

PENTIUM® II

P6I440LX/DP

Legend - IV

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Contents

❶ Chapter 1 ~ Introduction

<i>Overview</i>	1-1
<i>Main Features</i>	1-1

❷ Chapter 2 ~ System Setting by the Jumpers

<i>CPU Frequency Selection</i>	2-1
<i>Clear CMOS</i>	2-3
<i>Memory Configuration</i>	2-3
<i>Wide SCSI Selection</i>	2-4
<i>SCSI Terminator Control</i>	2-4

❸ Chapter 3 ~ MainBoard Connectors

Connectors using header

<i>Power LED & Keyboard Lock Connector</i>	3-1
<i>Power Switch Connector</i>	3-1
<i>Hard Disk LED Connector</i>	3-2
<i>Speaker Connector</i>	3-2
<i>Turbo LED Connector</i>	3-2
<i>Reset Switch</i>	3-2
<i>Hardware Green Connector</i>	3-2
<i>Infrared Header</i>	3-3
<i>Controller Fan Connector</i>	3-3
<i>Standard Fan Connector</i>	3-3
<i>Chassis Security</i>	3-3

I/O Port and Slot

<i>IDE1, IDE2, FLOPPY, PRINTER, UART1, UART2</i>	3-4
<i>USB1, USB2, Keyboard, PS2 Mouse</i>	3-4
<i>SLOT1, SLOT2, LAN, AGP</i>	3-4
<i>PCI1, PCI2, PCI3, PCI4</i>	3-4

Contents

<i>RAIDPORT, ISA1,2,3, DIMMI, 2, 3, 4</i>	3-5
<i>Narrow SCSI, Wide SCSI, ATX Power</i>	3-5

④ Chapter 4 ~ Award BIOS Description

Entering Setup	4-1
Load Setup Defaults	4-2
Standard CMOS Setup	4-2
BIOS Features Setup	4-5
Chipset Features Setup	4-7
Power Management Setup	4-9
PNP/PCI Configuration Setup	4-12
Integrated Peripherals	4-14
System Monitor Setup	4-16
Supervisor/User Password	4-17
IDE HDD Auto Detection	4-18
Power- On Boot	4-20

⑤ Appendix.

Appendix~A BIOS Upgrade Diskette	A-1
Appendix~B Installation Procedures	A-2
Appendix~C PCI Resource	A-5

Chapter 1

Introduction

Overview

P61440LX/DP Legend IV is a high-performance and powerful dual Pentium II processor system, which provides on-board LAN for fast Ethernet network at 10/100Mbps, on-board Ultra Wide SCSI at 40MB/sec, RAID and health system monitor support. Using the PCI/ISA architecture, the system provides a highly integrated solution for fully compatible PC/AT platform, featuring the industry standard ATX form factor. Flexible main memory size can be installed from 8MB to 512MB SDRAM or 1GB EDO DIMM. The system also offers a wide range of interface to support integrated on-board IDE and on-board I/O functions. The system provides 3 modes of green function: Doze, Standby and Suspend.

Main Features

CPU

- Supports single/dual Intel Pentium II CPU at 233/266/300/333MHz
- System clock:66.66MHz
- CPU core frequency = system clock x2, x2.5,x3, x3.5, x4, x4.5, x5
- Two sets of switching regulator supply CPU core voltage independently, the voltage from 1.8V to 3.5V adjusted automatically by CPU's VID

Chipset

- Intel® 440LX (82443LX, 82371AB, PIIX4)
- NS82307 I/O chip
- Intel 82093AA I/OAPIC, Intel 82557 LAN controller, NS P83840A PHY
- Adaptec AIC7880 PCI SCSI Controller.

Introduction

System memory

- Four 168 pin DIMM sockets, capacity of 8MB to 512MB SDRAM or 1G EDO space, 3.3V power supply
- Support memory EC (Error Checking) and ECC (Error Checking and Correction) function

BIOS

- Licensed advanced AWARD BIOS, supports Flash ROM BIOS, plug and play ready

On-board I/O

- Support 2 Fast IDE interfaces for up to 4 IDE devices including IDE hard disks and CD-ROMs
- Support Ultra DMA/33 Synchronous DMA mode transfers up to 33 Mbytes
- Two high speed serial ports(16550 Fast UART compatible)
- One floppy port supports up to 2 floppy drivers (360K/720K1.2M/1.44M/2.88M)

Expansion slots

- 4 PCI bus slots
- 3 ISA bus slots
- 1 AGP slot
- 1 RAID port

On-board SCSI

- Adaptec AIC-7880 PCI to SCSI controller which is equivalent to Adaptec AHA_2940UW PCI SCSI Controller.
- Both Ultra wide, narrow SCSI interface
- Data transfer rate up to 40MB/Sec
- Driver for Netware, Windows NT, OS/2, SCO Unix, Unixware. With 1 RAID port, RAID function(RAID 0,1, 0/1 and 5) is supported

- SCSI terminator can be powered up/down automatically or by manual setting

On-board LAN

- Intel 10/100Mbps PCI to LAN controller 82557, NS DP83840A and DP83223V physical layer.
- Auto-negotiation

Green function

- Advanced Configuration and Power Interface (ACPI) specification and OS Directed Power Management
- Supports three green modes: (Doze, Standby and Suspend)
- Power LED will blink when the system is in green status

Advanced Features

- Health system (monitoring the system's voltages, processor's temperature, chassis intrusion and Fan speed by LM78 and LM75)
- Supports LDSM (LAN Desk Server Manager) software (Optional)
- Supports Windows 95 Software Power-Down
- Supports External Modem Ring Power-On
- Supports Auto Fan-Off when system entering suspend mode
- On-board two USB connectors
- On-board PS/2 mouse and PS/2 keyboard sockets
- All I/O ports can be enabled/disabled by BIOS setup
- Provides Anti-virus function
- Provides Infrared interface
- Green mode
- Supports IDE CD-ROM or SCSI bootup

Board size

- 305 mm x 310mm

Introduction

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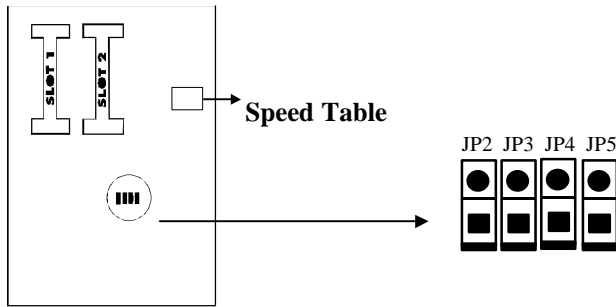
Chapter 2

System Setting by Jumper

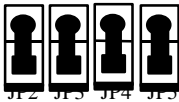
The mainboard offers a set of jumper settings to facilitate clock frequency adjustment and some important selections.

CPU Frequency Selection

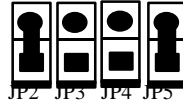
According to CPU's specification, set CPU's clock speed carefully. The following illustration lists the jumper settings for the Pentium® II CPUs:



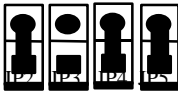
Pentium® II 133MHz =2x66MHz



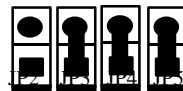
Pentium® II 333MHz=5x66MHz



Pentium® II 200MHz =3x66.66MHz



Pentium® II 166=2.5x66MHz



JP2 JP3 JP4 JP5

System Setting by the jumpers

Pentium® II 266MHz =4x66MHz:



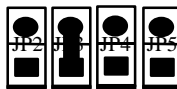
Pentium® II 233=3.5x66MHz:



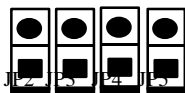
Pentium® II 299MHz =4.5x66MHz

Pentium® II 100=1.5x66MHz:

JP2 JP3 JP4 JP5



Pentium® II 133MHz =2x66MHz:

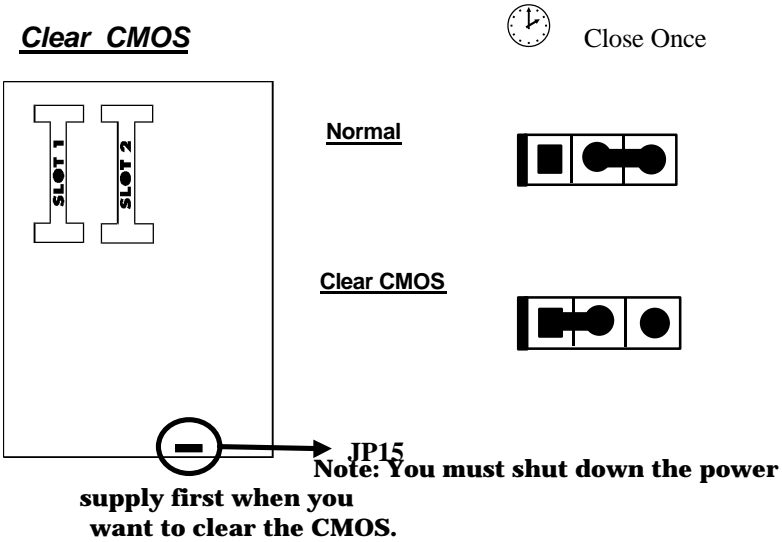


Remark: All other Combinations



Warning:

Set CPU's clock speed according to its specification.
CPU over speed will be dangerous!



Memory Configuration

The P6I440LX/DP Legend IV mainboard supports up to four 168PIN 3.3V un-buffered DIMM, provides a flexible size from 8MB up to 512MB SDRAM memory or from 8MB up to 1GB EDO memory. The following set of rules allows for optimum configurations.

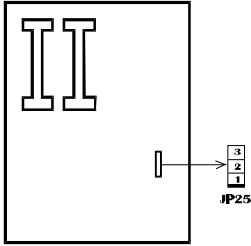
Rules for populating a 440LX/DP Legend IV memory array:

- ✎ DIMM sockets can be populated in any order. However, to take advantage of potentially faster MA timing it is recommended to populate sockets in order.
- ✎ SDRAM and EDO DIMMs can be mixed within the memory array.
- ✎ The DRAM Timing register, which provides the DRAM speed grade control for the entire memory array, must be programmed to use the timings of the slowest DRAMs installed (Please refer to "Chipset Features Setup" of BIOS).
- ✎ Possible EDO DIMM memory size is 8MB, 16MB, 32MB, 64MB, 128MB, 256MB in each DIMM socket.
- ✎ Possible SDRAM memory size is 8MB, 16MB, 32MB, 64MB, 128MB, 256MB in each DIMM socket.

Wide SCSI Selection

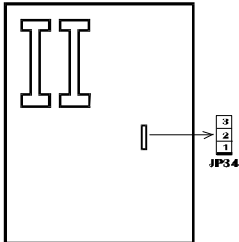
JP25 decides the on-board SCSI controller whether to work in ultra wide SCSI mode or ultra narrow SCSI mode. Please see the table listed below. 2 - 3

System Setting by the jumpers



JP25	Wide Device	Narrow Device	Mode	Comment
All Open	present	absent	Wide	The mode is decided automatically by the SCSI Device installed or not.
	absent	present	Narrow	
	present	present	Wide	
	absent	absent	Narrow	
2-3 Close	ignore	ignore	wide	Force into wide mode
1-2 Close	Reserved			

SCSI Terminator Control



JP34 decides the on-board SCSI terminator to be power-down or power-up. The terminator are divided into high byte and low byte. Please see the table listed below.

JP34	High byte terminator	Low byte terminator
All Open	Power-down	Power-down
2-3 Close	Power-up if wide mode selected; Power-down if narrow mode selected.	Power-up if only one type of wide or narrow SCSI device present; Power-down if both type present.
1-2 Close	Reserved	

Chapter 3

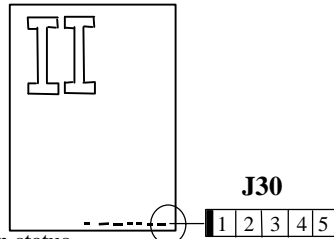
MainBoard Connectors

This section lists all connector pin assignment and port description on the main-board. The situations of the connectors and ports are illustrated in the following figures. Before inserting these connectors, please pay attention to the directions.

Connectors with Header

Power LED & Keyboard Lock Connector (KEYLOCK)

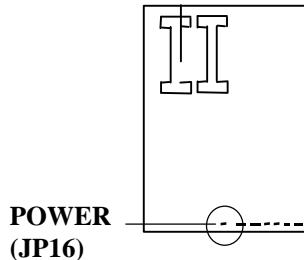
PIN NUMBER	FUNCTION
1	LED Anode
2	NC
3	LED Cathode
4	K.B. LOCK
5	GND



The LED will blink when system in green status.

Power Switch (POWER)

1. If you want to power up your system, push the button once which connected to JP16.
2. If you want to power off your system, just ***push once**** again the button.



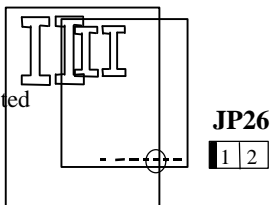
*Note: If you change 'soft-off by PWR-BTTN' from default 'Instant-off' to 'Delay 4 Secs' in BIOS Setting, you will have to press the power button for more than 4 seconds before the system power down. For details, please refer to Page 4-9.

Hard Disk LED Connector(HD.LED)

MainBoard Connector

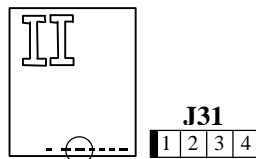
PIN NUMBER	FUNCTION
1	LED ANODE
2	LED CATHODE

Hard disk LED indicator should be connected to the LED of the front-panel.



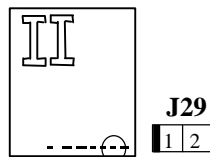
Speaker Connector(SPEAKER)

PIN NUMBER	FUNCTION
1	SPEAKER-
2	NC
3	GND
4	SPEAKER+



Turbo LED Connector (TB. LED)

PIN NUMBER	FUNCTION
1	LED ANODE
2	LED CATHODE

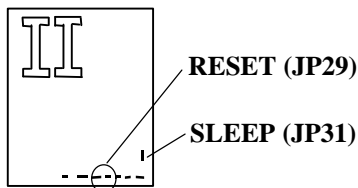


Reset Switch (RESET)

SETTING	FUNCTION
CLOSE	Reset the system
OPEN	NORMAL

Hardware Green Connector (SLEEP)

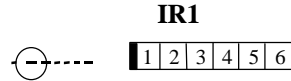
SETTING	FUNCTION
CLOSE	Hardware green
OPEN	NORMAL



Infrared Header(IRI)

PIN NUMBER	FUNCTION
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1	VCC
2	NC
3	IRRX
4	GND
5	IRTX
6	VCC

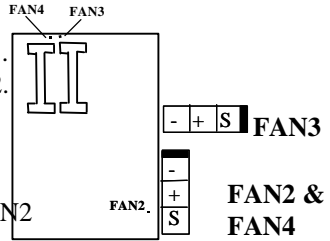


Controlled Fan Connector(FAN2, FAN3, FAN4)

PIN NUMBER	FUNCTION
+	FAN+
-	FAN-
S	Speed

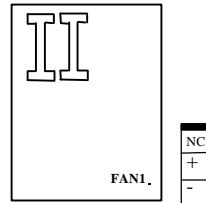
Note1: FAN4 for CPU1 installed in SLOT1.
 FAN3 for CPU2 installed in SLOT2.
 FAN2 for other FAN.

Note2: Fan's current should not be more than 150 mA for FAN3 and FAN4, and not be more than 300mA for FAN2 in +12V supply condition.



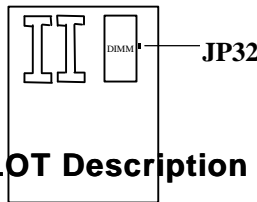
Standard Fan Connector (FAN1)

PIN NUMBER	FUNCTION
-	GND
+	+12V
NC	NC



Chassis Security (JP32):

Connected to the chassis's **Open/Close** detecting switch. JP32 **Close** means the chassis is close, while **Open** means it is open.



I/O Port and SLOT Description (See Figure 3-01)

MainBoard Connector

<u>CONNECTOR</u>	<u>FUNCTION</u>
IDE1	Primary IDE Port
IDE2	Secondary IDE Port
FLOPPY	Floppy Drive Port
PRINTER	Parallel Port
UART1	COM1/COM2/COM3/COM4
UART2	COM2/COM3/COM4/COM1
USB1	First USB Port
USB2	Second USB Port
Keyboard	For PS2 Keyboard
PS2 Mouse	For PS2 Mouse
SLOT1, SLOT2	Slots for CPU1 and CPU2. When single CPU is needed, you can select any one of the two slots to install the CPU, while another slot is for GTC (GTL Terminator Card). It's necessary to install GTC when single CPU mode is selected.
LAN	On-board LAN I/O Connector. The on-board LAN adapter occupies PIRQB of the PCI interrupter.
AGP	For AGP cards. Since the on-board LAN occupies PIRQB of PCI interrupter, you must select PIRQA for AGP Card to avoid the resource's conflicting.
PCI1	A PCI slave device can be installed, such as VGA card which does not need interrupter. A PCI master device also can be installed which needs PCI interrupter, such as a LAN adapter. If a master device is installed, PIRQA must be selected and there's no AGP card available.
PCI2	For those PCI slave devices which do not need PCI interrupter.
PCI3	For those PCI slave devices which do not need PCI interrupter.
PCI4	It's the same as PCI1 except the PCI interrupter should be set to PIRQD when a master device is installed. In most cases, PCI4 combining with the RAID port slot is used for RAID port card (See RAID port).
RAID port	Turn this SCSI embedded Motherboard to be hardware assist RAID ready by adding the Adaptec ARO-1130

adapter.

This RAID port option by adding the Adaptec ARO-1130 adapter can support:

- Bus Master DMA
- Up to 133 Mbyte/Sec Burst rate
- RAID 5, 1, 0 and 0/1
- Fully Netware 3.11, 3.12, 4.x & WinNT 3.51/4.0 supported by Adaptec

ISA 1, 2, 3
DIMM 1-2, 3, 4
Narrow SCSI

General using for ISA cards.

Memory for SDRAM or EDO.

For ultra narrow SCSI peripherals. Be sure the red side of the cable should align to the end of the connector which is signed with "A".

Wide SCSI

For ultra wide SCSI peripherals.

Note1: Ultra narrow SCSI peripherals and ultra wide SCSI peripherals can be used at the same time.

Note2: You must assign a different SCSI ID to each device on the SCSI bus connected to the system board. See your SCSI device documentation for directions on how to determine the ID and change it.

Ultra Wide SCSI devices connected to this mainboard's SCSI connector can be assigned ID from 0 to 15 (for 68 pin Wide SCSI connection). Normally, ID7 will be used by the on-board host.

The SCSI ID0 is the best one for SCSI hard disk to be used as your computer's boot device; ID1 is best reserved for a secondary SCSI hard disk. (Only when you use the SCSI hard disks and devices.)

ATX Power

ATX power supply connector.

MainBoard Connector

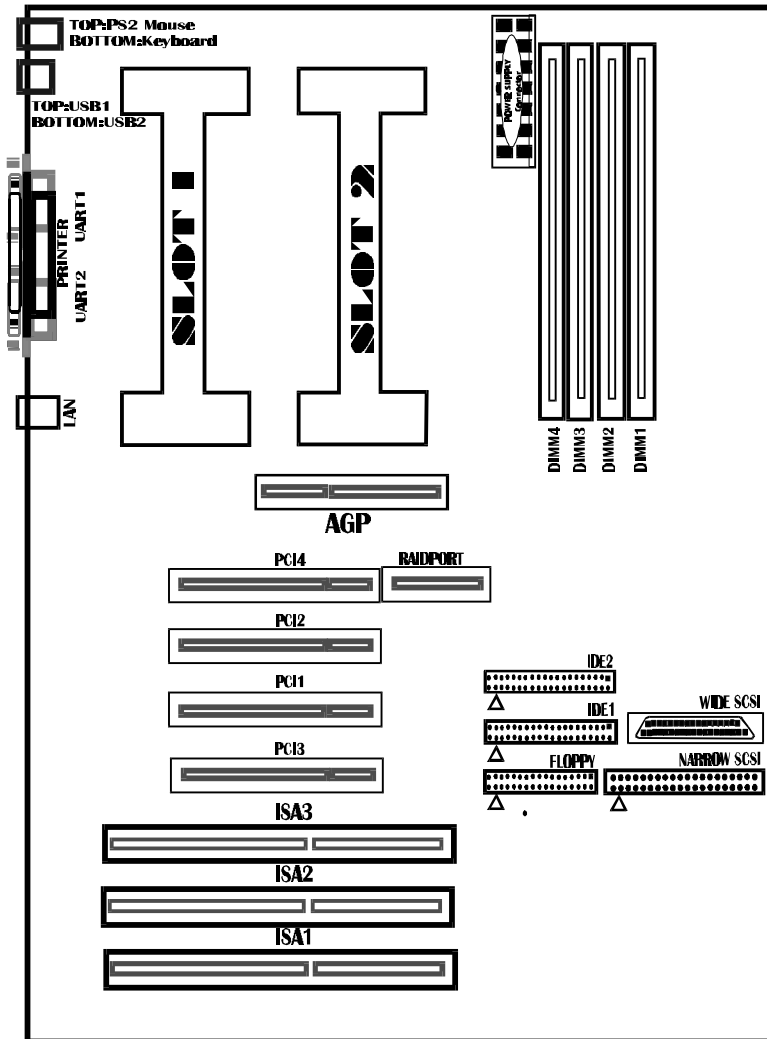


Figure 3-01 Illustration I/O and slots on board

Chapter 4

AWARD BIOS Description

Entering Setup

Power on the computer, when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test), press key or simultaneously press <Ctrl> + <Alt> + <Esc> keys.

Press to enter SETUP

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will be appeared 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.

ROM PCI/ISA BIOS (2A69JQ19) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SYSTEM MONITOR
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGEMENT SETUP	USER PASSWORD
PNP/PCI CONFIGURATION	IDE HDD AUTO DETECTION
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type ...	

Figure-1 Main Menu

AWARD BIOS Description

Load Setup Defaults

The Setup Defaults is common and efficient setting.

Standard CMOS Setup

Use the arrow keys to highlight the item, then use the < PgUp> or <PgDn> keys to select the value you want in each item.

ROM PCI/ISA BIOS (2A69JQ19) STANDARD CMOS SETUP AWARD SOFTWARE, INC.								
Date (mm:dd:yy) : Fri, Jun 20 1997								
Time (hh:mm:ss) : 10:10:10								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: Auto	0	0	0	0	0	0	AUTO
Primary Slave	: Auto	0	0	0	0	0	0	AUTO
Secondary Master	: Auto	0	0	0	0	0	0	AUTO
Secondary Slave	: Auto	0	0	0	0	0	0	AUTO
Drive A	: 1.44M, 3.5in							
Drive B	: None							
Video	: EGA/VGA							
Halt On	: All Errors							
		Base Memory : 640K						
		Extended Memory : 15360K						
		Other Memory : 384K						
		Total Memory : 16384K						
ESC : Quit	↑ ↓ → ← : Select Item				PU/PD/+/- : Modify			
F1 : Help	(Shift)F2 : Change Color							

Figure-2 Standard CMOS Setup Menu

Hard Disk

Primary Master/Primary Slave/Secondary Master/Secondary Slave

The categories identify the types of 2 IDE channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are used for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User's

user-definable. If your hard disk drive type is not matched with drive table or listed in it, you can use Type 'User' to define your own drive type manually.

If you select Type **"Auto"**, that means the system can autodetect your hard disk when boots up. If you select Type **"User"**, related information is asked to be entered into the following items. Enter the information directly from the keyboard and press <Enter>:

CYLS	number of cylinders	HEAD	number of heads
PRECOMP	write precom	LANDZ	landing zone
SECTOR	number of sectors	MODE	HDD access mode

Video

You have two ways to boot up the system:

- I. When VGA is used as primary and monochrome is used as secondary, the selection of the video type is **"EGA/VGA"** mode.
- II. When monochrome is used as primary and VGA is used as secondary, the selection of the video type is **"Mono"** mode.

EGA/ VGA	Enhanced Graphics Adapter / Video Graphic Array. For EGA, VGA, SEGA, SVGA, or PGA monitor adapters.
CGA 40	Color Graphic Adapter, powering up in 40 column mode.
CGA 80	Color Graphic Adapter, powering up in 80 column mode.
MONO	Monochrome adapter, including high resolution monochrome adapters.

Error Halt

The category determines that whether the computer will stop or not if an error is detected during powering up.

No errors	The system boot will not stop for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error, but it will stop for all the other errors.
All, But Diskette	The system boot will not stop for a disk error; but it will stop for all the other errors.

AWARD BIOS Description

All, But Disk/Key	The system boot will not stop for a keyboard or disk error, but it will stop for all the other errors.
-------------------	--

Memory

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory	The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.
Extended Memory	The BIOS determines that how much extended memory is presented during the POST.
Other Memory	This is the memory that can be used for different applications. Most use for this area is Shadow RAM.
Total Memory	Total memory of the system is the sum of the above memory.

BIOS Features Setup

ROM PCI/ISA BIOS (2A69JQI9)			
BIOS FEATURES SETUP			
AWARD SOFTWARE, INC.			
Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
Pentium(R)II L1 Cache	: Enabled	C8000 – CBFFF Shadow	: Disabled
Pentium(R)II L2 Cache	: Enabled	CC000 – CFFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D0000 – D3FFF Shadow	: Disabled
Boot Sequence	: A,C, SCSI	D4000 – D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000 – DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	DC000 – DFFFF Shadow	: Disabled
Boot Up Numlock Status	: On	Delay For HDD (Secs)	: 0
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay(Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled	ESC: Quit	↑↓→← : Select Item
Assign IRQ for VGA	: Disabled	F1 : Help	PU/PD/+/- : Modify
MPS for Unix / Others OS	: Others	F5 : Old Values (Shift)F2: Color	
OS Select For DRAM>64MB	: Non-OS2	F6 : Load BIOS Defaults	
Report No FDD For WIN 95	:Yes	F7 : Load Setup Defaults	

Figure-4 BIOS Features Setup Menu

The following pages tell you the options of each item and describe the meaning of each option.

<u>Item</u>	<u>Option</u>	<u>Description</u>
• Virus Warning	<i>Enabled</i>	Activate automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
	<i>Disabled</i>	No warning message appears when anything attempts to access the boot sector or hard disk partition table. Note: This function is available only for DOS and other OS that do not trap INT13.
• Pentium(R)II L1/L2 Cache	<i>Enabled</i>	Enable Pentium® II internal Level1/Level2 cache.
	<i>Disabled</i>	Disable Pentium® II internal Level1/Level2 cache.
	<i>Enabled</i>	Enable quick POST. BIOS will shorten or skip some check items during POST to speed up POST after you power on the computer.
• Quick Power On Self Test	<i>Disabled</i>	Normal POST.
	<i>A,C,SCSI, ..</i>	You can choose any search sequence forbootup.

AWARD BIOS Description

	<i>C, CDROM,A</i>	
• Swap Floppy Drive	<i>Enabled</i>	It will exchange the assignment of A&B floppy drives.
• Boot Up Floppy Seek	<i>Disabled</i> <i>Enabled</i>	The assignment of A&B floppy drives are normal. BIOS searches for floppy disk drive to determine if drive is ready for diskette read/write during booting.
• Boot Up Numlock Status	<i>Disabled</i> <i>On</i>	skip drive seeking to speed up system booting. Keypad is used as number keys.
• Gate A20 Option	<i>Off</i> <i>Normal</i>	Keypad is used as arrow keys. The A20 signal is controlled by keyboard controller or chipset hardware.
• Typematic Rate Setting	<i>Fast</i> <i>Enabled</i>	It is default. The A20 signal is controlled by Port 92 or chipset specific method. Enable typematic rate and typematic delay programming.
• Typematic Rate Chars/Sec)	Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these two items.
• Typematic Delay (Msec)	6 ~ 30	Set the speed of the typematic rate (characters per second).
• Security Option	250 ~ 1000	Set the time of the typematic delay.
• PCI/VGA Palette Snoop	<i>System</i> <i>Setup</i>	The system will not boot and access to Setup will be denied if the correct password is not entered when prompting. The system will boot up, but access to Setup will be denied if the correct password is not entered when prompting.
• Assign IRQ for VGA	<i>Enabled</i> <i>Disabled</i> <i>Enabled</i>	Enable PCI/VGA palette snoop. Disable PCI/VGA palette snoop. If PCI VGA card needs to use IRQ, please select the item.
• MPS For Unix / Others OS	<i>Disabled</i> <i>UNIX</i> <i>Others</i>	PCI VGA card without IRQ. Multiprocessor system is unix. Multiprocessor system is not unix, such as NT, Netware.....
• OS Select For DRAM>64MB	<i>Non-OS2</i> <i>OS2</i>	If your operating system is not OS/2, please select this item. If system DRAM is more than 64MB and operating system is OS/2, please select this item.
• Video BIOS Shadow	<i>Enabled</i> <i>Disabled</i>	Video BIOS will be copied to RAM. Video Shadow will increase the video speed. Video shadow is disabled.
• C8000-CBFFF Shadow ... DC000-DFFFF Shadow:	<i>Enabled</i> <i>Disabled</i>	Optional ROM will be copied to RAM by 16K bytes per unit. The shadow function is disabled.
• Delay For HDD	0-15	Set the predelay time for hard disk to be ready to be

(Secs): accessed by the system.

Chipset Features Setup

ROM PCI/ISA BIOS (2A69JQ19) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.		
Auto Configuration	:Enabled	SDRAM CAS Latency Time: 2
DRAM Speed Selection	:50ns	
MA Wait State	:Slow	
EDO RAS# To CAS# Delay	:3	
EDO RAS# Precharge Time	:3	
EDO DRAM Read Burst	:x222	
EDO DRAM Write Burst	:x222	
DRAM Data Integrity Mode	:Non-ECC	
CPU-To-PCI IDE Posting	:Enabled	
System BIOS Cacheable	:Disabled	
Video BIOS Cacheable	:Disabled	
Video RAM Cacheable	:Disabled	
8Bit I/O Recovery Time	:1	
16Bit I/O Recovery Time	:1	
Memory Hole At 15M-16M	:Disabled	
Delayed Transaction	:Disabled	ESC: Quit ↑↓→← : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2: Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
AGP Aperture Size (MB)	:64	
SDRAM RAS-To-CAS Delay	:Fast	
SDRAM RAS Precharge Time	:Fast	

Figure-5 Chipset Features Setup Menu

The following pages tell you the options of each item and describe the meaning of each option.

<u>Item</u>	<u>Option</u>	<u>Description</u>
• Auto Configuration	<i>Enabled</i>	Automatically configure DRAM Timing according to the value of "DRAM Speed Selection".
	<i>Disabled</i>	Manually configure. Note: It is recommended to choose "Enabled" option for common users.
• DRAM Speed Selection	<i>50ns,</i>	This item is of selected EDO DRAM read/write timing. You must ensure that your DIMMs are as fast as 50ns, otherwise you have to select 60ns.
	<i>60ns</i>	One additional wait state is inserted before the assertion of the first MA and CAS#/RAS# during DRAM read or write leadoff cycles. This affects page hit, row miss and page miss cases.
• MA Wait State	<i>Slow</i>	Without additional wait state.
	<i>Fast</i>	Add a delay time between the assertion of RAS# and CAS#
• EDO RAS# To CAS# Delay	<i>2</i>	Without additional delay time.
	<i>3</i>	

AWARD BIOS Description

• EDO RAS# Precharge Time	3	DRAM RAS# Precharge time=3x system clocks.
• EDO DRAM Read Burst	4 ^ 3 3 3, ^ 2 2 2,	DRAM RAS# Precharge time=4x system clocks. The DRAM read burst timing depends on the type of DRAM on a per-row basis. Slower rates may be required to support slower DRAM.
• EDO DRAM Write Burst	^ 2 2 2, ^ 3 3 3,	The DRAM write burst timing depends on the type of DRAM on a per-row basis. Slower rates may be required to support slower DRAM.
• DRAM Data Integrity Mode	ECC	Provide ECC (Error Checking and Correction) function.
• CPU-To-PCI IDE Posting	Non-ECC Enabled	Disable ECC / EC function. Enable CPU-To-PCI write posting.
• System BIOS Cacheable	Disabled	Disable CPU-To-PCI write cycles to IDE.
• Video BIOS Cacheable	Enabled	Beside conventional memory, the system BIOS area is also cacheable.
• Video RAM Cacheable	Disabled	The system BIOS area is not cacheable.
• 8 Bit I / O Recovery Time	Enabled	Beside conventional memory, video BIOS area is also cacheable.
• 16 Bit I / O Recovery Time	Disabled	Video BIOS area is not cacheable.
• Memory Hole At 15M-16M	Enabled	Beside conventional memory, video BIOS area is also cacheable.
• Delayed Transaction	Disabled	Video BIOS area is not cacheable.
• AGP Aperture Size (MB)	1~8	Define the ISA Bus 8 bit I/O operating recovery time.
• SDRAM RAS-To-CAS Delay	NA	8 bit I/O recovery time is not exist.
• SDRAM RAS Precharge Time	1~4	Define the ISA Bus 16 bit I/O operating recovery time.
• SDRAM CAS Latency Time	NA	16 bit I/O recovery time is not exist.
	Enabled	Memory Hole at 15-16M is reserved for expanded PCI card.
	Disabled	Do not set this memory hole.
	4~256	Set the effective size of the Graphics Aperture to be used in the particular PAC Configuration.
	Fast	RAS-To-CAS Delay time=2 HCLK
	Slow	RAS-To-CAS Delay time=3 HCLK
	Fast	RAS Precharge Time=2 HCLK
	Slow	RAS Precharge Time=3 HCLK
	Fast	Define the CLT timing parameter of SDRAM expressed in 66 MHz clocks. Latency Time=2 clocks
	Slow	Latency Time=3 clocks

Power Management Setup

ROM PCI/ISA BIOS (2A69JQ19) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.		
Power Management	:Disabled	** Reload Global Timer Events **
PM Control by APM	:No	IRQ [3-7,9-15], NMI :Enabled
Video Off Method	:V/H SYNC+Blank	Primary IDE 0 :Disabled
Video Off After	:Standby	Primary IDE 1 :Disabled
MODEM Use IRQ	:NA	Secondary IDE 0 :Disabled
		Secondary IDE 1 :Disabled
Doze Mode	:Disabled	Floppy Disk :Disabled
Standby Mode	:Disabled	Serial Port :Enabled
Suspend Mode	:Disabled	Parallel Port :Disabled
HDD Power Mode	:Disabled	Reset key function :Enabled
VGA Active Monitor	:Disabled	
Soft-Off by PWR-BTTN	:Instant-Off	
Resume by Ring	:Disabled	
Resume by Alarm	:Disabled	
	** Break Event From Suspend **	F1 :Help PU/PD+/- :Modify
IRQ 8 Clock Event	:Disabled	F5 :Old Values (Shift)F2 :Color
		F6 : Load BIOS Defaults
		F7 :Load Setup Defaults

Figure-6 Power Management Setup Menu

The following pages tell you the options of each item and describe the meanings of each option.

<u>Item</u>	<u>Option</u>	<u>Description</u>
• Power Management	<i>Disabled</i>	Global Power Management (PM) will be disabled.
	<i>User Define</i>	Users can configure their own Power Management Timer.
	<i>Min Saving</i>	Pre - defined timer value are used such that all timers are in their MAX values
	<i>Max Saving</i>	Pre - defined timer value are used such that all timers are in their MIN value
• PM Control by APM	<i>No</i>	System BIOS will ignore APM when Power Management is enabled.
	<i>Yes</i>	System BIOS will wait for APM's prompt before it enters any PM mode e.g. Standby or Suspend.
		Note: If APM is installed, and if there is a task running, even the timer is time out, the APM will not prompt the BIOS to put the system

AWARD BIOS Description

<ul style="list-style-type: none"> • Video Off Method 	<p><i>Blank Screen</i></p> <p><i>V / H SYNC + Blank</i></p> <p><i>DPMS</i></p>	<p>into any power saving mode. But if APM is not installed, this option has no effect.</p> <p>The system BIOS will only blank off the screen when disabling video.</p> <p>In addition to Blank Screen, BIOS will also turn off the V-SYNC & H - SYNC signals from VGA cards to monitor.</p> <p>This function is enabled only for the VGA card supporting DPMS.</p> <p>Note: Green monitors detect the V/H-SYNC signals to turn off its electron gun .</p>
<ul style="list-style-type: none"> • Video Off After 	<p><i>N/A</i></p> <p><i>Suspend Standby</i></p> <p><i>Doze</i></p>	<p>System BIOS will never turn off the screen.</p> <p>Screen off after system enters into Suspend mode.</p> <p>Screen off after system enters into Standby mode.</p> <p>Screen off after system enters into Doze mode.</p>
<ul style="list-style-type: none"> • Doze mode 	<p><i>Disabled</i></p> <p><i>1Min ~ 1 Hr</i></p>	<p>The system will never enter Doze mode.</p> <p>Define the continuous idle time before the system entering Doze mode. If any item defined in “Wake Up Events In Doze & Suspend” is On and activated, the system will be waken up.</p>
<ul style="list-style-type: none"> • Standby Mode 	<p><i>Disabled</i></p> <p><i>1 Min ~ 1Hr</i></p>	<p>The system will never enter Standby mode.</p> <p>Define the continuous idle time before the system entering Standby mode. If any item defined in “Wake Up Events In Doze & Suspend” is On and activated, the system will be waken up.</p>
<ul style="list-style-type: none"> • Suspend Mode 	<p><i>Disabled</i></p> <p><i>1 Min ~ 1Hr</i></p>	<p>The system will never enter Suspend mode.</p> <p>Define the continuous idle time before the system entering Suspend mode. If any item defined in “Wake Up Events In Suspend” is On and activated, the system will be waken up.</p>
<ul style="list-style-type: none"> • HDD Power Down 	<p><i>Disabled</i></p> <p><i>1 ~15 Min</i></p>	<p>HDD’s motor will not be off.</p> <p>Define the continuous HDD idle time before the HDD entering power saving mode (motor off).</p>
<ul style="list-style-type: none"> • VGA Active Monitor 	<p><i>Disabled</i></p>	<p></p>
<ul style="list-style-type: none"> • Resume by Ring 	<p><i>Enabled</i></p>	<p>Allow the system to be powered on when a Ring Indicator signal comes up to UART1 or UART2 from external modem.</p>
<ul style="list-style-type: none"> • Resume by Alarm 	<p><i>Disabled</i></p> <p><i>Enabled</i></p>	<p>Do not allow Ring Power-On.</p> <p>RTC alarm can be used to generate a wake event when the system is in a sleeping.</p>
<ul style="list-style-type: none"> • IRQ 8 Clock Event 	<p><i>Disabled</i></p> <p><i>Enabled</i></p> <p><i>Disabled</i></p>	<p>RTC no alarm function.</p> <p>Generate a clock event.</p> <p>Do not generate a clock event.</p>

Note: IRQ8 Clock Event must be enabled when

you want to use Resume By Ring and Alarm.

- | | | |
|---------------------------|-----------------------------------|---|
| • IRQ [3-7, 9-15],
NMI | <i>Enabled</i>
<i>Disabled</i> | Reload global timer.
No influence to global timer. |
| • Reset key
function | <i>Enabled</i>
<i>Disabled</i> | Enable reset button function control.
Disable reset button function control. |

PNP/PCI Configuration Setup

ROM PCI/ISA BIOS (2A69JQ19) PNP/PCI CONFIGURATION SETUP AWARD SOFTWARE, INC.
--

AWARD BIOS Description

PNP OS Installed	:No	PCI IDE IRQ Map To	:PCI-AUTO
Resources Controlled By	:Manual	Primary IDE INT#	:A
Reset Configuration Data	:Disabled	Secondary IDE INT#	:A
		Used MEM base addr	:N/A
IRQ-3 assigned to	:Legacy ISA		
IRQ-4 assigned to	:Legacy ISA		
IRQ-5 assigned to	:PCI/ISA PnP		
IRQ-7 assigned to	:Legacy ISA		
IRQ-9 assigned to	:PCI/ISA PnP		
IRQ-10 assigned to	:PCI/ISA PnP		
IRQ-11 assigned to	:PCI/ISA PnP		
IRQ-12 assigned to	:PCI/ISA PnP		
IRQ-14 assigned to	: Legacy ISA		
IRQ-15 assigned to	: Legacy ISA		
DMA-0 assigned to	:PCI/ISA PnP		
DMA-1 assigned to	:PCI/ISA PnP		
DMA-3 assigned to	:PCI/ISA PnP	ESC: Quit	↑↓→← :Select Item
DMA-4 assigned to	:PCI/ISA PnP	F1 : Help	PU/PD/+/- : Modify
DMA-5 assigned to	:PCI/ISA PnP	F5 : Old Values	(Shift)F2 : Color
DMA-6 assigned to	:PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7 assigned to	:PCI/ISA PnP	F7 : Load Setup Defaults	

Figure-7 PNP/PCI Configuration Setup Menu

The following pages will tell you the options of each item and describe the meaning of each option.

<u>Item</u>	<u>Option</u>	<u>Description</u>
• PNP OS Installed	<i>Yes</i>	Device resource assigned by PnP OS.
	<i>No</i>	Device resource assigned by BIOS.
• Resources Controlled By	<i>Manual</i>	Assign system resources (IRQ and DMA) manually by user.
	<i>Auto</i>	Assign system resources (IRQ and DMA) automatically by BIOS.
	<i>Enabled</i>	The system BIOS will force updating ESCD once, then automatically set this item Disable.
• Reset Configuration Data	<i>Disabled</i>	Disable force update ESCD function.
	<i>Legacy ISA</i>	The specified IRQ-x will be assigned to ISA only.
• IRQ-3~IRQ-15 assigned to	<i>PCI/ISA PnP</i>	The specified IRQ-x will be assigned to ISA or PCI.
	<i>Legacy ISA</i>	The specified DMA-x will be assigned to ISA only.
• DMA-0~DMA-7 assigned to	<i>Legacy ISA</i>	The specified DMA-x will be assigned to ISA only.
		The specified DMA-x will be assigned

	<i>PCI/ISA PnP</i>	to ISA or PCI.
• PCI IDE IRQ Map To	<i>PCI-AUTO</i>	The BIOS will scan for PCI IDE devices and determine the location of the PCI IDE device.
	<i>PCI - SLOT5 ~1</i>	The BIOS will scan IRQ14 for primary IDE INT# and IRQ15 for secondary IDE INT# at the specified slot.
	<i>ISA</i>	The BIOS will not assign any IRQs even if PCI IDE card is found. Because some IDE cards connect the IRQ14&15 directly from ISA slot through a card.
• Primary IDE INT#	<i>A ~ D</i>	Tell which INT# the PCI IDE card uses for its interrupt of 1st IDE channel.
• Secondary IDE INT#	<i>A ~ D</i>	Tell which INT# the PCI IDE card uses for its interrupt of 2nd IDE channel.
• Used MEM base address	<i>C800/8 ~ 64K</i>	Claim a memory space occupied by legacy ISA card.
	<i>N/A</i>	Invalidate this feature.
	<i>PCI/ISA PnP</i>	The specified DMA-x will be assigned to ISA or PCI.

Integrated Peripherals

ROM PCI/ISA BIOS (2A69JQ19)			
INTEGRATED PERIPHERALS			
AWARD SOFTWARE, INC.			
IDE HDD Block Mode	:Enabled	Parallel Port Mode	:SPP
IDE Primary Master PIO	:Auto		

AWARD BIOS Description

IDE Primary Slave PIO	:Auto	
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	
On-Chip Primary PCI IDE	:Enabled	
On-Chip Secondary PCI IDE	:Enabled	
Onboard PCI SCSI chip	:Enabled	
USB Keyboard Support	:Disabled	
USB Function Selection	:Disabled	
Onboard FDC Controller	:Enabled	ESC: Quit ↑↓→← : Select Item
Onboard Serial Port 1	:3F8/IRQ4	F1 : Help PU/PD/+/-: Modify
Onboard Serial Port 2	:2F8/IRQ3	F5 : Old Values (Shift) F2 : Color
UR2 Mode	:Standard	F6 : Load BIOS Defaults
Onboard Parallel Port	:378/IRQ7	F7 : Load Setup Defaults

Figure-8 Integrated Peripherals Menu

The following pages tell you the options of each item and describe the meaning of each option.

<u>Item</u>	<u>Option</u>	<u>Description</u>
• IDE HDD Block Mode	<i>Enabled</i>	Allow IDE HDD read/write several sectors one time.
	<i>Disabled</i>	IDE HDD only reads/writes a sector for one time.
• IDE Primary/Secondary Master/Slave PIO (UDMA)	<i>Mode 0 - 4</i>	Define the IDE primary/secondary master/slave PIO mode.
	<i>Auto</i>	The IDE PIO mode is defined according to auto - detect.
• On-chip Primary/Secondary PCI IDE	<i>Enabled</i>	On-chip primary/secondary PCI IDE port is enabled.
	<i>Disabled</i>	On-chip primary/secondary PCI IDE port is disabled.
• Onboard PCI SCSI chip	<i>Enabled</i>	Onboard AHA7880 SCSI controller enabled.
	<i>Disabled</i>	Onboard AHA7880 SCSI controller disabled.
• USB Keyboard Support	<i>Enabled</i>	The USB keyboard is enabled.
	<i>Disabled</i>	The USB keyboard is disabled.
• USB Function Selection	<i>Enabled</i>	USB function is enabled, RAID port is disabled.
	<i>Disabled</i>	USB function is disabled, RAID port is enabled.
• Onboard FDC Controller	<i>Enabled</i>	Onboard floppy disk controller is enabled.
	<i>Disabled</i>	Onboard floppy disk controller is disabled.

- Onboard Serial Port 1/2 *3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Disabled, Auto*

Define onboard serial port address and required interrupt number.

Onboard serial port is disabled.
Set address and interrupt number automatically.
- UR2 Mode *Standard, Sharp IR, IrDA SIR*

Define Serial Port 2 as standard serial port
This mode provides bi-directional communication by transmitting and receiving infrared radiation. In this mode, infrared I/O circuits receive the serial UART output signal. The rate of the signal is 38.4K Baud in half-duplex, and it uses normal UART serial data formats with physical ASKIR modulation. The system function is the same as in Sharp-IR mode, but at 115.2K Baud.
- Onboard Parallel Port *378/IRQ7, 278/IRQ5, SPP*

Define onboard parallel port address and IRQ channel.
- Parallel Port Mode *EPP1.7, EPP1.9, ECP, ECP+EPP*

Define the parallel port mode as Standard Parallel Port (SPP), Enhanced Parallel Port (EPP), or Extended Capabilities Port (ECP).

System Monitor Setup

ROM PCI/ISA BIOS (2A69JQ19) System Monitor SETUP AWARD SOFTWARE, INC.	
Current CPU1 Temperature	:48°C/118°F
Current CPU2 Temperature	:48°C/118°F
MB System Temperature	:31°C/87°F

AWARD BIOS Description

Fan Speed(fan2)	:φRPM	
Fan Speed(fan3)	:φRPM	
Fan Speed(fan4)	:φRPM	
+ 3.3V	:3.30	V
CPU1 (+ 2.8V)	:+2.80	V
+ 5.0V	:5.00	V
CPU2 (+ 2.8V)	:+2.80	V
+12.0V	:+12.00	V
-12.0V	:-12.00	V
-5.0V	:-5.00	V
		ESC: Quit ↑↓→← : Select Item
		F1 : Help PU/PD/+/- : Modify
		F5 : Old Values (Shift) F2 : Color
		F6 : Load BIOS Defaults
		F7 : Load Setup Defaults

Figure-9 System Monitor Setup Menu

The following pages tell you the options of each item and describe the meaning of each option.

<u>Item</u>	<u>Option</u>	<u>Description</u>
<ul style="list-style-type: none"> • MB System Temperature • Current CPU1, CPU2 Temperature • fan2 Speed fan3 fan4 • + 3.3V, CPU1 (+2.8V), + 5V, CPU2 (+2.8V), +12 V, - 12 V, - 5 V. 		<p>Display the current mainboard temperature detected by "LM78" chip.</p> <p>Display the current temperature detected by "LM75" chip which is under the heatsink of Pentium® II processor.</p> <p>RPM (Revolution Per Minute) Speed of fan which is connected to the fan header. Fan speed value is based on an assumption that tachometer signal is two pulses per revolution; In other cases, you should regard it relatively.</p> <p>Display current Voltage value including all the most important voltages of the mainboard. +3.3V, +5V, +12V, -12V, -5V are voltages from the ATX power supply, CPU1, 2(+2.8V) Voltage is CPU1, 2 Core Voltage, and Voltage is CPU Core Voltage from the on board switching Power Supply.</p>

Supervisor/User Password

When you select this function, the following message will appear at the centre of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory.

You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED

If you select **System** at Security Option of BIOS Features will be prompted for the password every time the system is rebooted or any time you try to enter CMOS Setup.

If you select **Setup** at Security Option of BIOS Features Setup Menu, you will be prompted for the password only when you try to enter CMOS

Supervisor Password has higher priority than *User Password*. You can use *Supervisor Password* when booting system or entering CMOS Setup to modify all settings. Also you can use *User Password* when booting system or entering CMOS Setup but can not modify any setting if *Supervisor Password* is enabled.

IDE HDD Auto Detection

The Enhanced IDE features was included in all Award BIOS. Below is a brief description of this features.

ROM/PCI/ISA BIOS (2A69HQ1C) IDE HDD AUTO DETECTION

AWARD BIOS Description

AWARD SOFTWARE, INC.

HARD DISKS TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE

Primary Master:

Select Primary Master Option (N=Skip): N							
Option	Size	Cyls	Heads	Precomp	Landzone	Sectors	Mode
2(Y)	541	525	32	0	1049	67	LBA
1	541	1050	16	65535	1049	63	NORMAL
3	541	525	32	65535	1049	63	LARGE

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

Figure-10 IDE HDD Auto Detection Menu

1. Setup Changes

With auto-detection

- BIOS setup will display all possible modes that is supported by the HDD including NORMAL, LBA and LARGE.
- If HDD does not support LBA modes, no LBA option will be shown.
- If number of physical cylinders is less than or equal to 1024, LARGE option may not be shown.
- Users can select a mode which is appropriate for them.

With Standard CMOS Setup

	CYLS	HEADS	PRECOMP	LAND	SECTOR	MODE
Drive C: User (516MB)	1120	16	65535	1119	59	Normal
Drive D: None(203MB)	684	16	65535	685	38	-----

When HDD type is in user type, the MODE option will be opened for user to select their own HDD mode.

2. HDD Modes

The Award BIOS supports 3 HDD modes: NORMAL, LBA and LARGE, and Auto detect.

NORMAL

Generic access mode in which neither the BIOS nor the IDE controller will make any transformation during accessing. The maximum number of cylinders, heads and sectors for NORMAL mode are 1024,16 and 63.

If user sets his HDD to NORMAL mode, the maximum accessible HDD size will be 528 megabytes even though its physical size may be greater than that.

LBA (Logical Block Addressing) mode

A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads and sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head and cylinder number into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4Gigabytes.

LARGE mode

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The Award BIOS provides another alternative to support these kinds of HDD.

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address.

Auto detect

If using Auto detect, the BIOS will automatically detect IDE hard disk mode and set it to one kind of HDD modes.

3. Remark

To support LBA or LARGE mode of HDDs, there must be some software involved which are located in Award HDD Service Routine (INT13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.

Power-On Boot

If you have made all the changes to CMOS values and the system can not boot with the CMOS values selected in Setup, restart the system by turning it

AWARD BIOS Description

OFF then ON or press the **RESET** button on the system case. You may also restart the system by simultaneously pressing < Ctrl >, < Alt > and < Del > keys.

Appendix A. BIOS Upgrade Diskette

You may use this diskette to update your BIOS when necessary.

For the most update and additional information about BIOS upgrade, please refer to “README” in the “BIOS Upgrade



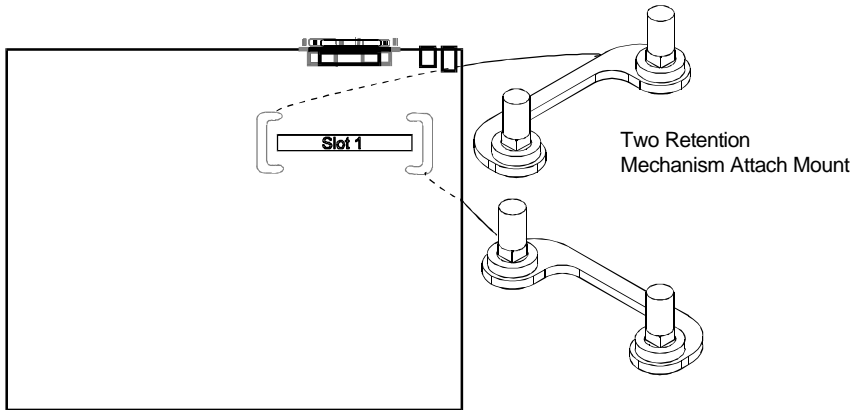
Warning:

Before you update your BIOS, you should look over the “README” file to avoid making mistake.

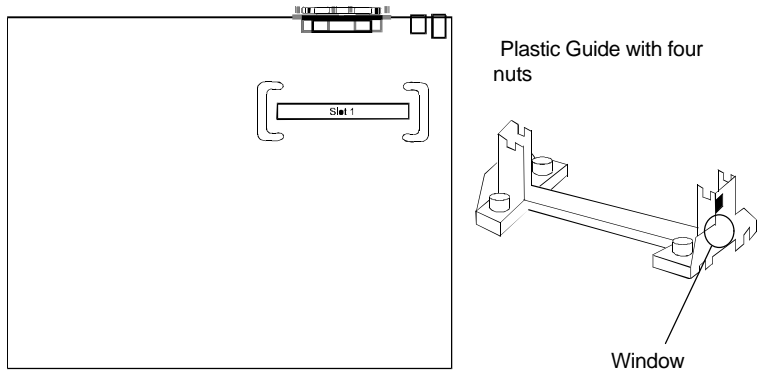
Appendix B.

Retention Mechanism & Pentium® II Processor Installation Procedures

1. Insert the two Retention Mechanism Attach Mount up through the bottom of the mainboard.

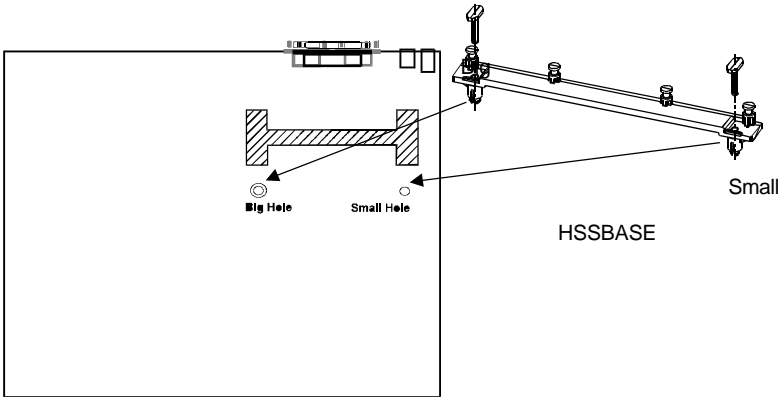


2. Place Plastic Guide with captive nuts on mainboard, then fasten all the four nuts.

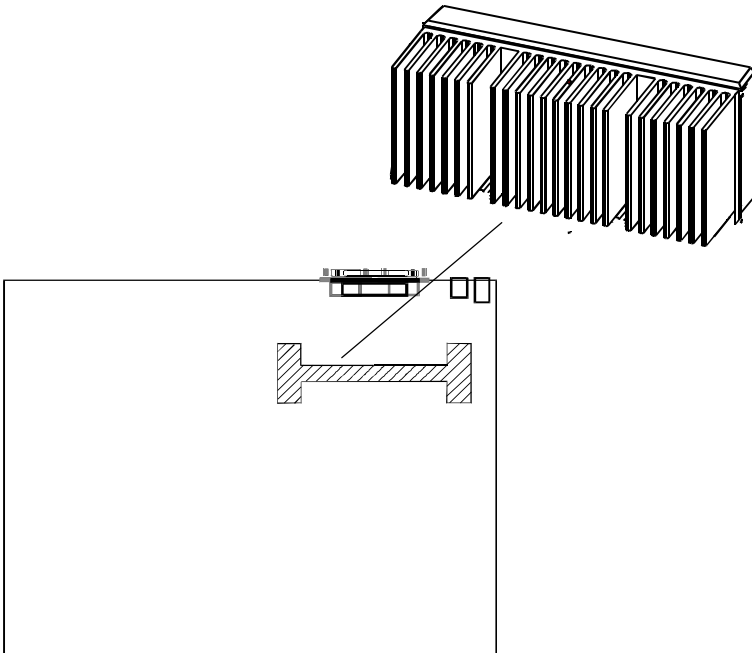


Note: Please pay attention to the direction of the window.

3. Install HSSBASE (Heatsink Support Base) on mainboard, then insert the two plastic pins through the HSSBASE to secure it to the mainboard.

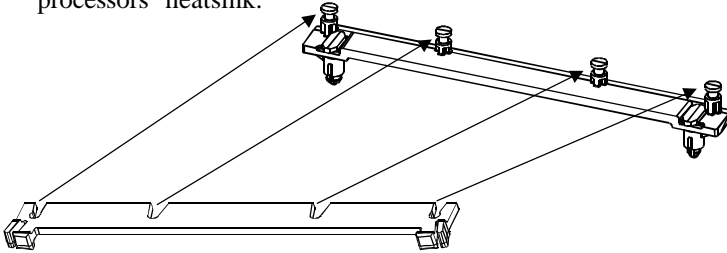


4. Insert Pentium® II Processor in Slot1.

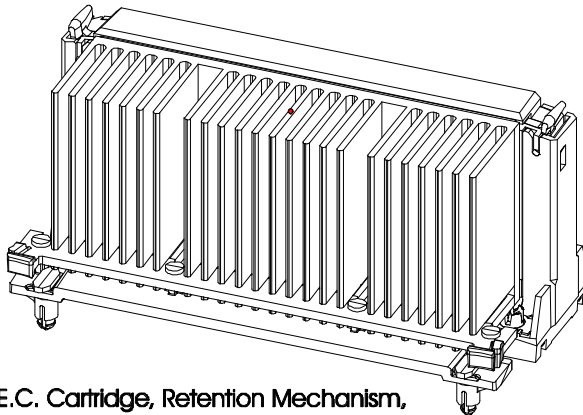


Appendix

5. Clip Plastic Bar onto the HSSBASE through the fins on the processors' heatsink.



6. The Retention Mechanism installation procedure is finished as below shown.



S.E.C. Cartridge, Retention Mechanism,
Heatsink Support, And ATX Form Factor Heatsink
Isometric View
Not To Scale

Remark:

Please skip step3 and step5 for Boxed Pentium® II Processor and refer to relevant details of this kind of processor for your installation.

Appendix C.

The PCI Configuration Note

Due to the PC Resource limitation, the main-board supports 4 PCI slots with 2 interrupt only. We do recommend to distribute the PCI interrupt as the table listed below.

PCI Interrupt Resource		PIRQ A	PIRQ B	PIRQ C	PIRQ D
Occupied by on-board adapter		none	LAN	SCSI	none
PCI Slot	No.	PCI 1	PCI 2	PCI 3	PCI 4
	Device can be installed	Master or Slave device	Slave device only	Slave device only	Master or Slave device
AGP Slot		can use PIRQ A only * Note *	cannot use PIRQ B	cannot use PIRQ C	cannot use PIRQ D

- * Note *:** If an AGP device is used,
- ❶ It's necessary to set interrupt selection jumper of this device to PIRQ A (please refer to the user's guide of this device for more details);
 - ❷ In this case, only slave device can be installed in PCI 1 Slot.

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Manual P6I440LX/DP Legend IV Ver 1.0