



Your Reliable Partner

SI-2P+

Dual Socket 604 Server Board

User's Manual

4200-0333-02

Rev. 1.00

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Table Of Contents

Chapter 1. Introduction	1-1
1.1. Features & Specifications.....	1-1
1.2. Package Checklist (Standard Package)	1-3
1.3. Layout Diagram.....	1-4
1.4. Jumpers & Connectors Description.....	1-5
Chapter 2. Hardware Setup.....	2-1
2.1. Precautions	2-1
2.2. Installing the Server Board.....	2-2
2.3. Installing the CPU	2-3
2.3.1. Installing Retention Modules.....	2-3
2.3.2. Installing CPU into Socket	2-4
2.3.3. Installing Heatsink and Wind Tunnel	2-4
2.3.4. Installing Fan to Wind Tunnel Assemblies	2-5
2.4. System Memory	2-6
2.4.1. Memory Configuration Table	2-6
2.4.2. Installing and Removing Memory Modules	2-6
2.5. Connectors, Headers, and Switches	2-8
2.5.1. EPS12V Power Connectors	2-8
2.5.2. FAN Connectors	2-9
2.5.3. CMOS Memory Clearing Header.....	2-10
2.5.4. Front Panel Switches & Indicators Headers	2-11
2.5.5. Floppy Disk Drive and IDE Connectors.....	2-12
2.5.6. PCI Expansion Slots	2-13
2.5.7. COM Port Header	2-14
2.5.8. Additional USB Ports Header.....	2-15
2.5.9. LAN Active/Link Indicators Headers.....	2-16
2.5.10. Onboard VGA Output Switch	2-17
2.5.11. Smart Card Reader Connector	2-18
2.5.12. Agilent Management Connector.....	2-19
2.5.13. IPMB Connector.....	2-20

2.5.14.	Ultra 320 SCSI Channels Connectors	2-21
2.5.15.	Adaptec Zero Channel RAID (ZCR) SO-DIMM Interface Riser	2-23
2.5.16.	External I/O Panel Connectors	2-24

Chapter 3. BIOS Setup..... 3-1

3.1.	Main Menu	3-2
3.2.	Advanced Menu	3-6
3.2.1.	Advanced BIOS Features	3-6
3.2.2.	Advanced Chipset Features	3-8
3.2.3.	Integrated Peripherals	3-10
3.2.4.	Power Management Setup	3-13
3.2.5.	PnP/PCI Configurations	3-14
3.3.	Security Menu	3-16
3.4.	PC Health Menu	3-17
3.5.	Clk/Misc. Menu	3-18
3.6.	Exit Menu	3-19

Chapter 4. SCSI Utility 4-1

Chapter 5. Driver Installation 5-1

5.1.	Setup Items	5-2
5.2.	Installing Ultra320 SCSI Controller.....	5-3
5.2.1.	Installing Windows 2000 with an Ultra320 SCSI Controller	5-3
5.2.2.	Installing the Driver when Windows 2000 is Already Installed	5-3
5.2.3.	Changing SCSI Boot Controllers in Windows 2000	5-4

Appendix A. Trouble Shooting A-1

Appendix B. How to Get Technical Support B-1

Chapter 1. Introduction

1.1. Features & Specifications

Processor

- Supports dual Intel® Xeon 400MHz/533MHz Processors with 512K L2 Cache up to 2.0GHz ~ 2.8GHz and higher

Chipset

- Intel® E7501 Chipset Memory Controller Hub (MCH)
- 2x 82870P2 64-bit PCI/PCI-X Controller Hub 2 (P64H2)
- 82801CA I/O Controller Hub 3-S (ICH3-S)

Memory

- 6x 184-pin DIMM sockets support 144-bit wide (Dual Channel) PC2100/PC1600 (DDR266/DDR200) memory
- Up to 12GB, ECC, Registered memory capacity (Chipkill technology support)

LAN

- Intel® 82546 dual ports Gigabit Ethernet controller
- RX and TX IP and TCP/UDP checksum off-loading capabilities
- Front panel LAN Active/Link LED

Graphics

- Onboard ATi RAGE XL PCI interface VGA
- 4MB local SDRAM memory support

PCI Extension Slot

- 4x PCI-X, support 64bit one 133MHz and three 100MHz slots
- 1x PCI 32bit/32MHz

Storage

- Dual Ultra 320 SCSI based on Adaptec 7902 ASIC with optional Adaptec Zero Channel RAID (ZCR) SO-DIMM interface riser
- Dual ATA 100 IDE port support up to 4 IDE drives
- 1x Floppy Port

Multi I/O Functions

- 2x Serial Ports / 1x Parallel Port

- 1x PS/2 keyboard, 1x PS/2 mouse connector
- 2x USB external, 2x USB internal connectors

System BIOS

- AWARD Plug and Play BIOS supports APM, DMI, and ACPI
- Write-Protect Anti-Virus function, Wake on LAN by AWARD BIOS
- 4M-bit Flash ROM

Form factor

- EEB 3.0 Form Factor: 12in. x 13in. (305mm x 330mm)
- EPS12V PSU Connector

Miscellaneous

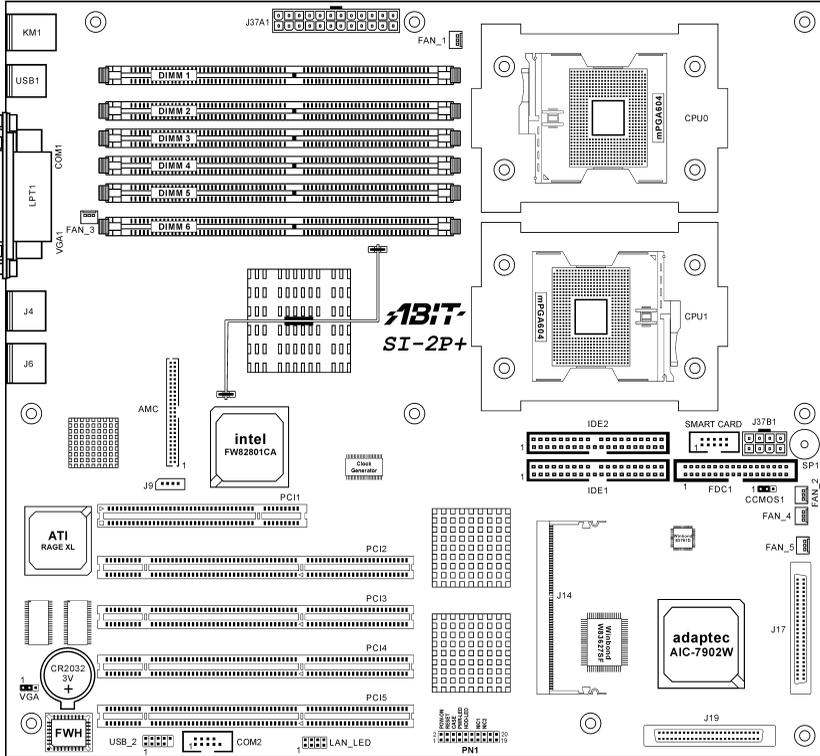
- Option for IPMI connector

* **Specifications and information contained herein are subject to change without notice.**

1.2. Package Checklist (Standard Package)

- (1) SI-2P+ Server Board
- (1) Brief Installation Guide
- (1) Driver & Utilities CD
- (1) 34-pin FDD Cable
- (2) 40-pin IDE ATA66 Cable
- (1) 68-pin LVD/SE SCSI cable with terminator for (2) Ultra 320 SCSI devices
- (2) 603/604-pin Retention Module
- (2) 603-pin Retention Module w/Clip
- (2) 604-pin Retention Module w/Clip
- (1) I/O Shield

1.3. Layout Diagram



1.4. Jumpers & Connectors Description

Jumpers	Description	Default Setting
CCMOS1	CMOS Clear	Pins 1-2 (Normal)
VGA	Onboard VGA Output Switch	Pins 1-2 (Enable)

Connectors	Description
AMC	Agilent Management Connector
COM2	External COM2 Bracket Connector
DIMM 1~6	DDR DIMM Slots
FAN_1	CPU0 Fan
FAN_2	CPU1 Fan
FAN_3/4/5	System Fan
FDC1	Floppy Disk Drive Connector
IDE1/IDE2	Hard Disk Drives Connectors
J14	Adaptec Zero Channel RAID (ZCR) SO-DIMM interface riser
J17	Ultra 320 SCSI Channel B Connector
J19	Ultra 320 SCSI Channel A Connector
J37A1	24-Pin EPS12V Power Connector
J37B1	8-Pin EPS12V Power Connector
J9	IPMB Connector
LAN_LED	LAN Active/Link Indicators Headers
PCI1	PCI 32bit/33MHz
PCI2/4/5	PCI-X 64bit/100MHz
PCI3	PCI-X 64bit/133MHz
PN1	Front Panel Switch & Indicators Headers
SMART CARD	Smart Card Reader Extension Cable Connector
USB_2	Additional USB Ports Connector



Chapter 2. Hardware Setup

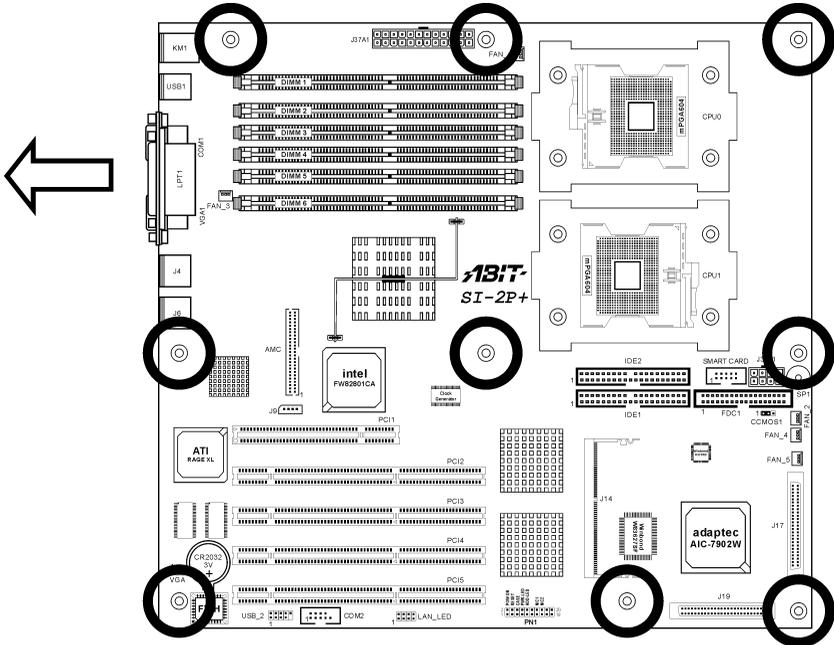
2.1. Precautions

Please pay attention to the following precautions before setting up any hardware.

1. Always switch off the power supply and unplug the power cord from the wall outlet before installing the board or changing any settings.
2. Ground yourself properly by wearing a static safety wrist strap before removing the board from the antistatic bag.
3. Hold the board by its edges. Avoid touching any component on it.
4. Avoid touching module contacts and IC chips
5. Place the board on a grounded antistatic surface or on the antistatic bag that came with the board.

2.2. Installing the Server Board

Before installing the server board, exam your chassis to ensure this server board fits into it. Your chassis should support EEB 3.0 form factor.



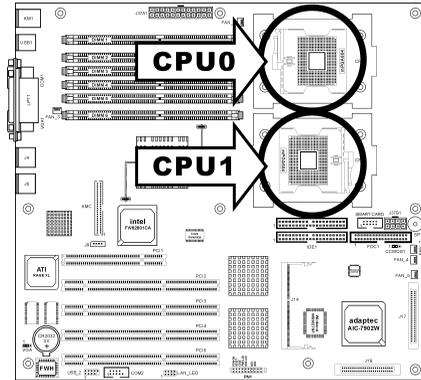
1. Face the side of the I/O ports toward the control panel.
2. Locate the screw holes on the server board and the chassis base.
3. Place all the studs or spacers needed on the chassis base and have them tightened.
4. Line up all the screw holes on the board with those studs or spacers on the chassis.
5. Tightens all the screw holes.

ATTENTION: To prevent shorting the PCB circuit, please REMOVE the metal studs or spacers if they are already secured on the chassis base and are without mounting-holes on the server board to align with.

2.3. Installing the CPU

This server board provides dual 604-pin Zero Insertion Force (ZIF) sockets to install the Intel Xeon CPU.

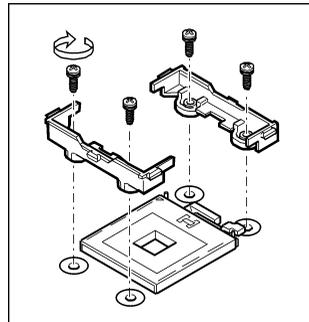
NOTE: This server board also supports the Xeon CPU of 603-pin package.



NOTE: This server board supports installing either one or two CPUs. To set up system with only one CPU, you MUST install it in the Primary Processor Socket (Socket CPU0 in this model). To install a second processor, you must verify that the second processor is identical to the first processor of same voltage and speed. Using non-identical processors could cause system failure.

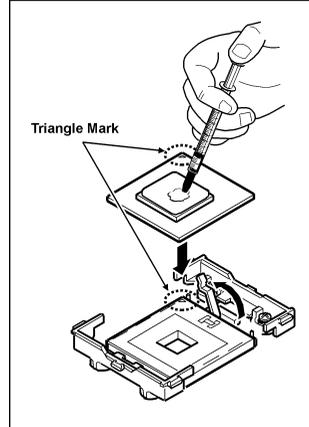
2.3.1. Installing Retention Modules

1. Remove power from your system by unplugging the AC power cord.
2. Remove the chassis cover (see your system or chassis documentation for instructions).
3. Locate the CPU sockets.
4. Insert the retention modules and tighten four retention screws.



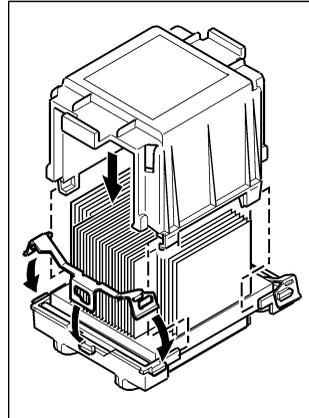
2.3.2. Installing CPU into Socket

1. Lift the socket lever upright to 115 degree at least.
2. Align the triangle mark on the CPU with the triangle cutout on the CPU socket.
3. Insert the CPU into the socket until it fits in place. Do not use extra force to insert CPU; it only fit in one orientation. Close down the socket lever to its locked position while firmly pressing the CPU.
4. Apply thermal grease to the CPU with an applicator.

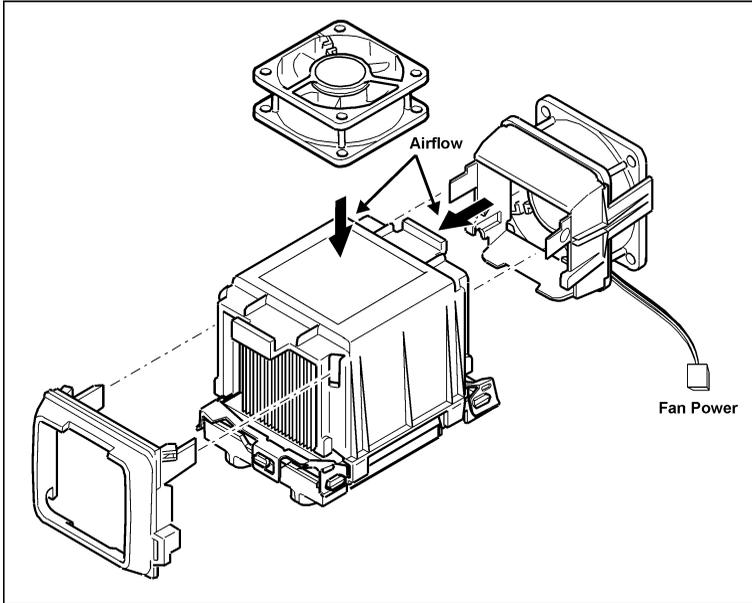


2.3.3. Installing Heatsink and Wind Tunnel

1. Align the heatsink with the retention modules, and then place the heatsink onto the CPU.
2. Position the retention clip over the plastic tab and then engage the clip end-slot over the plastic tab.
3. Press downward on the retention clip ends until they engage the plastic tabs.
4. Repeat steps 2-3 to install the other retention clip.
5. Install the CPU wind tunnel center portion over the heatsink. Note that the plastic tabs engage the tabs on the retention clips.



2.3.4. Installing Fan to Wind Tunnel Assemblies



1. Attach the cooling fan with its airflow direction pointed to heatsink to the air intake portion of wind tunnel.
2. Attach the air intake assembly to the side of the wind tunnel nearest to the front of the chassis.

Instead of attaching cooling fan to the side of the wind tunnel, the fan itself could also be attached to the top of the center portion of wind tunnel.

3. Align the tabs on the assembly with the slots in the wind tunnel portion, and then snap the lower portion of the fan holder over the tabs on the center portion.
4. Attach the air outlet portion of the wind tunnel.
5. Attach CPU Fan 1 power cable to the server board at location FAN1 and/or attach CPU Fan 2 power cable at location FAN2.

NOTE: The system airflow should be toward the front of the chassis. If there are two processors installed, the fans should be positioned side by side.

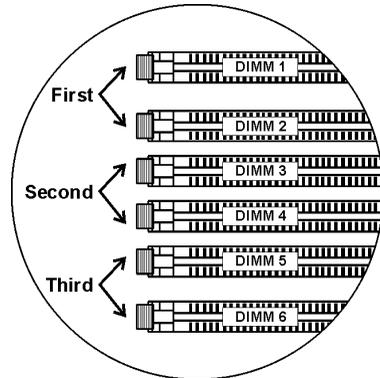
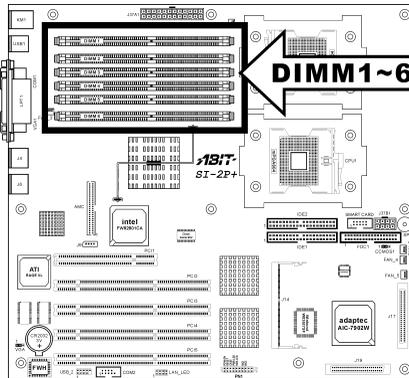
2.4. System Memory

This server board provides six 184-pin Double Data Rate (DDR) Dual Inline Memory Module (DIMM) slots for Registered ECC DIMM modules with memory expansion size up to 12GB (DDR266/DDR200).

2.4.1. Memory Configuration Table

DIMM	Registered ECC DIMM Module	Total Memory
1	128MB, 256MB, 512MB, 1GB, 2GB	128MB ~ 2GB
2	128MB, 256MB, 512MB, 1GB, 2GB	128MB ~ 2GB
3	128MB, 256MB, 512MB, 1GB, 2GB	128MB ~ 2GB
4	128MB, 256MB, 512MB, 1GB, 2GB	128MB ~ 2GB
5	128MB, 256MB, 512MB, 1GB, 2GB	128MB ~ 2GB
6	128MB, 256MB, 512MB, 1GB, 2GB	128MB ~ 2GB
Total System Memory		256MB ~ 12GB

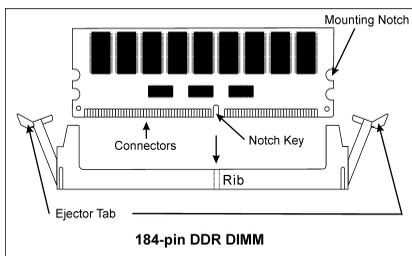
2.4.2. Installing and Removing Memory Modules



ATTENTION: Populate the DDR DIMMs **in-order** and **in-pair** (of the same type and size) by starting from *DIMM1+DIMM2*, *DIMM3+DIMM4*, to *DIMM5+DIMM6*. The system may hang or appear unstable if the DIMM ordering is not followed.

Power off the computer and unplug the AC power cord before installing or removing memory modules.

1. Locate the DIMM slot on the board.
2. Hold two edges of the DIMM module carefully, keep away of touching its connectors.
3. Align the two notch keys on the module with the two ribs on the slot.
4. Firmly press the module into the slots until the ejector tabs at both sides of the slot automatically snaps into the mounting notch. Do not force the DIMM module in with extra force as the DIMM module only fit in one orientation.
5. To remove the DIMM modules, push the two ejector tabs on the slot outward simultaneously, and then pull out the DIMM module.



ATTENTION: As the static electricity can damage the electronic components of the computer or optional modules, make sure you are discharged of static electricity by touching a grounded metal object briefly before starting these procedures.

2.5. Connectors, Headers, and Switches

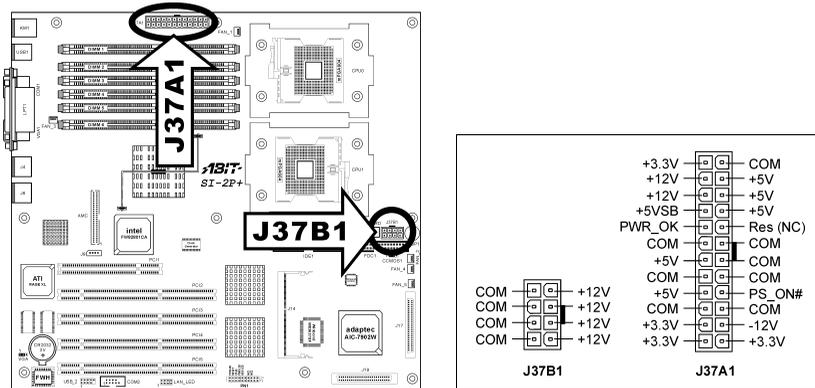
All the connectors, headers and switches mentioned here are depending on your system configuration. Some features you may (or may not) have to connect or to configure depending on the peripherals you have connected.

WARNING: Always power off the computer and unplug the AC power cord before adding or removing any peripheral or component. Failing to do so may cause severe damage to your server board and/or peripherals. Plug in the AC power cord only after you have carefully checked everything.

2.5.1. EPS12V Power Connectors

These two connectors connect to EPS12V power supply. This server board requires an EPS12V power supplier with 460W capacity at least for Pentium 4 Xeon CPU system.

WARNING: This server board only supports EPS12V power supplies and will not operate with other types. DO NOT use ATX 2.x, ATX12V and dual AMD power supplies as they will damage the board and void your warranty.



NOTE: The auxiliary 12V power (J37B1) is necessary to support Intel Xeon CPUs. Failing to provide such extra power will result in the system's booting failure.

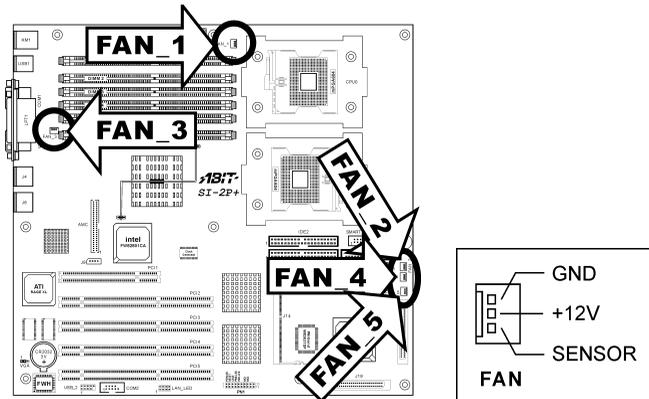
2.5.2. FAN Connectors

These 3-pin connectors each provide power to the cooling fans installed in your system.

The CPU must be kept cool by using a powerful fan with heatsink. The system is capable of monitoring the speed of the CPU fan.

- FAN_1: CPU0 Fan
- FAN_2: CPU1 Fan
- FAN_3/4/5: System Fan

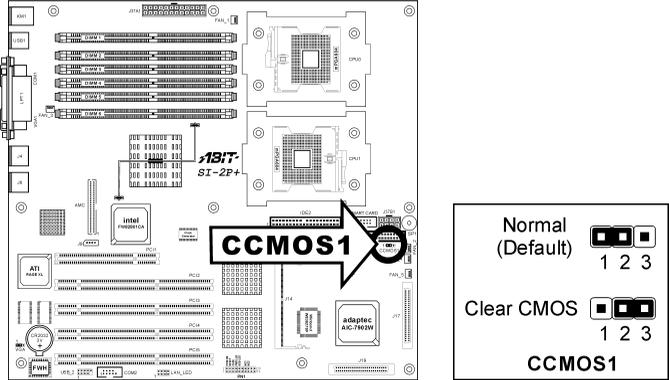
WARNING: These fan connectors are not jumpers. DO NOT place jumper caps on these connectors.



2.5.3. CMOS Memory Clearing Header

This header uses a jumper cap to clear the CMOS memory.

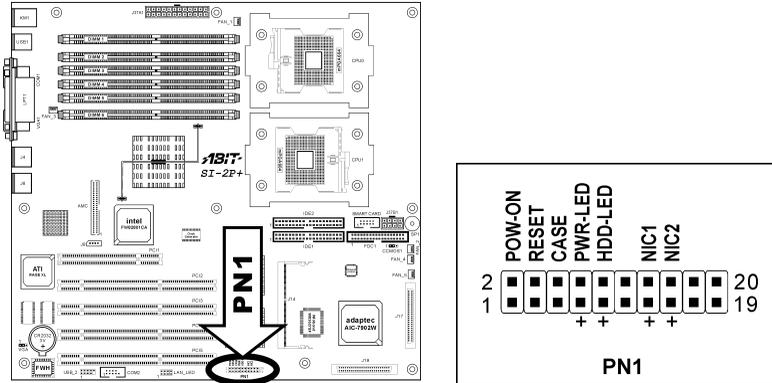
- **Pin 1-2 shorted (default):** Normal operation.
- **Pin 2-3 shorted:** Clear CMOS memory.



ATTENTION: Turn the system power off first (including the +5V standby power) before clearing the CMOS memory. Failing to do so may cause your system to work abnormally or malfunction.

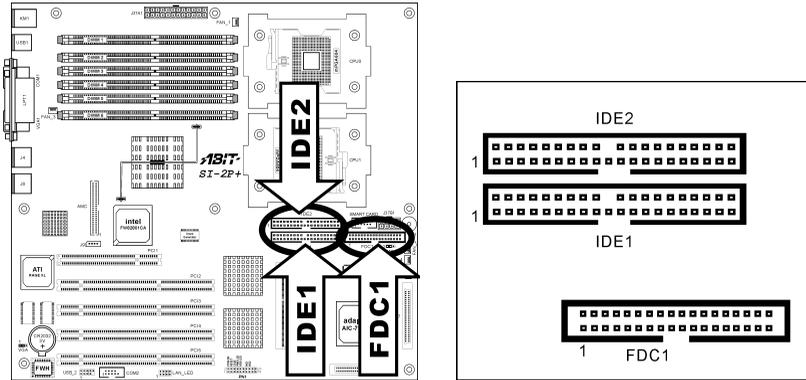
2.5.4. Front Panel Switches & Indicators Headers

These headers are used for connecting switches and LED indicators on the chassis front panel. The mark “+” stands for positive polarity of LED connection.



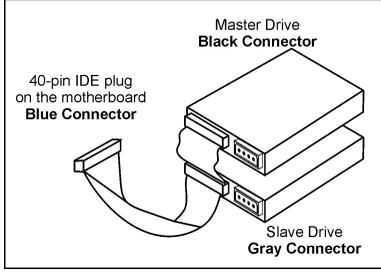
Pin Number	Pin Assignment	Definition
Pin 1, 2	POW-ON	Connects to the Power Switch cable of chassis front panel.
Pin 3, 4	RESET	Connects to the Reset Switch cable of chassis front panel.
Pin 5, 6	CASE	Case-Open Detection Header
Pin 7, 8	PWR-LED	Connects to the Power LED cable of chassis front panel.
Pin 9, 10	HDD-LED	Connects to the HDD LED cable of chassis front panel.
Pin 13, 14	NIC1	Network Interface Controller 1 Active/Link Indicator
Pin 15, 16	NIC2	Network Interface Controller 2 Active/Link Indicator

2.5.5. Floppy Disk Drive and IDE Connectors



The FDC1 connector connects up to two floppy drives with a 34-wire, 2-connector floppy cable. Connect the single end at the longer length of ribbon cable to this FDC1, and the two connectors on the other end to the floppy disk drives. Generally you need only one floppy disk drive in your system.

The IDE1/IDE2 port connects up to two IDE drives at Ultra ATA/100 mode by one 40-pin, 80-conductor, and 3-connector Ultra ATA/66 ribbon cables. Connect the single end (blue connector) at the longer length of ribbon cable to the IDE port on server board, and the other two ends (gray and black connector) at the shorter length of the ribbon cable to the connectors on hard drives.



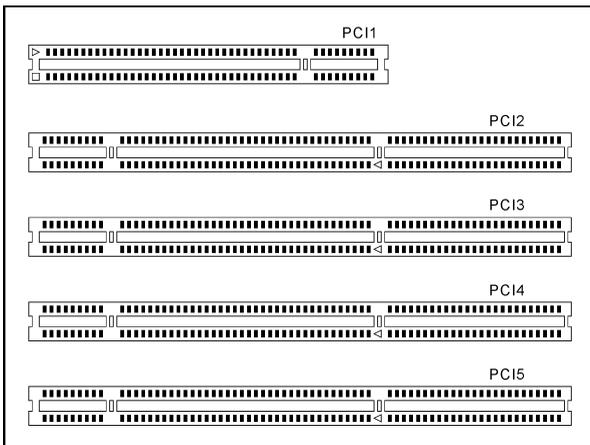
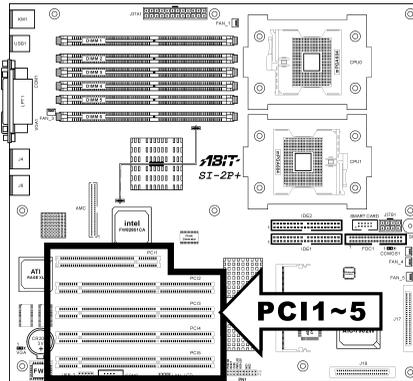
NOTE: The red line on the ribbon cable should be aligned with pin-1 on this connector.

2.5.6. PCI Expansion Slots

PCI1: Supports PCI 32bit/33MHz.

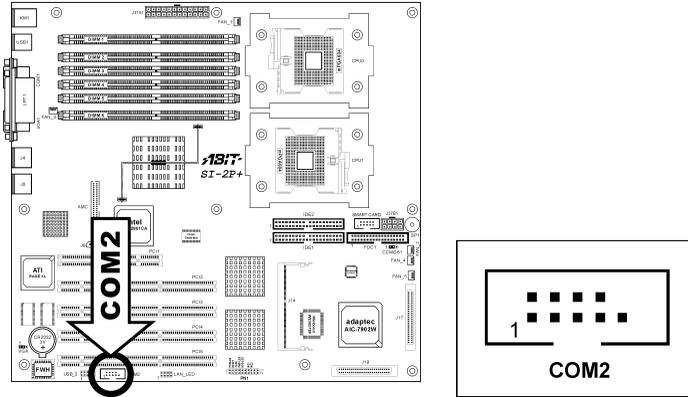
PCI2/4/5: Supports PCI-X 64bit/100MHz.

PCI3: Supports PCI-X 64bit/133MHz.



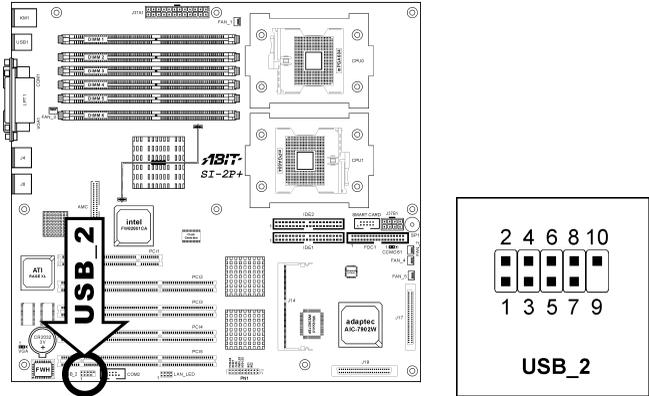
2.5.7. COM Port Header

This header provides connection to external COM Ports through an extension cable and bracket.



2.5.8. Additional USB Ports Header

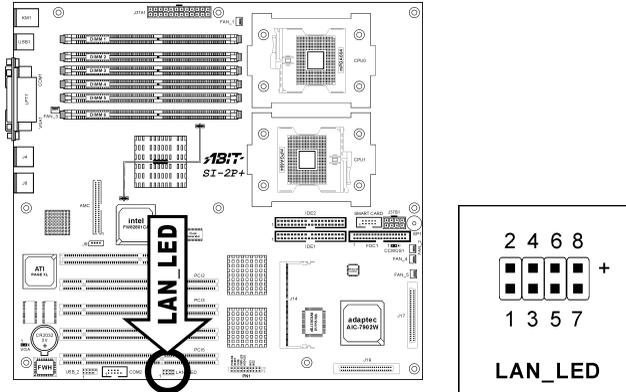
This header provides two additional USB ports connection through an extension cable and bracket.



Pin	Pin Assignment	Pin	Pin Assignment
1	VCC	2	VCC
3	Data0 -	4	Data1 -
5	Data0 +	6	Data1 +
7	Ground	8	Ground
9	NC	10	NC

2.5.9. LAN Active/Link Indicators Headers

These headers are used for connecting LED indicators for LAN status. The mark “+” stands for positive polarity of LED connection.

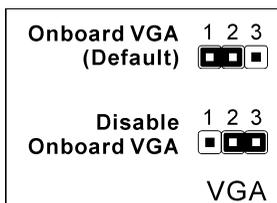
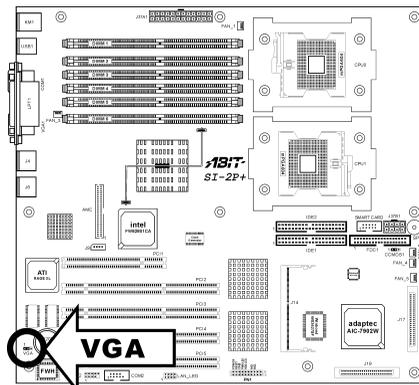


Pin Number	Definition
Pin 1, 2	LAN Port J4 Active Indicator
Pin 3, 4	LAN Port J4 Link Indicator
Pin 5, 6	LAN Port J6 Active Indicator
Pin 7, 8	LAN Port J6 Link Indicator

2.5.10. Onboard VGA Output Switch

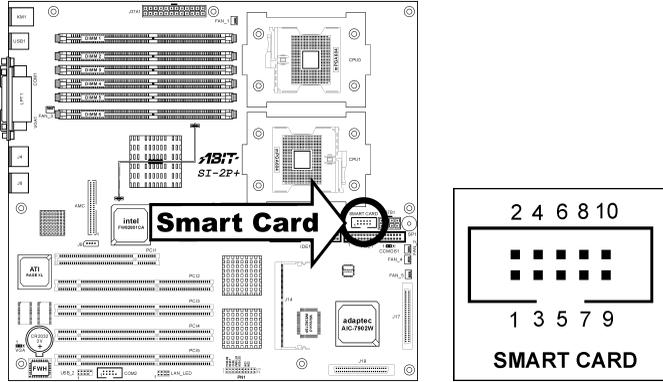
This header serves as a switch to select the VGA output from onboard VGA1 connector or from add-on optional VGA card at PCI slot.

To select the onboard VGA output, short pin-1 and pin-2 (default setting). For external VGA card operation through PCI slot, short pin-2 and pin-3.



2.5.11. Smart Card Reader Connector

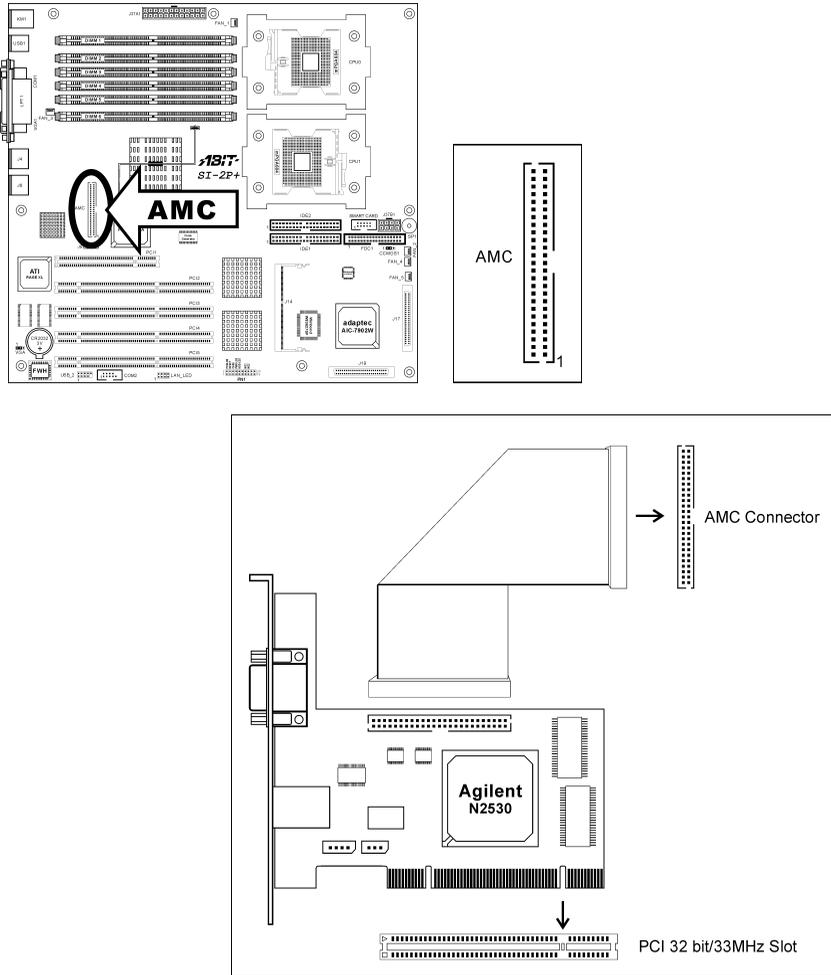
This connector provides connection to the optional Smart Card Reader device through an extension cable and bracket.



Pin	Pin Assignment	Pin	Pin Assignment
1	VCC	2	GND
3	SCPWR	4	SCRST
5	NC	6	NC
7	SCIO	8	NC
9	SCCLK	10	SCPSNT

2.5.12. Agilent Management Connector

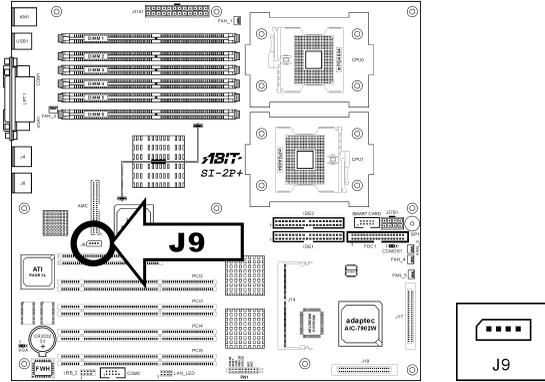
This server board provides one onboard 50-pin AMC connector. The AMC is a standard connector for server or communication system motherboards. It includes all signals needed for IPMI-complaint baseboard management.



NOTE: The AMC does not support “Hot Plug”. The RMC or motherboard itself can be damaged if the AMC cables is plugged or unplugged while power is present.

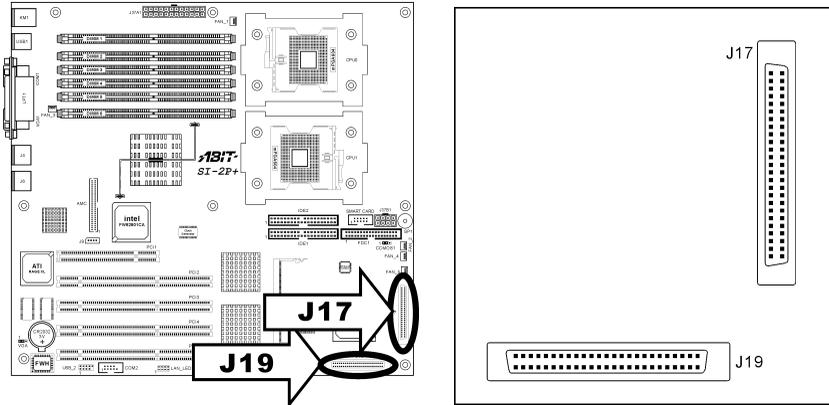
2.5.13. IPMB Connector

This server board provides one onboard 4-pin IPMB connector to transfer intelligent platform management information.

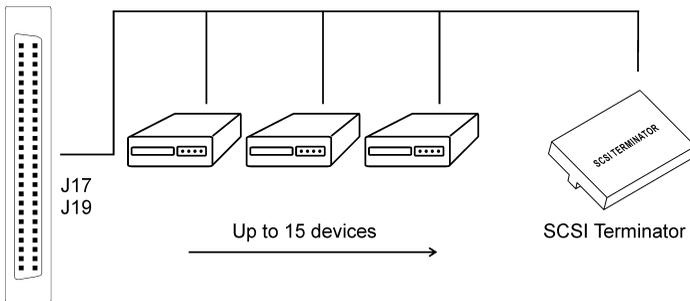


2.5.14. Ultra 320 SCSI Channels Connectors

The onboard SCSI controller provides Ultra 320 SCSI channels through these two connectors.



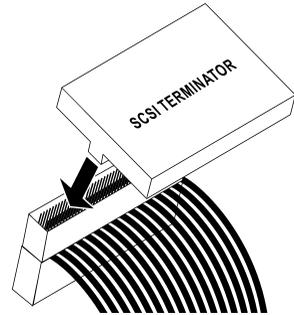
Both J17 and J19 connectors provide two 68-pin Ultra 320 SCSI channels. Each channel supports up to 15 devices (ID0~ID15) on a standard Ultra 320 SCSI LVD (Low Voltage Differential) cable, configuration up to 12 meters. In a point-to-point arrangement, cabling can extend 25 meters.



Each device has its own individual SCSI ID number, but none of the devices connected can use ID7, which is reserved for SCSI controller.

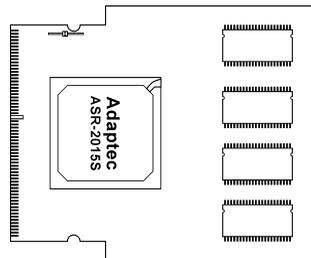
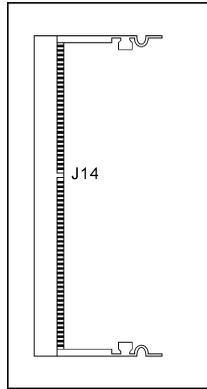
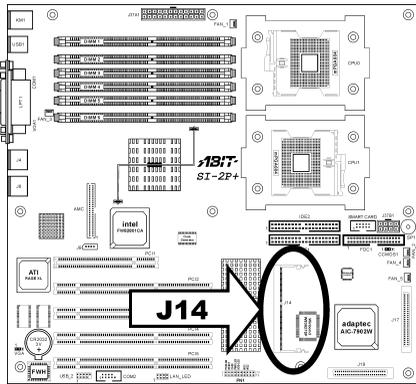
In order to prevent signal loss, a 68-pin twisted ribbon cable (LVD) with external SCSI terminator is necessary to connect Ultra 320 SCSI hard drive to this board. All termination jumpers on the SCSI devices must be removed when using the external SCSI terminator.

IMPORTANT: Each channel should have only one type of SCSI standard. A mixed setup with different standard on the same channel will decrease the performance to the slowest device.

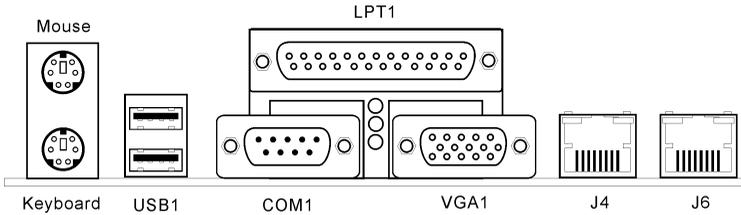


2.5.15. Adaptec Zero Channel RAID (ZCR) SO-DIMM Interface Riser

The J17 and J19 connector can also be used to setup a RAID system by installing an optional Adaptec RAID card - 2015S to this connector.



2.5.16. External I/O Panel Connectors



- **Mouse:** PS/2 mouse connector.
- **Keyboard:** PS/2 keyboard connector.
- **USB1:** Universal Serial Bus connector.
- **LPT1:** Parallel port connector.
- **COM1:** Serial port connector
- **VGA1:** Monitor signal connector.
- **J4, J6:** Local Area Network connector.

Chapter 3. BIOS Setup

This motherboard provides a programmable EEPROM that you can update the BIOS utility. The BIOS (Basic Input/Output System) is a program that deals with the basic level of communication between processor and peripherals. Use the BIOS Setup program only when installing motherboard, reconfiguring system, or prompted to “Run Setup”. This chapter explains the Setup Utility of BIOS utility.

After powering up the system, the BIOS message appears on the screen, the memory count begins, and then the following message appears on the screen:

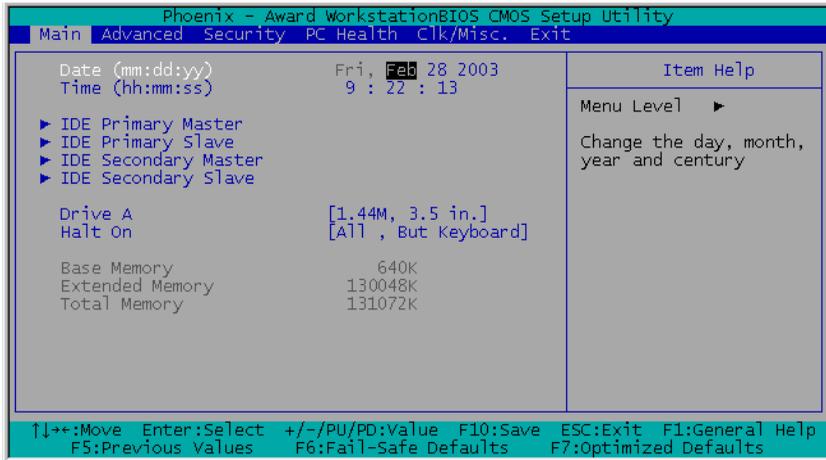
Press DEL to run setup

If this message disappears before you respond, restart the system by pressing <Ctrl> + <Alt> + keys, or by pressing the Reset button on computer chassis. Only when it failed by these two methods can you restart the system by powering it off and then back on.

NOTE: In order to increase system stability and performance, our engineering staffs are constantly improving the BIOS menu. The BIOS setup screens and descriptions illustrated in this manual are for your reference only, may not completely match what you see on your screen.

After pressing key, the main menu screen appears.

3.1. Main Menu



Date (mm:dd:yy)

This item sets the date you specify (usually the current date) in the format of [Month], [Date], and [Year].

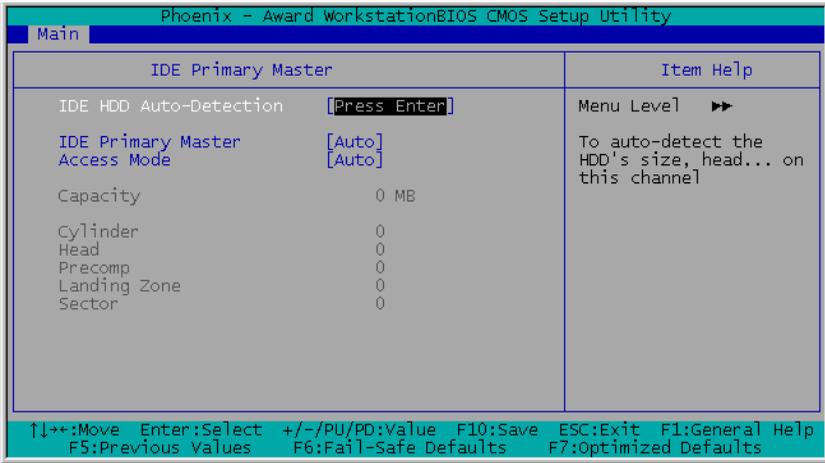
Time (hh:mm:ss)

This item sets the time you specify (usually the current time) in the format of [Hour], [Minute], and [Second].

IDE Primary Master, IDE Primary Slave, IDE Secondary Master, and IDE Secondary Slave

Move cursor to item “IDE Primary Master”, “IDE Primary Slave”, “IDE Secondary Master” or “IDE Secondary Slave”, and then press <Enter> key to enter a sub-menu.

IDE Primary/Secondary Master/Slave



IDE HDD Auto-Detection

This item allows you to detect the parameters of IDE drives by pressing the <Enter> key. The parameters will automatically be shown on the screen.

IDE Primary Master

When set to [Auto], the BIOS will automatically check what kind of IDE drive you are using. If you want to define your own drive by yourself, set it to [Manual] and make sure you fully understand the meaning of the parameters. Refer to the manual provided by the device manufacturer to get the settings right.

Access Mode

This item selects the mode to access your IDE devices. Leave this item to its default [Auto] settings to let BIOS detects the access mode of your HDD and makes decision automatically.

Capacity

This item automatically displays your HDD size. Note that this size is usually slightly greater than the size given by a disk-checking program of a formatted disk.

NOTE: The following [Cylinder], [Head], [Precomp], [Landing Zone], and [Sector] items are available when you set the item "IDE Primary Master" to "Manual".

Cylinder

This item configures the numbers of cylinders.

Head

This item configures the numbers of read/write heads.

Precomp

This item displays the number of cylinders at which to change the write timing.

Landing Zone

This item displays the number of cylinders specified as the landing zone for the read/write heads.

Sector

This item configures the numbers of sectors per track.

Drive A

This item sets the type of floppy drives installed.

[None]: No floppy drive installed

[360K, 5.25 in.]: 5.25-inch standard drive; 360KB capacity

[1.2M, 5.25 in.]: 5.25-inch AT-type high-density drive; 1.2MB capacity

[720K, 3.5 in.]: 3.5-inch double-sided drive; 720KB capacity

[1.44M, 3.5 in.]: 3.5-inch double-sided drive; 1.44MB capacity

[2.88M, 3.5 in.]: 3.5-inch double-sided drive; 2.88MB capacity

Halt On

This item determines whether the system stops if an error is detected during system boot-up.

[All Errors]: The system-boot will stop whenever the BIOS detect a non-fatal error.

[No Errors]: The system-boot will not stop for any error detected.

[All, But Keyboard]: The system-boot will stop for all errors but keyboard error.

[All, But Diskette]: The system-boot will stop for all errors but disk error.

[All, But Disk/Key]: The system boot will stop for all errors but disk or keyboard error.

Base Memory

This item displays the amount of base memory installed in the system. The value of the base memory is typically 640K for system with 640K or more memory size installed on the motherboard.

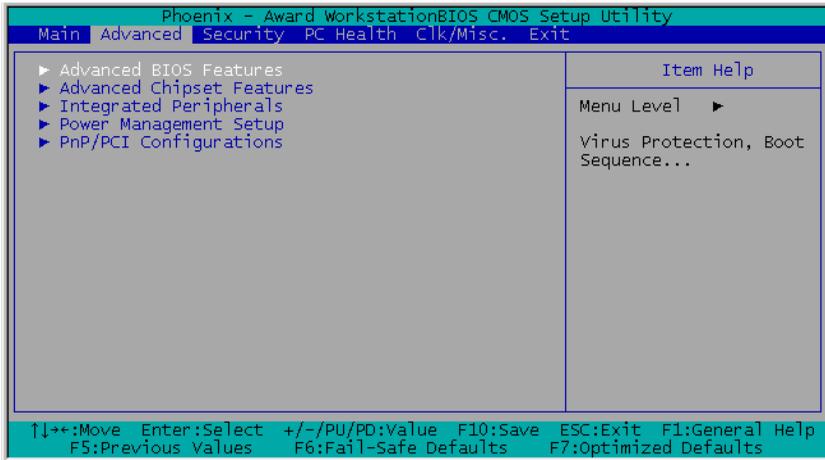
Extended Memory

This item displays the amount of extended memory detected during system boot-up.

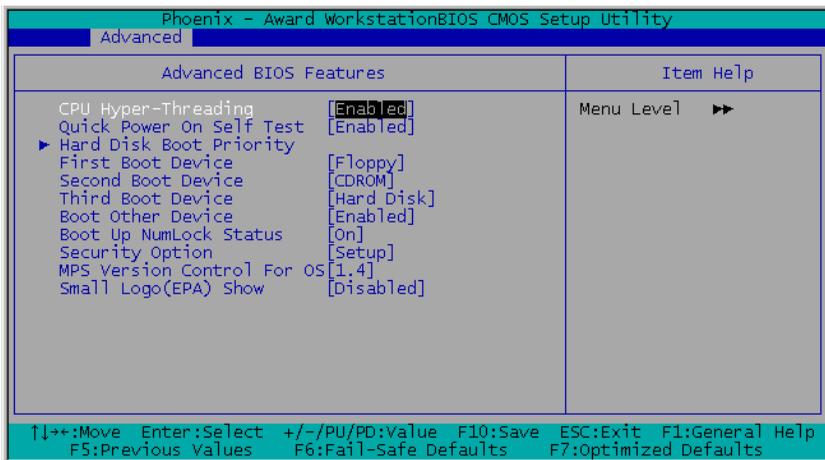
Total Memory

This item displays the total memory available in the system.

3.2. Advanced Menu



3.2.1. Advanced BIOS Features



CPU Hyper-Threading

This option enables or disables the processor's Hyper-Threading Technology.

Leave this item to its default setting to enable the simultaneous multi-threaded (SMT) processor so as to make one physical processor looks like two logical processors to the OS and applications.

This option is for CPU with Hyper-Threading Technology only. For more information on “Hyper-Threading Technology”, please visit Intel Web site at <http://www.intel.com/homepage/land/hyperthreading.htm> , <http://www.intel.com/design/chipsets/ht/>.

Quick Power On Self Test

When set to [Enabled], this item speeds up the Power On Self Test (POST) after powering on the system. The BIOS shorten or skip some check during the POST.

Hard Disk Boot Priority

This item selects the hard disks booting priority. By pressing <Enter> key, you can enter its submenu where the hard disks detected can be selected for the booting sequence to boot up system.

This item functions only when there is the option of [Hard Disk] in any one of the First/Second/Third Boot Device items.

First Boot Device / Second Boot Device / Third Boot Device / Boot Other Device

Select the drive to boot first, second and third in the [First Boot Device], [Second Boot Device], and [Third Boot Device] fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected. Set [Boot Other Device] to [Enabled] if you wish to boot from another device other than these three items.

Boot Up NumLock Status:

This item determines the default state of the numeric keypad at system booting up.

[On]: The numeric keypad functions as number keys.

[Off]: The numeric keypad functions as arrow keys.

Security Option

This item determines when the system will prompt for password - every time the system boots or only when enters the BIOS setup.

[Setup]: The password is required only when accessing the BIOS Setup.

[System]: The password is required each time the computer boots up.

NOTE: Don't forget your password. If you forget the password, you will have to open the computer case and clear all information in the CMOS before you can start up the system. But by doing this, you will have to reset all previously set options.

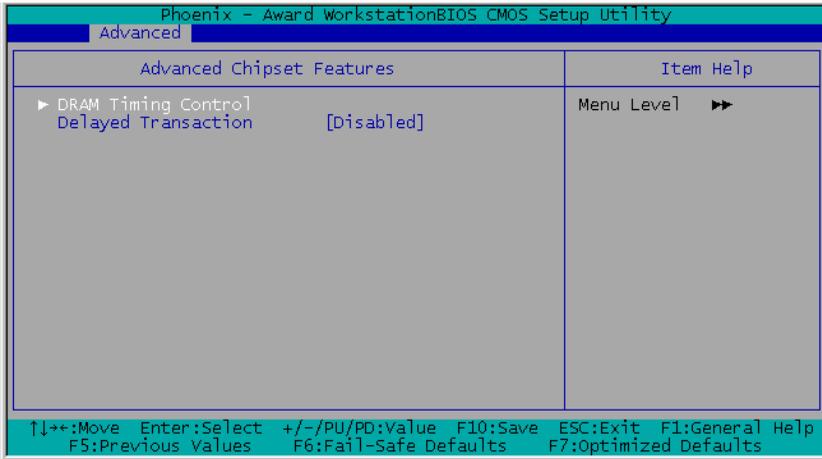
MPS Version Control For OS

This item specifies which version of MPS (Multi-Processor Specification) this board will use. The options are 1.1 and 1.4. The default setting is **1.4**. If you use an older OS for dual processor executing, please set this option to 1.1.

Small Logo(EPA) Show

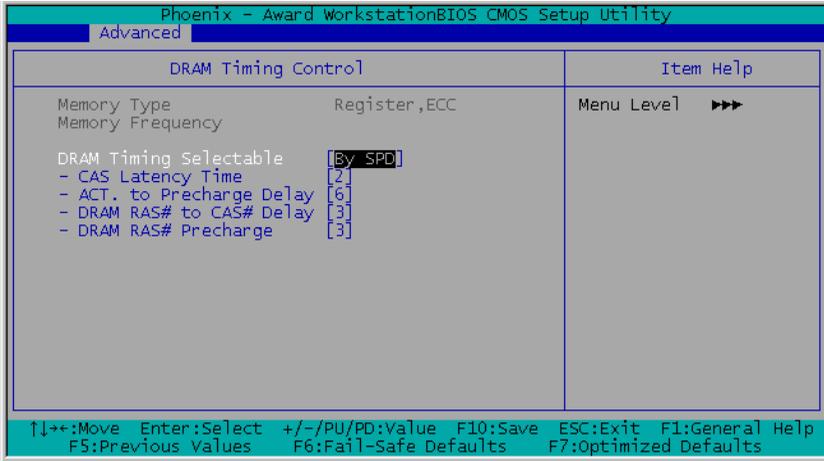
This item determines to show the EPA logo when booting.

3.2.2. Advanced Chipset Features



DRAM Timing Control

This item controls the DRAM timing. Press <Enter> key to enter its menu.



Memory Type

This item displays the type of memory module you are using.

Memory Frequency

This item displays the frequency of memory module you are using.

DRAM Timing Selectable

This item sets the optimal timings for the following four items, depending on the memory module you are using. The default setting “By SPD” configures these four items by reading the contents in the SPD (Serial Presence Detect) device. The EEPROM on the memory module stores critical parameter information about the module, such as memory type, size, speed, voltage interface, and module banks.

CAS Latency Time

This item controls the latency between the DRAM read command and the time that the data becomes actually available.

Active to Precharge Delay

This item controls the number of DRAM clocks used for DRAM parameters.

DRAM RAS# to CAS# Delay

This item controls the latency between the DRAM active command and the read/write command.

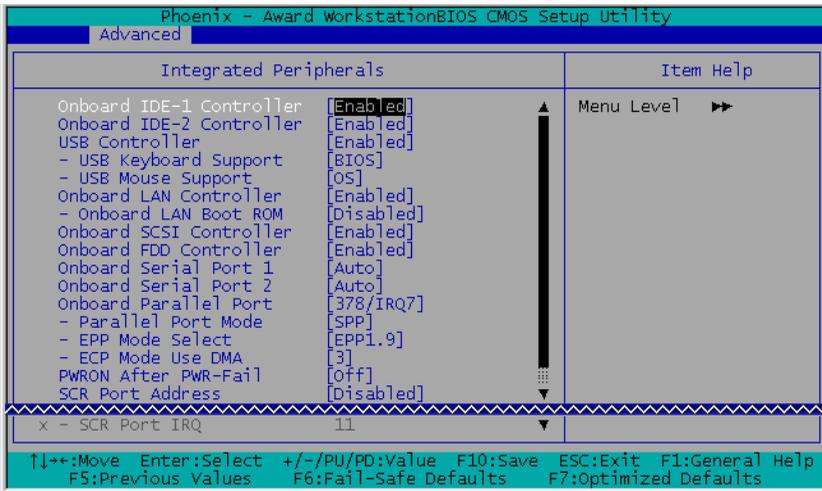
DRAM RAS# Precharge

This item controls the idle clocks after issuing a precharge command to the DRAM.

Delayed Transaction

When set to [Enabled], the PCI bus will be freed up when the CPU is accessing 8-bit ISA cards. This will allow PCI and ISA buses to be used more efficiently and prevents performance dropping on the PCI bus. This process normally consumes about 50-60 PCI clocks without PCI delayed transaction. Leave this item to its default [Disabled] setting when using ISA cards that are not PCI 2.1 compliant.

3.2.3. Integrated Peripherals



Onboard IDE-1 Controller

This item enables or disables the onboard IDE-1 controller.

Onboard IDE-2 Controller

This item enables or disables the onboard IDE-2 controller.

USB Controller

This option enables or disables the USB controller.

USB Keyboard Support

This item allows you to select [**BIOS**] for using USB keyboard in DOS environment, or [**OS**] in OS environment.

USB Mouse Support

This item allows you to select [**BIOS**] for using USB mouse in DOS environment, or [**OS**] in OS environment.

Onboard LAN Controller

This item enables or disables the onboard LAN controller.

Onboard LAN Boot ROM

This item allows you to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly.

Onboard SCSI Controller

This item enables or disables the onboard SCSI controller.

Onboard FDD Controller

This item enables or disables the onboard FDD controller.

Onboard Serial Port 1

This item determines which I/O addresses the onboard Serial Port 1 controller will access.

[Auto]: The system automatically select an I/O address for the onboard Serial Port 1.

[3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3]: Allows you to manually select an I/O address for the onboard Serial Port 1.

[Disabled]: Disables the onboard Serial Port 1.

Onboard Serial Port 2

This item determines which I/O addresses the onboard Serial Port 2 controller will access.

[Auto]: The system automatically select an I/O address for the onboard Serial Port 2.

[3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3]: Allows you to manually select an I/O address for the onboard Serial Port 2.

[Disabled]: Disables the onboard Serial Port 2.

Onboard Parallel Port

This item specifies the I/O address used by the parallel port.

[Disabled]: This option prevents the parallel port from accessing any system resources. When the value of this option is set to [Disabled], the printer port becomes unavailable.

[378]: This option allows the parallel port to use [378] as its I/O port address. The majority of parallel ports on computer systems use IRQ7 and I/O Port 378H as the standard setting.

[278]: This option allows the parallel port to use [278] as its I/O port address.

[3BC]: This option allows the parallel port to use [3BC] as its I/O port address.

Parallel Port Mode

This item specifies the parallel port mode.

[SPP]: (Standard Parallel Port) Allows bi-directional parallel port operation at normal speed.

[EPP]: (Enhanced Parallel Port) Allows bi-directional parallel port operation at maximum speed.

[ECP]: (Extended Capabilities Port) Allows bi-directional parallel port operation at a speed faster than the normal mode's data transfer rate.

[EPP+ECP]: Using parallel port as EPP & ECP mode.

EPP Mode Select

This item selects the EPP mode.

ECP Mode Use DMA

This item selects the DMA channel of the parallel port.

PWRON After PWR-Fail

This item sets the system action after a power failure.

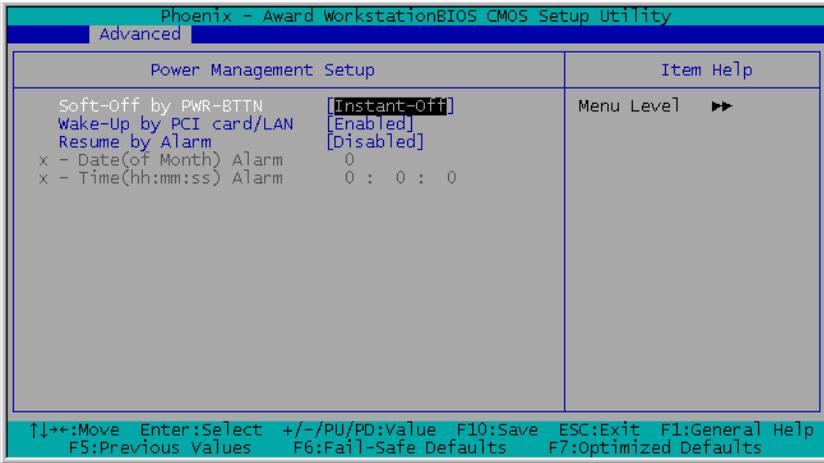
SCR Port Address

This item sets the I/O address and IRQ of the onboard SCR (Smart Card Reader) port.

SCR Port IRQ

After enabling the SCR port, here you can set the IRQ for SCR port.

3.2.4. Power Management Setup



Soft-Off by PWR-BTTN

This item selects the method of powering off your system:

[Hold 4 Sec.]: Pushing the power button for more than 4 seconds will power off the system. This will prevent the system from powering off in case you accidentally hit or pushed the power button.

[Instant-Off]: Pressing and then releasing the power button at once will immediately power off the system.

Wake-Up by PCI card/LAN

When set to [Enabled], access to the onboard LAN or a PCI card such as a modem or LAN card will cause the system to wake up. The PCI card must support the wake up function.

Resume by Alarm

When set to [Enabled], you can set the date and time you would like the Soft-Off PC to power-on in the “**Date (of Month) Alarm**” and “**Time (hh:mm:ss) Alarm**” items. However, if the system is being accessed by incoming calls or the network (Resume On Ring/LAN) prior to the date and time set in these items, the system will give priority to the incoming calls or network instead.

Date (of Month) Alarm

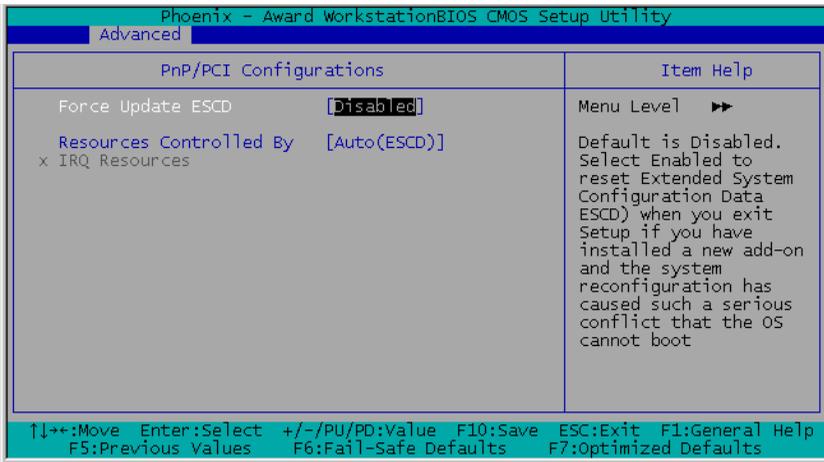
[0]: This option power-on the system everyday according to the time set in the “Time (hh:mm:ss) Alarm” item.

[1-31]: This option selects a date you would like the system to power-on. The system will power-on on the date set, and the time set in the “Time (hh:mm:ss) Alarm” item.

Time (hh:mm:ss) Alarm

This item sets the time you would like the system to power-on.

3.2.5. PnP/PCI Configurations



Force Update ESCD

When set to [Enabled], the BIOS will reset the ESCD (Extended System Configuration Data) once automatically next time you boot up. It will then recreate a new set of configuration data. But the next time you boot up, this option will automatically be set as Disabled.

Resources Controlled By

This item configures all of the boot and Plug-and-Play compatible devices.

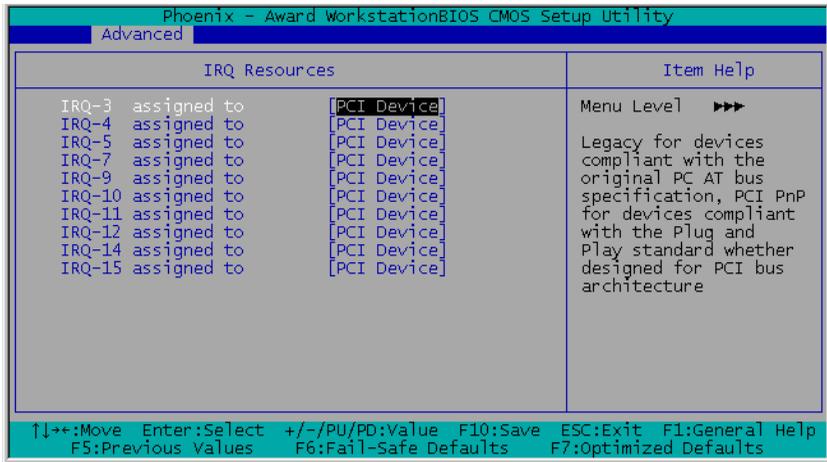
[Auto(ESCD)]: The system will automatically detect the settings.

[Manual]: Choose the specific IRQ resources in the “IRQ Resources” menu.

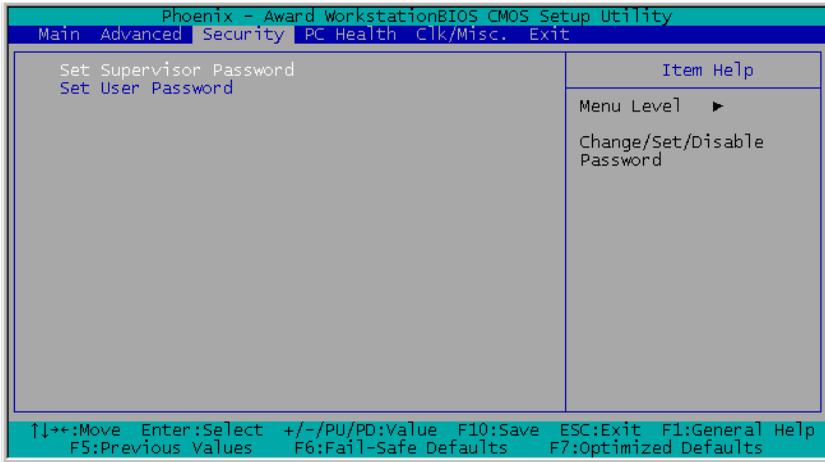
IRQ Resources

Click <Enter> key to enter its submenu:

This item sets each system interrupt to either [PCI Device] or [Reserved].



3.3. Security Menu



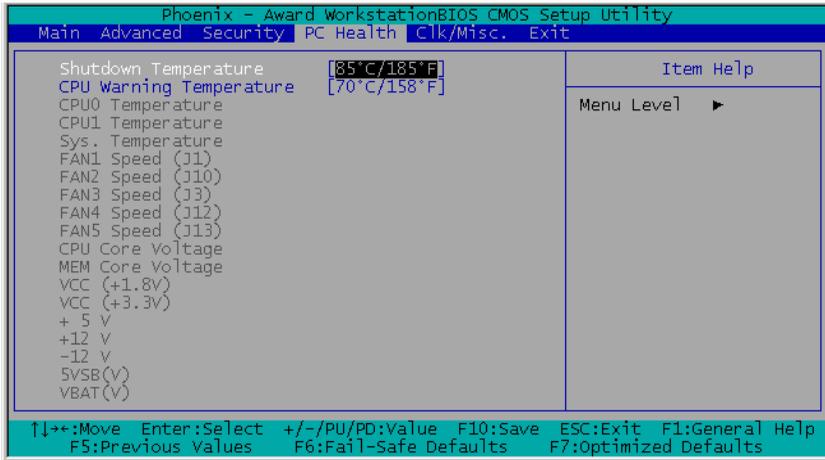
Set Supervisor Password

This option protects the BIOS configuration or restricts access to the computer itself. The Supervisor Password is used to protect the stored CMOS options from being changed by unauthorized users.

Set User Password

This option protects the BIOS configuration or restricts access to the computer itself. The User Password requires all users to enter a password in order to use the system, and/or enter the BIOS setup (but can't change its contents).

3.4. PC Health Menu



Shutdown Temperature

This item sets the temperature that would shutdown the system automatically in order to prevent system overheats.

CPU Warning Temperature

This item selects the CPU's warning temperature limit. Once the system has detected that the CPU's temperature exceeded the limit, warning beeps will sound.

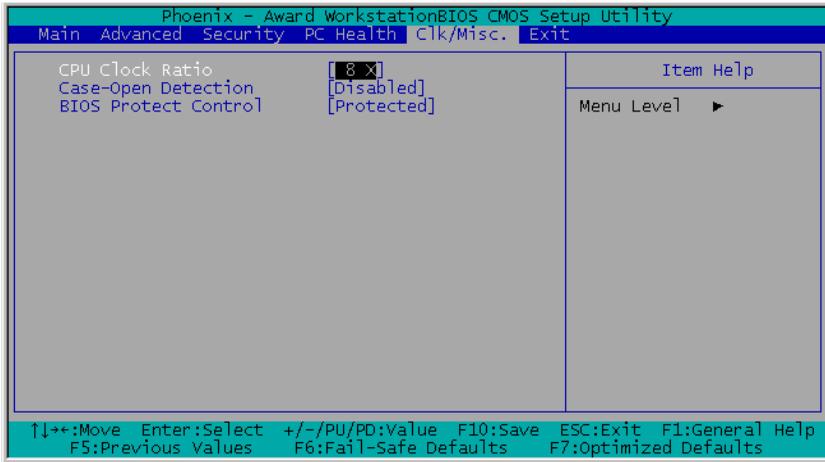
NOTE: The onboard hardware monitor function is capable of detecting these system health conditions. If you want a warning message to pop-up or a warning alarm to sound when an abnormal condition occurs, you must install the "Hardware Doctor" utility. This utility is included in the "Driver & Utility CD" that came packed with this motherboard.

All Voltages, Fans Speed and Thermal Monitoring

These unchangeable items list the current status of the CPU and environment temperatures, fan speeds, and system power voltage.

NOTE: The hardware monitoring features for temperatures, fans and voltages will occupy the I/O address from 294H to 297H. If you have a network adapter, sound card or other add-on cards that might use those I/O addresses, please adjust your add-on card I/O address to avoid using these addresses.

3.5. Clk/Misc. Menu



CPU Clock Ratio

This option selects the CPU clock ratio. Please type in the correct multiple for your CPU.

Case-Open Detection

This option controls the function for case-opening detection via JP3 header.

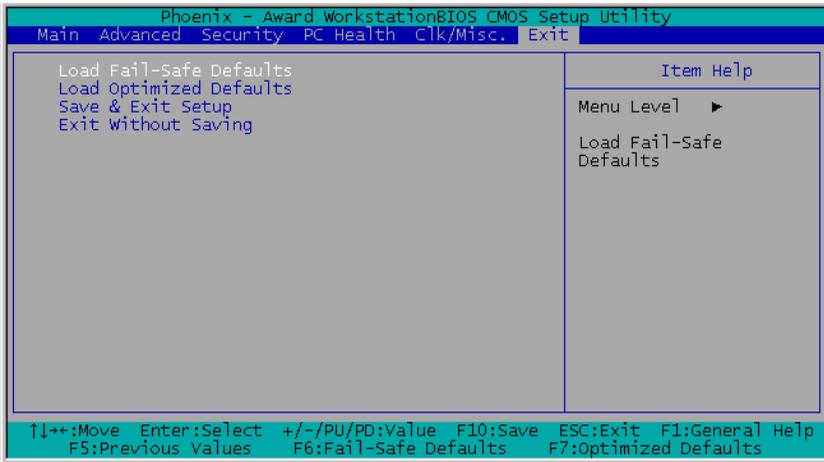
BIOS Protect Control

This option protects for accidentally BIOS writing attempt.

NOTE: Make sure to set this item to "Unprotected" when flashing the BIOS.

3.6. Exit Menu

Once you have made all your selections in the previous BIOS setup menu, you have to save the settings and exit the setup menu. Select the Exit Menu in the menu bar to show the following menu:



NOTE: Pressing <ESC> does not exit this menu. You have to select one of the options in this menu, such as “Exit Without Saving” to exit the menu without saving your previous settings.

Load Fail-Safe Defaults

This option loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

This option loads the BIOS default values that are factory settings for optimal-performance system operations.

Save & Exit Setup

This option saves your selections and exits the setup menu.

Exit Without Saving

This option exits the setup menu without saving any change.



Chapter 4. SCSI Utility

To enter the SCSI configuring menu, reboot the system, press <Ctrl> and <A> key when the following message appears:

Press <Ctrl> <A> for SCSISelect(TM) Utility

The following screen appears. Select the channel you want to enter the SCSI configuring menu.

```
AIC-7902 A at slot 09 06:02:00
AIC-7902 B at slot 09 06:02:01
```

Move the <Up> or <Down> arrow key to select the channel your SCSI devices attached, and then press <Enter> key to enter. Press <Esc> key will exit this menu.

The following screen appears. Here in this option, you can configure the SCSI controller, or run the SCSI Disk Utilities.

```
===== AIC-7902 A at slot 09, 06:02:00 =====
Would you like to configure the SCSI controller, or run the
  SCSI Disk Utilities? Select the option and press <Enter>.

Options
-----
Configure/View SCSI Controller Settings
      SCSI Disk Utilities
```

Move the <Up> or <Down> arrow key to select the option you want and press <Enter> key to enter. Press <Esc> key will exit this menu.

```

AIC-7902 A at slot 09, 06:02:00
-----
- Configuration -
SCSI Bus Interface Definitions
SCSI Controller ID.....7
SCSI Controller Parity.....Enabled
SCSI Controller Termination.....Enabled

Additional Options
Boot Device Configuration.....Press <Enter>
SCSI Device Configuration.....Press <Enter>
Advance Configuration.....Press <Enter>

<F6> - Reset to SCSI Controller Defaults

- BIOS Informaton -
Interrupt (IRQ) Channel.....11
I/O Port Address.....B000h, B400h

```

This is the “Configure/View SCSI Controller Settings” menu. Carefully configure your settings. Press <F6> key will reset to SCSI Controller defaults.

```

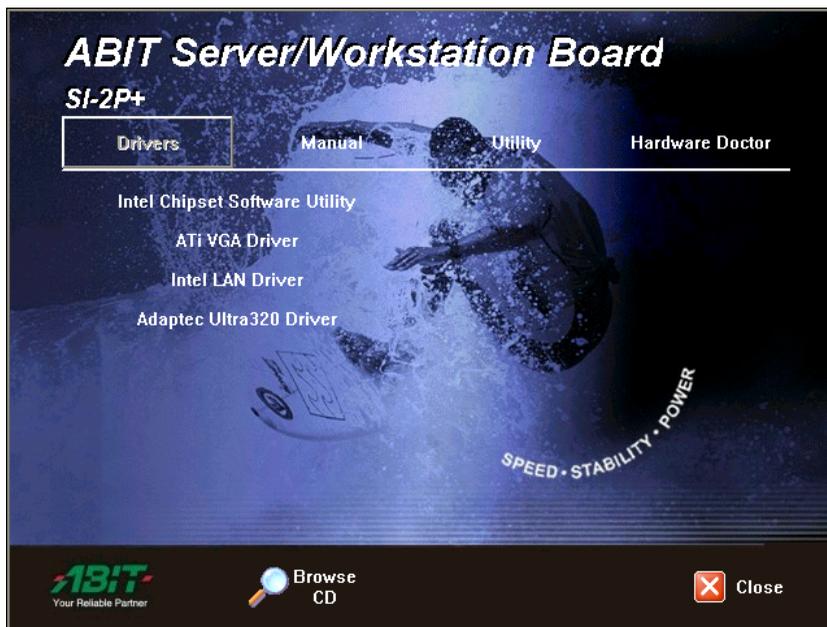
AIC-7902 A at slot 09, 06:02:00
-----
- Select SCSI Disk and press <Enter> -
SCSI ID #0: No Device
SCSI ID #1: No Device
SCSI ID #2: No Device
SCSI ID #3: No Device
SCSI ID #4: No Device
SCSI ID #5: No Device
SCSI ID #6: No Device
SCSI ID #7: Adaptec AIC-7902
SCSI ID #8: No Device
SCSI ID #9: No Device
SCSI ID #10: No Device
SCSI ID #11: No Device
SCSI ID #12: No Device
SCSI ID #13: No Device
SCSI ID #14: No Device
SCSI ID #15: No Device

```

This is the “SCSI Disk Utilities” menu. SCSI ID #7 is reserved for SCSI controller only.

Chapter 5. Driver Installation

All the necessary drivers are included within the Drivers & Utilities CD that came packaged with your board. The display shown in the following figure should appear after inserting this CD into your CD-ROM drive, if not, enter → [My Computer] → [CD-ROM] Drive → double click [autorun.exe]. Please follow the on-screen instruction.



5.1. Setup Items

- **Intel Chipset Software Utility**
Install Intel chipset driver for Windows Operating System.
- **ATI VGA Driver**
Install ATI VGA graphic driver for Windows Operating System.
- **Intel LAN Driver**
Install the drivers needed to run Fast Ethernet controller. The operating systems supported are Windows, Windows XP 64-bit, Linux, Netware, and FreeBSD.
- **Adaptec Ultra320 Driver**
Install Adaptec Ultra320 SCSI driver for Windows Operating System.
- **Manual**
View the user's manual in PDF.
- **Utility**
Click to enter the sub-screen for installing software like Storage Management, Award Flash, DirectX8.1, LoFormat, and Utility Acrobat Reader.
- **Hardware Doctor**
Install the Hardware Doctor program for monitoring the system health.
- **Browse CD**
Browse the contents of this CD-ROM.
- **Close**
Exit the CD setup Items Menu.

5.2. Installing Ultra320 SCSI Controller

5.2.1. Installing Windows 2000 with an Ultra320 SCSI Controller

1. Start your system with the Windows 2000 Boot CD-ROM in the CD-ROM drive. Note: When using a CD-ROM drive to install Windows 2000 from the bootable CD-ROM, make sure Bootable CD-ROM support is enabled. This is done through the System BIOS Setup Utility.
2. Press F6 when this message is displayed: "Press F6 if you need to install third-party SCSI drivers".
3. When prompted, press "S" to supply the new driver.
4. Insert the Adaptec Ultra320 FMS driver disk when the setup prompts you to insert the manufacturer supplied disk into drive A, and press Enter.
5. The screen displays the adapter drivers supported on the disk. Select "Adaptec Ultra320 SCSI Cards (Win2000)" and continue with the rest of the Windows 2000 installation.
6. Your system will reboot once more to finish setting up Windows 2000.

5.2.2. Installing the Driver when Windows 2000 is Already Installed

1. Start Windows 2000. Windows 2000 will automatically discover the new hardware and start the Found New Hardware Wizard to guide you through the device driver installation.
2. At the Welcome to the Found New Hardware Wizard window, select Next.
3. On the Install Hardware Device Drivers screen, select Display a list of the known drivers for this device, and click Next.
4. Select the Have Disk button. You will be prompted to insert the manufacturer supplied disk. Insert the Adaptec Ultra320 FMS driver disk in your disk drive and enter the following path, then click OK.

a: \win2000

5. Select the Adaptec Ultra320 driver from the list, then click the Next button.
6. Click the Next button again to confirm the installation of the driver. You may be prompted with this warning message: "The software you are about to install does not contain a Microsoft digital signature ..." Ignore the

warning and click Yes to continue the installation.

7. When the driver is copied on the hard drive, click Finish.
8. You will be prompted to restart the computer. Select Yes.

5.2.3. Changing SCSI Boot Controllers in Windows 2000

1. With the existing controller still installed, install the Ultra320 controller into your system. Do not attach any devices to it at this time.
2. Boot up the operating system. Install the driver for the Adaptec Ultra320 Adapter.
3. Shut down Windows 2000. Turn off your system if necessary.
4. Switch the bootable hard drive from the old SCSI controller to the Ultra320 controller and boot up your computer.

Appendix A. Trouble Shooting

Why the system shows incorrect CPU speed in Win2K

If you run Msinfo32.exe on a computer that has an Intel Pentium 4 Xeon 2.2-GHz or faster processor, a very high processor speed may be shown. The Processor information on the System Summary page shows the correct name, family, model and stepping for the processor, but the approximate speed may be 37,000 MHz or faster.

This is because the speed of the newest Pentium processors exposes a limitation in the speed calculation code in Msinfo32.exe.

To resolve this problem, refer to the hotfix described in the Microsoft Knowledge Base article: "[Q302857](#) WMI Win32_Group ASSOCIATORS Queries Are Not Optimized".

How to improve system performance for RedHat 7.2 and RedHat 7.3

It is recommended to upgrade RedHat 7.2 to version 7.3, since there are many improvements as well as kernel upgrade. Currently there is limitation about multi-processor handling irq in RedHat 7.3. It is suggested to download the latest kernel in order to improve the performance. The latest kernel 2.4.18 need patch to fix multi-processor handle irq limitation. Please use the following steps to build the kernel.

Download the latest kernel from <http://www.kernel.org>, for example:

```
linux-2.4.18.tar.gz .
```

```
# mv linux-2.4.18.tar.gz /usr/src
```

```
# gunzip linux-2.4.18.tar.gz (unpack the kernel)
```

```
# tar xvf linux-2.4.18.tar (extract form kernel tar file)
```

```
# patch -p0 < irq.patch (update necessary patch)
```

```
# cd linux
```

```
# make mrproper
```

```
# make xconfig
```

```
# make dep
```

```
# make clean
```

```
# make bzImage
```

```
# cp /usr/src/linux/arch/i386/boot/bzImage /boot/vmlinuz-24188irqbal
```

```
# make modules
```

```
# make modules_install
```

```
# mkdinitrd /boot/initrd.2.4.18.img 2.4.18
```

```
# cp /usr/src/linux/System.map /boot/System.map-2.4.18-irqbal
```

```
# cd /boot
```

```
# ln -s System.map-2.4.18-irqbal System.map
```

```
# add following entries to /etc/lilo.conf
```

```
    image=/boot/vmlinuz-24188irqbal
```

```
        label=lin24188irqbal
```

```
        initrd=/boot/initrd-2.4.18.img
```

```
        read-only
```

```
        root=/dev/hda2
```

```
# lilo
```

```
# reboot
```

How to access system memory in excess of 4GB for Microsoft Windows 2000 Advanced Server and Datacenter Server

Microsoft Windows 2000 Advanced Server and Datacenter Server support memory in excess of 4GB of RAM by way of the Intel Physical Addressing Extension (PAE) specification. Windows 2000 Advanced Server is limited to 8GB, and Windows 2000 Datacenter Server is limited to 64GB.

You can enable PAE in the “Boot.ini” file. To enable PAE, follow these steps:

1. Locate the Boot.ini file, typically in the root folder (for example, C:) and remove its read-only attribute.
2. Open the Boot.ini file, and then add the **/PAE** parameter to the ARC path, as shown in bold format in the following example:

```
multi(0)disk(0)rdisk(0)partition(2)\WINNT= “Windows 2000 Advanced  
Server” /PAE /basevideo /sos
```

3. On the **File** menu, click **Save**.
4. Restore the read-only attribute to the Boot.ini file.

Even with PAE enabled, the underlying architecture of the system is still based on 32-bit linear addresses. This effectively retains the 2GB of application space and the 2GB of kernel mode space because only 4GB of addresses are available. However, multiple processes can immediately benefit from the increased RAM because they are less likely to encounter physical memory restrictions and begin paging. Additionally, applications can be modified to use the AWE API to allocate memory outside of the applications process space, bypassing the 2-GB limit for applications.

Why the system hung when it detects AIC7xxx driver under RedHat 7.2

The AC7xxx driver in RedHat 7.2 is old for AIC-7902. Please use the following steps to do the installation:

1. Boot from RedHat 7.2 CD-ROM.
2. At boot prompt, type <expert noprobe>.
3. Select the appropriate language, country, and etc.
4. Choose “add devices” to list device drivers.
5. Select “new experimental aic7xxx_mod”. The aic7xxxx_mod will be loaded, instead of the regular aic7xxx driver.
6. Complete the installation.

Appendix B. How to Get Technical Support

(From our website) <http://www.abit.com.tw>

(In North America) <http://www.abit-usa.com>

(In Europe) <http://www.abit.nl>

Thank you for choosing ABIT products. ABIT sells all our products through distributors, resellers and system integrators; we have no direct sales to end-users. Before sending email for tech support please check with your resellers or integrators if you need any services, they are the ones who sold you your system and they should know best as to what can be done, how they serve you is a good reference for future purchases.

We appreciate every customer and would like to provide the best service to you. Providing fast service to our customers is our top priority. However we receive many phone calls and a huge amount of email from all over the world. At the present time it is impossible for us to respond to every single inquiry. Therefore it is quite possible that if you send an email to us that you may not receive a response.

We have done many compatibility tests and reliability tests to make sure our products have the best quality and compatibility. In case you need service or technical support, please understand the constraint we have and **always check with the reseller who sold the product to you first.**

To expedite service, we recommend that you follow the procedures outlined below before contacting us. With your help, we can meet our commitment to provide the best service to the **greatest number of ABIT customers:**

- 1. Check the Manual.** It sounds simple but we have taken a lot of care in making a well-written and thorough manual. It is full of information that doesn't only pertain to motherboards. The CD-ROM included with your board will have the manual as well as drivers. If you don't have either one, go to our Program Download Area of the Website or FTP server.
- 2. Download latest BIOS, software or drivers.** Please go to our Program Download area on our Website to check to see if you have the latest BIOS. They are developed over periods of time to fix bugs or incompatibilities. **Also please make sure you have the latest drivers from your peripheral cards makers!**
- 3. Check the ABIT Technical Terms Guide and FAQ on our Website.** We are trying to expand and make the FAQs more helpful and information rich. Let us know if you have any suggestions. For hot topics check out our HOT FAQ!

4. **Internet Newsgroups.** They are a great source of information and many people there can offer help. ABIT's Internet News group, alt.comp.periphs.mainboard.abit, is an ideal forum for the public to exchange information and discuss experiences they have had with ABIT products. Many times you will see that your question has already been asked before. This is a public Internet news group and it is reserved for free discussions. Here is a list of some of the more popular ones:

alt.comp.periphs.mainboard.abit
comp.sys.ibm.pc.hardware.chips
alt.comp.hardware.overclocking
alt.comp.hardware.homebuilt
alt.comp.hardware.pc-homebuilt

5. **Ask your reseller.** Your ABIT authorized distributor should be able to provide the fastest solution to your technical problem. We sell our products through distributors who sell to resellers and stores. Your reseller should be very familiar with your system configuration and should be able to solve your problem much more efficiently than we could. After all, your reseller regards you as an important customer who may purchase more products and who can urge your friends to buy from him or her as well. They integrated and sold the system to you. They should know best what your system configuration is and your problem. They should have reasonable return or refund policies. How they serve you is also a good reference for your next purchase.
6. **Contacting ABIT.** If you feel that you need to contact ABIT directly you can send email to the ABIT technical support department. First, please contact the support team for the branch office closest to you. They will be more familiar with local conditions and problems and will have better insight as to which resellers offer what products and services. Due to the huge number of emails coming in every day and other reasons, such as the time required for problem reproduction, we will not be able to reply to every email. Please understand that we are selling through distribution channels and don't have the resources to serve every end-user. However, we will try to do our best to help every customer. Please also remember that for many of our technical support team English is a second language, you will have a better chance of getting a helpful answer if your question can be understood in the first place. Be sure to use very, simple, concise language that clearly states the problem, avoid rambling or flowery language and always list your system components. Here is the contact information for our branch offices:

North America and South America:

ABIT Computer (U.S.A.) Corporation

45531 Northport Loop West,
Fremont, California 94538, U.S.A.

Tel: 1-510-623-0500

Fax: 1-510-623-1092

sales@abit-usa.com

technical@abit-usa.com

<http://www.abit-usa.com>

U.K. and Ireland:

ABIT Computer (U.K.) Corporation Ltd.

Unit 3, 24-26 Boulton Road,
Stevenage, Herts SG1 4QX, U.K.

Tel: 44-1438-228888

Fax: 44-1438-226333

sales@abitcomputer.co.uk

technical@abitcomputer.co.uk

***Germany, Benelux (Belgium, Netherlands, Luxembourg),
Denmark, Norway, Sweden, Finland, and Switzerland:***

AMOR Computer B.V. (ABIT's European Office)

Van Coehoornstraat 7,
5916 PH Venlo, The Netherlands

Tel: 31-77-3204428

Fax: 31-77-3204420

sales@abit.nl

technical@abit.nl

<http://www.abit.nl>

***Austria, Czech, Romania, Bulgaria, Yugoslavia, Slovakia,
Slovenia, Croatia, Bosnia, Serbia, and Macedonia:***

Asguard Computer Ges.m.b.H

Schmalbachstrasse 5,
A-2201 Gerasdorf/Wien, Austria

Tel: 43-1-7346709

Fax: 43-1-7346713

asguard@asguard.at

Japan:

ABIT Computer (Japan) Co. Ltd.

Fax: 81-3-5396-5110

<http://www.abit4u.jp>

Shanghai:

ABIT Computer (Shanghai) Co. Ltd.

Tel: 86-21-6235-1829

Fax: 86-21-6235-1832

<http://www.abit.com.cn>

Russia:

ABIT Computer (Russia) Co. Ltd.

Fax: 7-095-937-2837

techrussia@abit.com.tw

<http://www.abit.ru>

France, Italy, Spain, Portugal, and Greece:

ABIT Computer France SARL

Tel: 33-1-5858-0043

Fax: 33-1-5858-0047

<http://www.abit.fr>

***All other territories not covered above please contact
Taiwan Head Office:***

When contacting our headquarters please Note we are located in Taiwan and we are 8+ GMT time. In addition, we have holidays that may be different from those in your country.

ABIT Computer Corporation

No.323, Yang Guang St., Neihu,

Taipei, 114, Taiwan

Tel: 886-2-8751-8888

Fax: 886-2-8751-3382

server_sales@abit.com.tw

market@abit.com.tw

technical@abit.com.tw

<http://www.abit.com.tw>

7. **RMA Service.** If your system has been working but it just stopped, but you have not installed any new software or hardware recently, it is likely that you have a defective component. Please contact the reseller from whom you bought the product. You should be able to get RMA service there.

8. **Reporting Compatibility Problems to ABIT.** Because of tremendous number of email messages we receive every day, we are forced to give greater weight to certain types of messages than to others. For this reason, any compatibility problem that is reported to us, giving detailed system configuration information and error symptoms will receive the highest priority. For the other questions, we regret that we may not be able to reply directly. But your questions may be posted to the Internet news group in order that a larger number of users can have the benefit of the information. Please check the news group from time to time.

Thank You

ABIT Computer Corporation

<http://www.abit.com.tw>



Technical Support Form

Company Name:

Phone Number:

Contact Person:

Fax Number:

E-mail Address:

Model	*	BIOS ID #	*
Motherboard Model No.		DRIVER REV	
OS/Application	*		
Hardware Name	Brand	Specifications	
CPU	*		
HDD	<input type="checkbox"/> IDE1 <input type="checkbox"/> IDE2		
CD-ROM-Drive	<input type="checkbox"/> IDE1 <input type="checkbox"/> IDE2		
System Memory			
ADD-ON CARD			

Problem Description:

