save & Exit Setup

Save & Exit Setup allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and the following message appears:

```
SAVE to CMOS and EXIT (Y/N)? Y
```

Press <Enter> key to save the configuration changes.

Exit Without Saving

Exit Without Saving allows you to exit the Setup utility without saving the modifications that you have specified. Highlight this option on the Main Menu and the following message appears:

```
Quit Without Saving (Y/N)? N
```

You may change the prompt to "Y" and press <Enter> key to leave this option.