Triumph i7320 /// S6621

Version 1.0

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Chapter 1: Introduction

1.1. Features & Specifications

CPU

• Supports dual Intel. Xeon (Nocona) FSB 800MHz up to 3.80GHz and higher

Chipset

• Intel 7320

• Intel ICH5

• 2x Intel PXH

Networking Security

• Onboard one Cavium CN-1120 Security Micro Processor supporting IPSec/SSL

VGA

• Onboard ATi Rage XL PCI interface VGA (8MB SDRAM)

Memory

• 4x 240-pin DIMM slots

• Supports 144-bit wide dual channel DDR II 400 memory

• Up to 8GB, ECC Registered memory capacity

LAN

• 4x Intel 82546EB dual-port 64-bit Gigabit Ethernet Controllers

System BIOS

• Supports Plug-and-Play (PNP)

• Supports Advanced Configuration Power Interface (ACPI)

• Write-Protect Anti-Virus function by AWARD BIOS

• 4MB Flash ROM

Expansion Slot

• 1x PCI-X slot supporting 1-to-3 64-bit Riser Card (3.3V) connections

Internal I/O Connectors

• 1x 44-pin IDE connector

• 2x SATA connectors

• 1x VGA header

• 1x COM2 port header

• 1x USB 2.0 header (Each header support two USB 2.0 devices)

• 1x LPC debug header

• 1x Printer port header

• 1x SM Bus header (For SM Bus and I2C)

• 1x 50-pin IDE interface Compact Flash Type II socket supports DMA mode

• 1x Fiber FP-NIC LED header

• 1x Copper FP-NIC LED header

External I/O Connectors

• 1x Dual USB 2.0 port

• 1x COM1 port

• LAN Ports: Default: 4x Optical SPF GbE LAN connectors, 4x RJ-45 w/ Transformer and LED single port GbE LAN connectors Optional: [2x Optical + 6x RJ-45] or [8x RJ-45]

Miscellaneous

• EEB 3.5 form factor (12” x 13”)

• Hardware monitoring – Including Fan speeds, Voltages, System environment temperature

• Chassis intrusion detector

• 3.3V 64-bit riser card supported (Optional)

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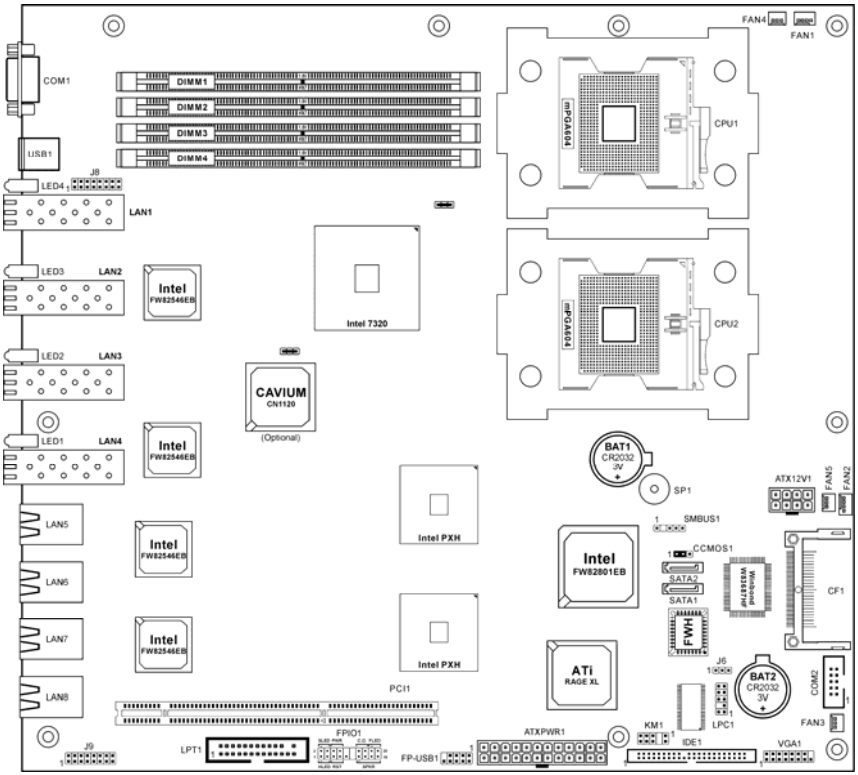
✸ **Specifications and information contained herein are subject to change without notice.**

1.2 Layout


COM1
USB1
J8
LED4
LAN1
LED3
LAN2
LED2
LAN3
LED1
LAN4
LAN5
LAN6
LAN7
LAN8
DIMM1
DIMM2
DIMM3
DIMM4
Intel
FW82546EB
Intel 7320
CAVIUM
CN1120
(Optional)
Intel PXH
Intel PXH
Intel
FW82801EB
ATi
RAGE XL
PCI1
FPIO1
J9
LPT1
FP-USB1
ATXPWR1
KM1
IDE1
LPC1
VGA1
FAN3
COM2
BAT2
CR2032
3V
J6
FWH
Winbond
W83627HF
SATA2
SATA1
CCMOS1
SMBUS1
SP1
BAT1
CR2032
3V
ATX12V1
FAN5
FAN2
CF1
FAN4
FAN1
CPU1
CPU2
mPGA604

1.3 Jumpers & Connectors Description

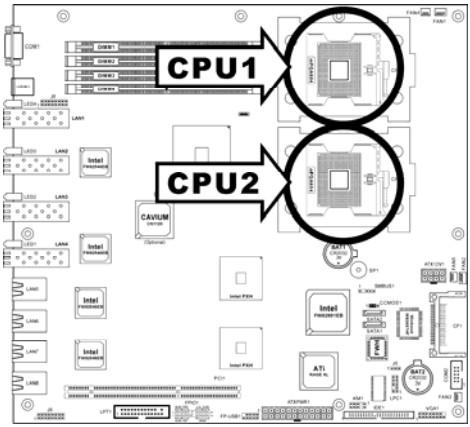
Jumpers	Description	Default Setting
CCMOS1	CMOS Clearing Header	Pins 1-2 Close (Normal)

Connectors	Description
ATX12V1	8-pin EPS 12V Power Connector
ATXPWR1	24-pin EPS 12V Power Connector
COM2	COM Port Connector
DIMM1~DIMM4	DDRII DIMM Slots
FAN1/FAN4	CPU and System Fan Power Connectors for CPU1
FAN2/FAN5	CPU and System Fan Power Connectors for CPU2
FAN3	Auxiliary Fan Power Connector
FPIO1	Front Panel Switch Connection Header
FP-USB1	Additional USB Port Connection Header
IDE1	IDE Disk Drive Connector
J6	Connection Header for Case Intrusion Detector
J8/J9	LED Connectors for Network Interface
KM1	External Keyboard/Mouse Connection Header
LPC1	Connection Header for Low Pin Count (reserved for internal testing)
LPT1	Connection Header for Parallel Port
PCI1	PCI-X 64bit/133Mhz Expansion Slot (3.3V)
SATA1/SATA2	Serial ATA Connectors
SMBUS1	System Management Bus Connection Header
VGA1	VGA Output Connection Header

Chapter 2: Hardware Setup

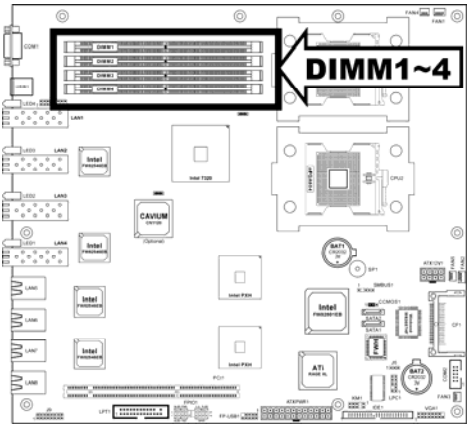
2.1 CPU Socket

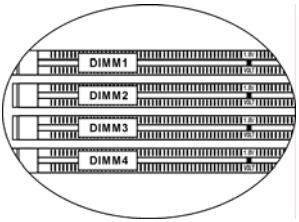
This server board provides dual 604-pin Zero Insertion Force (ZIF) sockets to install the Intel Xeon CPU. You may install either one or two CPUs, but to set up system with only one CPU, it MUST be installed in the primary socket (socket "CPU1" in this model). To install a second processor, you must verify that the second processor is identical to the first processor with same voltage and speed. Using non-identical processors could cause system failure.



2.2 System Memory

This server board provides four 240-pin Double Data Rate (DDRII) Dual Inline Memory Module (DIMM) slots for Registered ECC DIMM modules with memory expansion size up to 8GB.





ATTENTION: Populate the DDR DIMMs in-order and in-pair (of the same type and size) by starting from ***DIMM1+DIMM2 to DIMM3+DIMM4.***

Single Channel				Dual Channel			
DIMM1	**DIMM2**	**DIMM3**	**DIMM4**	**DIMM1**	**DIMM2**	**DIMM3**	**DIMM4**
x				**x**	**x**		
x		**x**		**x**	**x**	**x**	**x**
	x						
	x		**x**				

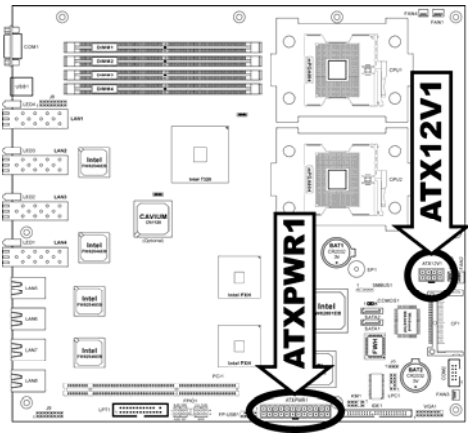
2.3 Connectors, Headers and Switches

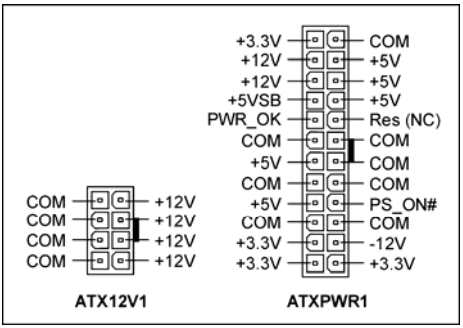
All the connectors, headers and switches mentioned here are depending on your system configuration. Some features you may (or may not) have to connect or to configure depending on the peripherals you have connected.

WARNING: Always power off the computer and unplug the AC power cord before adding or removing any peripheral or component. Failing to so may cause severe damage to your system board and/or peripherals. Plug in the AC power cord only after you have carefully checked everything. 2.3.1.

2.3.1 EPS Power Connectors

These two provides the connection to EPS12V power supply.





2.3.2 FAN Connectors

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

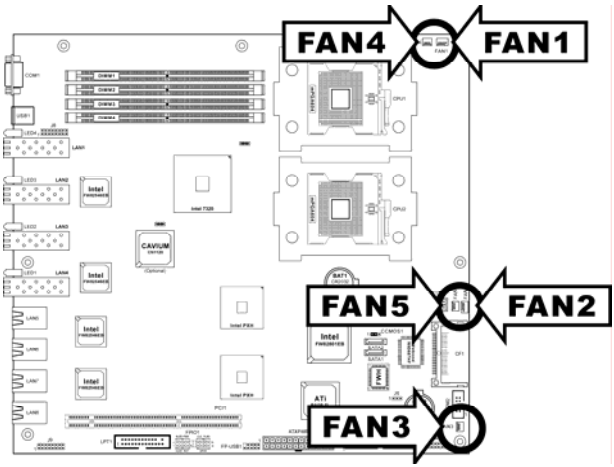
The CPU must be kept cool by using a powerful fan with heatsink. The system is capable of monitoring the speed of the CPU fan.

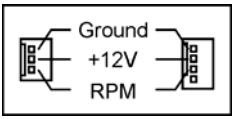
• **FAN1/FAN4:** CPU and System Fan Power Connectors for CPU1

• **FAN2/FAN5:** CPU and System Fan Power Connectors for CPU2

• **FAN3:** Auxiliary Fan Power Connector

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



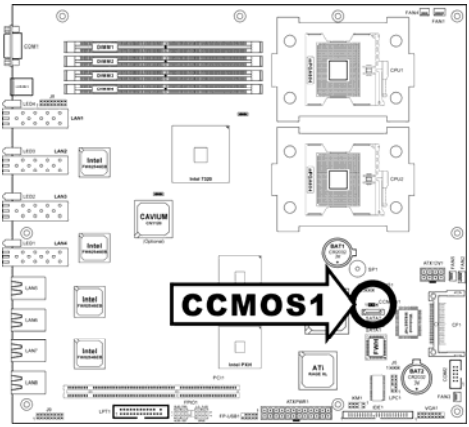


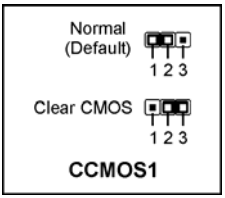
2.3.3. CMOS Memory Clearing Header

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.



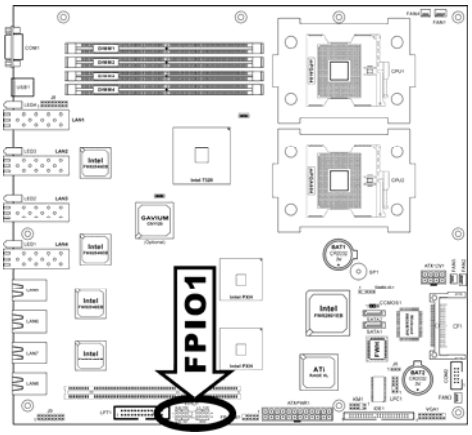


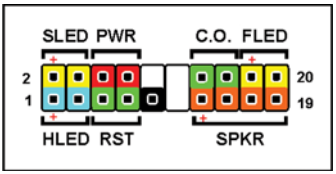
ATTENTION: Turn the system power off first (including the +5V standby power) before clearing the CMOS memory. Failing to do so may cause your system to work abnormally or malfunction.

2.3.4. Connection Header for Front Panel Switches & Indicators

This header is used for connecting switches and LED indicators on the chassis front panel.

Watch the power LED pin position and orientation. The mark "+" align to the pin in the figure below stands for positive polarity for the LED connection. Please pay attention to connect these headers. A wrong orientation will only cause the LED not lighting, but a wrong connection of the switches could cause system malfunction.

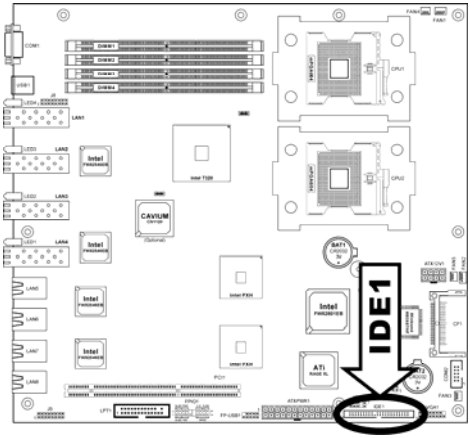


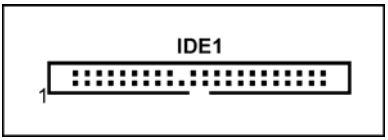


- **HLED (Pin 1, 3):** Connects to the HDD LED cable.
- **RST (Pin 5, 7):** Connects to the Reset Switch cable.
- **SPKR (Pin 13, 15, 17, 19)**: Connects to the System Speaker cable.
- **SLED (Pin 2, 4):** Connects to the Suspend LED cable.
- **PWR (Pin 6, 8):** Connects to the Power Switch cable.
- **C.O. (Pin 14, 16):** Connects to Case Open (Intrusion) device.
- **FLED (Pin 18, 20)**: Connects to the Fault LED cable.

2.3.5. IDE Disk Drive Connector

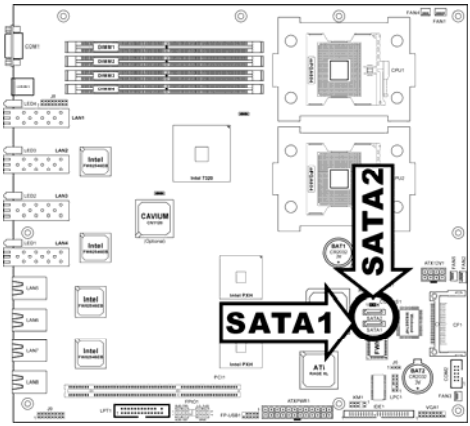
This connector provides IDE hard drive connection (Pitch 2.5).

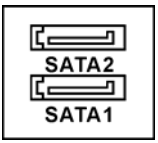




2.3.6. Serial ATA connectors

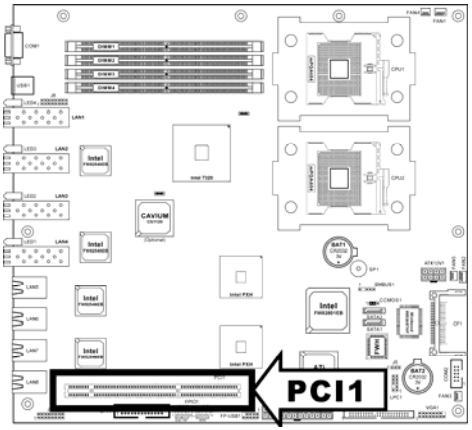
These connectors each provide one Serial ATA channel connection.

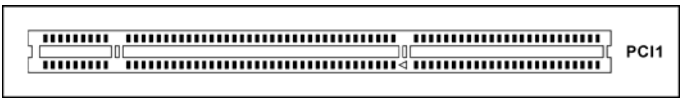




2.3.7. PCI Slot

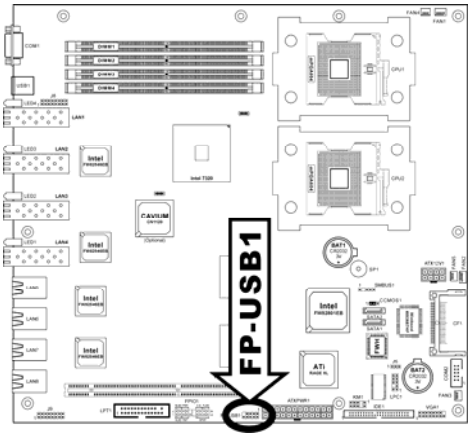
This slot provides 1-to-3 64-bit PCI Riser Card (3.3V) connections.

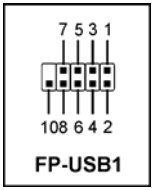




2.3.8. Connection Header for Additional USB Port

This header provides two additional USB port connections.

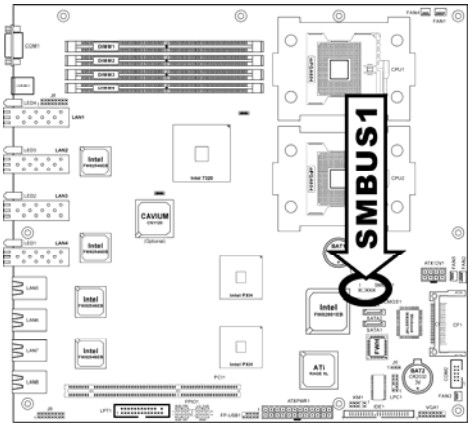


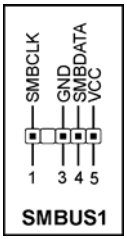


Pin	Definition	Pin	Definition
1	VCC	2	VCC
3	- Data 0	4	- Data 1
5	+ Data 0	6	+ Data 1
7	GND	8	GND
		10	NC

2.3.9. Connection Header for System Management Bus

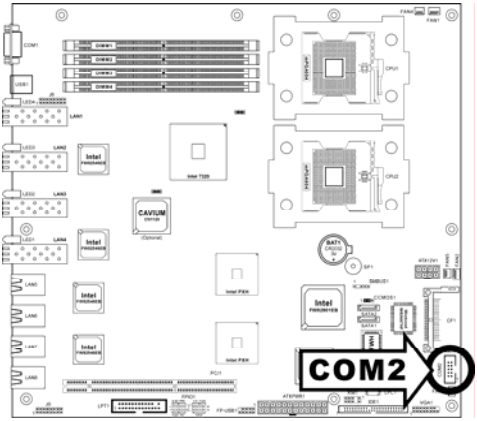
This header provides the connection to system management bus (SMBus).

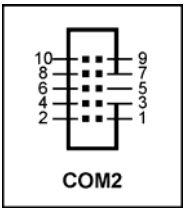




2.3.10. Connection Header for Additional COM Port

This header provides one external COM2 port connection.

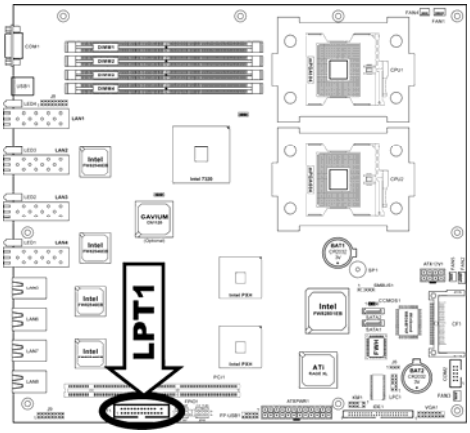


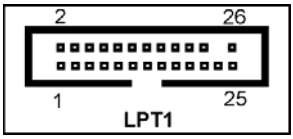


Pin	Definition	Pin	Definition
1	DCD (Data Carrier Detect)	2	RXD (Receive-Data)
3	TXD (Transfer-Data)	4	DTR (Data-Terminal-Ready)
5	GND	6	DSR (Data-Set-Ready)
7	RTS (Request-to-Send)	8	CTS (Clear-to-Send)
9	RI (Ring-Indicator)	10	VCC (+5V)

2.3.11. Connection Header for Parallel Port

This header provides one external LPT port connection.

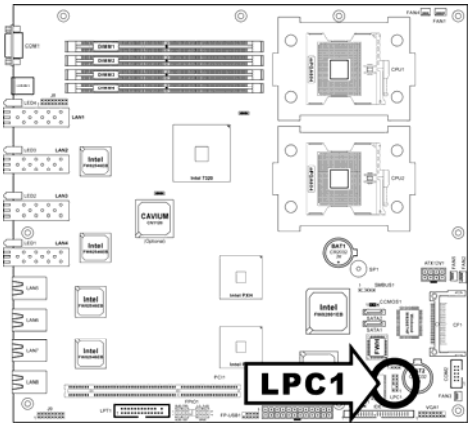


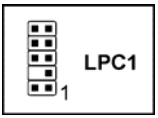


Pin	Definition	Pin	Definition
1	STB#	2	AFD#
3	PD0	4	ERR#
5	PD1	6	INIT#
7	PD2	8	SLIN#
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	GND

2.3.12. Connection Header for Low Pin Count

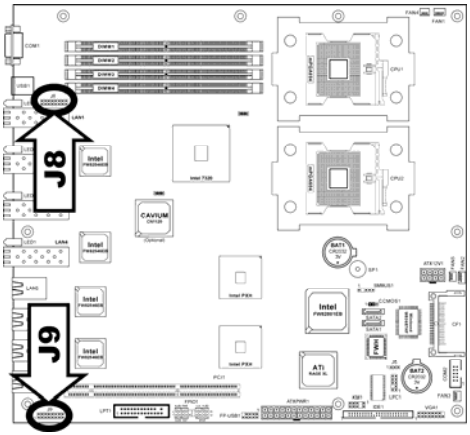
(Reserved for internal testing)

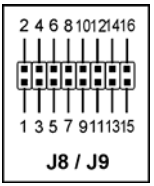




2.3.13. LED Connection Header for Network Interface

These headers are reserved for connecting LED indicators of Network Interface.

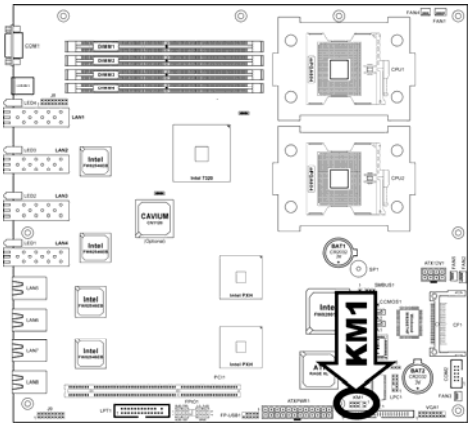


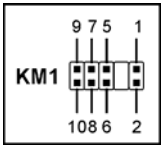


J8				J9			
Pin	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**
1	LAN1_ACT	2	LAN1_Link	1	LAN5_ACT	2	LAN5_Link
3	LAN1_100	4	LAN1_1000	3	LAN5_100	4	LAN5_1000
5	LAN2_ACT	6	LAN2_Link	5	LAN6_ACT	6	LAN6_Link
7	LAN2_100	8	LAN2_1000	7	LAN6_100	8	LAN6_1000
9	LAN3_ACT	10	LAN3_Link	9	LAN7_ACT	10	LAN7_Link
11	LAN3_100	12	LAN3_1000	11	LAN7_100	12	LAN7_1000
13	LAN4_ACT	14	LAN4_Link	13	LAN8_ACT	14	LAN8_Link
15	LAN4_100	16	LAN4_1000	15	LAN8_100	16	LAN8_1000

2.3.14 Connection Header for External Keyboard/Mouse

This header provides the external connection to keyboard and mouse.

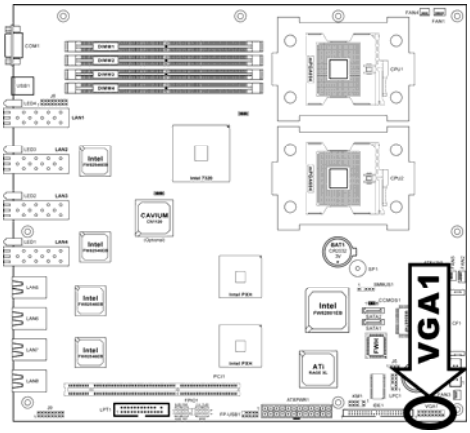


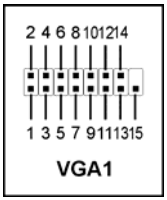


Pin	Definition	Pin	Definition
1	VCC	2	VCC
3	NC	4	NC
5	KB Data	6	Mouse Data
7	Ground	8	Ground
9	KB Clock	10	Mouse Clock

2.3.15. Connection Header for VGA Output

This header provides one external VGA port connection.

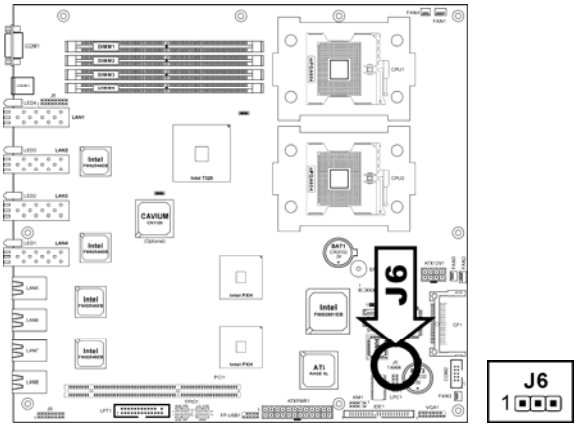




Pin	Definition	Pin	Definition
1	Red	2	Green
3	Blue	4	NC
5	Ground	6	Ground
7	Ground	8	Ground
9	VCC	10	Ground
11	NC	12	DDC Data
13	H.SYNC	14	V.SYNC
15	DDC Clock		

2.3.16. Connection Header for Case Intrusion Detector

This header provides the connection to external Case Intrusion Detector.



2.3.17 External I/O Panel

- **COM1:** Serial port connector
- **USB1:** USB 2.0 connectors
- **LAN1~LAN4:** Optical SPF GbE LAN connectors (Default)
- **LAN5~LAN8:** RJ-45 w/ Transformer and LED single port GbE LAN connectors (Default)

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:

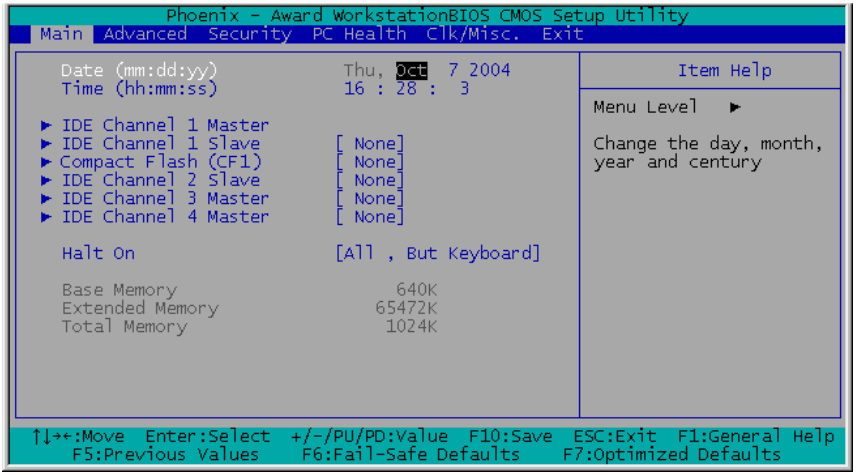
```
Press DEL to run setup
```

If this message disappears before you respond, restart the system by pressing <Ctrl> + <Alt> + <Del> 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 <Del> key, the main menu screen appears.

3.1 Main Menu



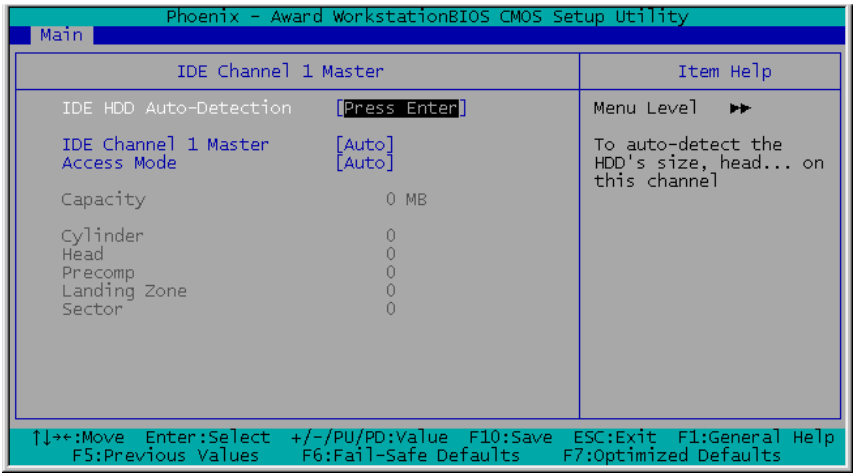
Date (mm:dd:yy)
This item sets the date you specify (usually the current date) in the format of [Month], [Date], and [Year].

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

IDE Channel 1 Master/Slave, Compact Flash (CF1), IDE Channel 2 Slave, IDE Channel 3 Master, IDE Channel 4 Master
Move cursor to each of these items, and then press <Enter> key to enter its sub-menu.

- **Channel 1 Master/Slave, Compact Flash (CF1), IDE Channel 2 Slave, IDE Channel 3 Master, IDE Channel 4 Master: Master, IDE Primary Slave**

Click <Enter> key to enter its submenu:



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 Channel 1 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.

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.

Back to Main Menu:

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.

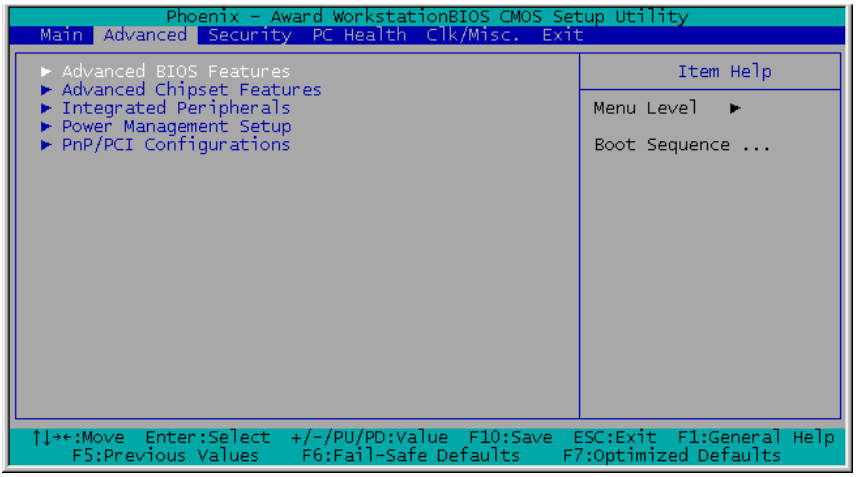
[All, But Keyboard]: The system-boot will stop for all errors but keyboard error.

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.

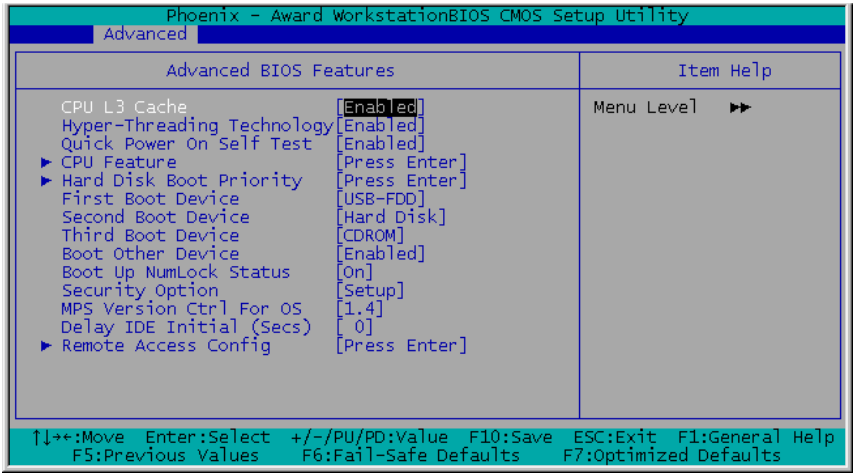
Extended Memory
This item displays the amount of extended memory detected during system boot-up.

Total Memory
This item displays the total memory available in the system.

3.2 Advanced Menu



3.2.1. Advanced BIOS Features

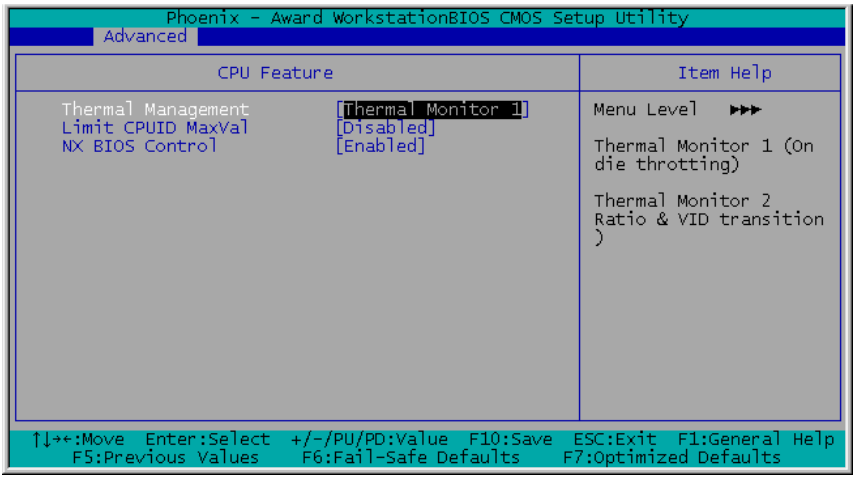


CPU L3 Cache:
This item is used to enable the L3 cache (default setting), and appears only for certain CPU (Intel processor with HT Technology Extreme Edition) that possesses L3 cache.

Hyper-Threading Technology:
This item is used to enable the functionality of the processor with Hyper-Threading Technology and will appear only when using such processor.
The Hyper-Threading Technology helps your PC work more efficiently by maximizing processor resources and enabling a single processor to run two separate threads of software simultaneously, bringing forth greater performance and system responsiveness when running multiple applications at once.

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.

CPU Feature:
Click <Enter> key to enter its submenu:



Thermal Management
This item selects the type of thermal monitoring.

Limit CPUID MaxVal
When set to [Enabled], this item limits the CPUID maximum value to 3, which is usually required for older OS like Windows NT4.0.
Leave this item to its default [Disabled] settings for OS like Windows XP.

NX BIOS Control
When set to [Disabled], this NX features flag will be forced to return to 0.

↳ Back to Advanced BIOS Features Setup Menu:

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.

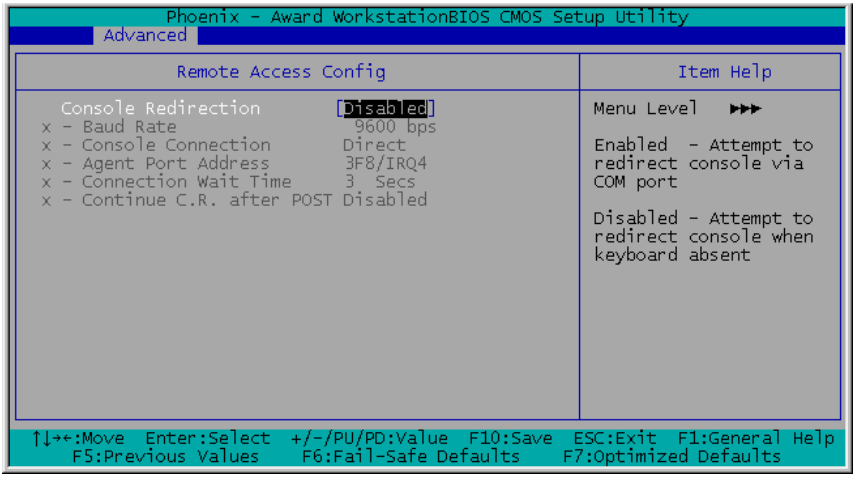
NOTE: Don't forget your password. If you forget the password, you will have to open the computer case and clear all information in the CMOS before you can start up the system. But by doing this, you will have to reset all previously set options.

MPS Version Control For OS
This item specifies which version of MPS (Multi-Processor Specification) this motherboard will use. Leave this item to its default setting.

Delay IDE Initial (Secs):
This item allows the BIOS to support some old or special IDE devices by prolonging this delay time. A larger value will give more delay time to the device for which to initialize and to prepare for activation.

Remote Access Config:

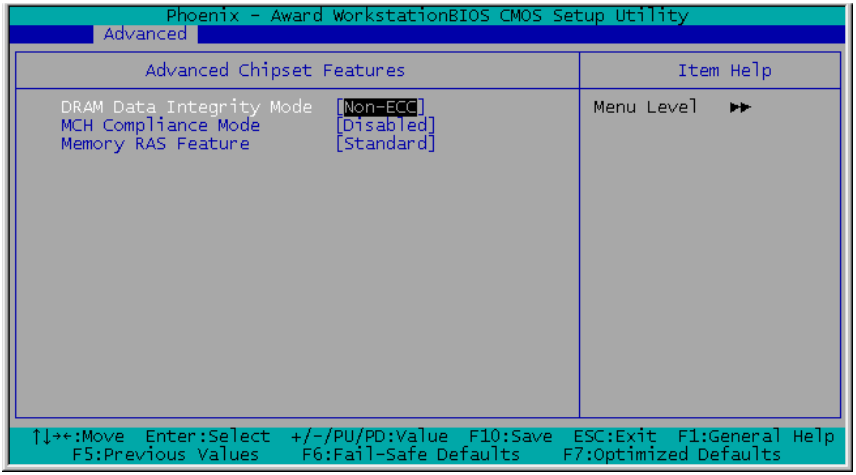
This item enables remote access to system through serial port.
Click <Enter> key to enter its submenu:



Console Redirection

[Enabled]: Attempt to redirect console via COM port.
[Disabled]: Attempt to redirect console when keyboard absent.

3.2.2. Advanced Chipset Features



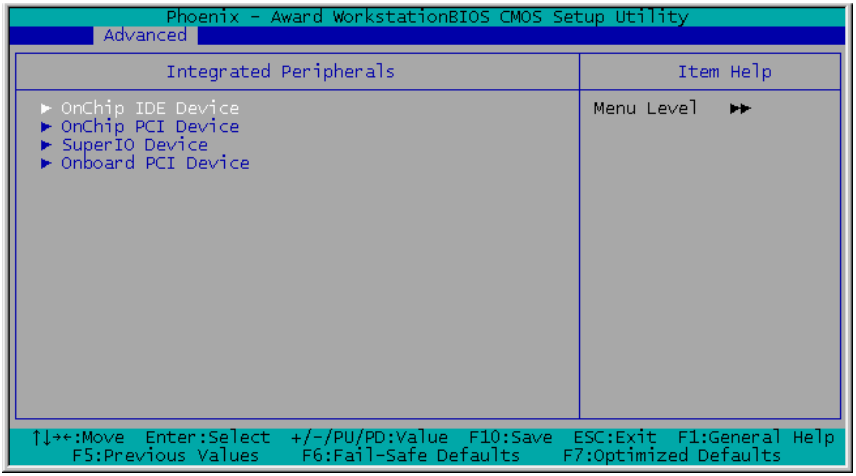
DRAM Data Integrity Mode
This item selects the type of DRAM in your system. ECC is “Error Checking and Correction”. Choose the ECC option only when your memory is ECC type.

MCH Compliance Mode
This item controls the entry by the MCH into Compliance Mode on all PCI Express ports.

Memory RAS Feature
This item selects the special feature for DIMM Sparing or Mirroring.

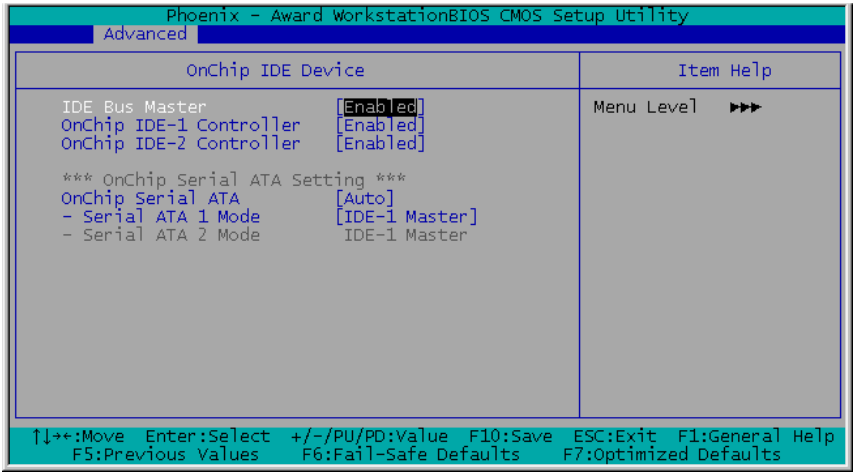
➢ **Back to Advanced Chipset Features Menu:**

3.2.3. Integrated Peripherals



➢ **OnChip IDE Device:**

Click <Enter> key to enter its submenu:



IDE Bus Master
This option enables or disables the IDE bus mastering capability under the DOS environment.

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.

On-Chip Serial ATA
This item determines the function for on-chip Serial ATA.
[Disabled]: Disable the Serial ATA controller.
[Auto]: Allows the Serial ATA controller to be arranged by BIOS automatically.
[Combined Mode]: Parallel ATA and Serial ATA are combined together. Supports up to 4 IDE drives.
[Enhanced Mode]: Enable both Parallel ATA and Serial ATA. Supports up to 6 IDE drives.

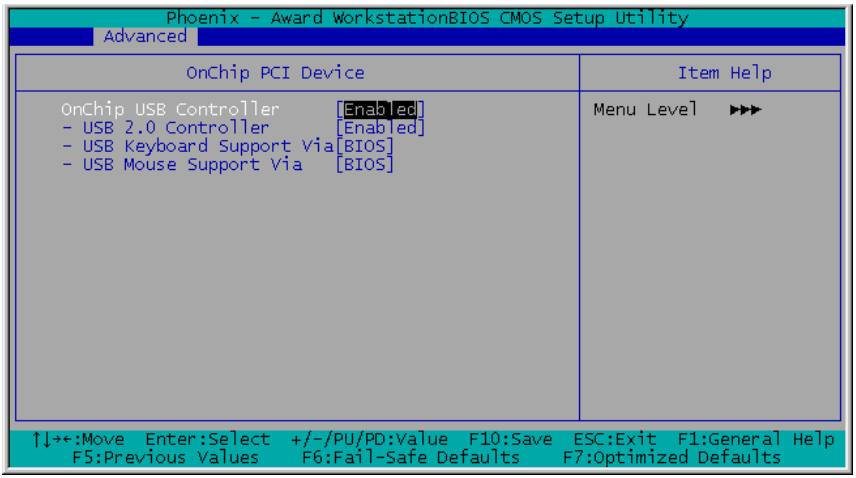
✷ **Serial ATA 1 Mode / Serial ATA 2 Mode:**
This item determines the function mode for SATA1 and SATA 2 Port. Both SATA1 and SATA2 will be served each as one single IDE connector after selected as the following modes:

Mode	Serial ATA Port1 (SATA1)	Serial ATA Port2 (SATA2)	Description
Enhanced	IDE-3 Master	IDE-4 Master	● SATA1 serves as IDE-3 Master ● SATA2 serves as IDE-4 Master ● OnChip IDE-1 and IDE-2 controller enabled
	IDE-4 Master	IDE-3 Master	● SATA1 serves as IDE-4 Master ● SATA2 serves as IDE-3 Master ● OnChip IDE-1 and IDE-2 controller enabled
Combined	IDE-1 Master	IDE-1 Slave	● SATA1 serves as IDE-1 Master ● SATA2 serves as IDE-1 Slave ● OnChip IDE-1 controller disabled

Mode	Serial ATA Port1 (SATA1)	Serial ATA Port2 (SATA2)	Description
	IDE-1 Slave	IDE-1 Master	● SATA1 serves as IDE-1 Slave ● SATA2 serves as IDE-1 Master ● OnChip IDE-1 controller disabled
	IDE-2 Master	IDE-2 Slave	● SATA1 serves as IDE-2 Master ● SATA2 serves as IDE-2 Slave ● OnChip IDE-1 controller disabled
	IDE-2 Slave	IDE-2 Master	● SATA1 serves as IDE-2 Slave ● SATA2 serves as IDE-2 Master ● OnChip IDE-1 controller disabled
SATA Only	IDE-1 Master	IDE-2 Master	● SATA1 serves as IDE-1 Master ● SATA2 serves as IDE-2 Master ● OnChip IDE-1 and IDE-2 controller disabled
	IDE-2 Master	IDE-1 Master	● SATA1 serves as IDE-2 Master ● SATA2 serves as IDE-1 Master ● OnChip IDE-1 and IDE-2 controller disabled

↳ OnChip PCI Device:

Click <Enter> key to enter its submenu:



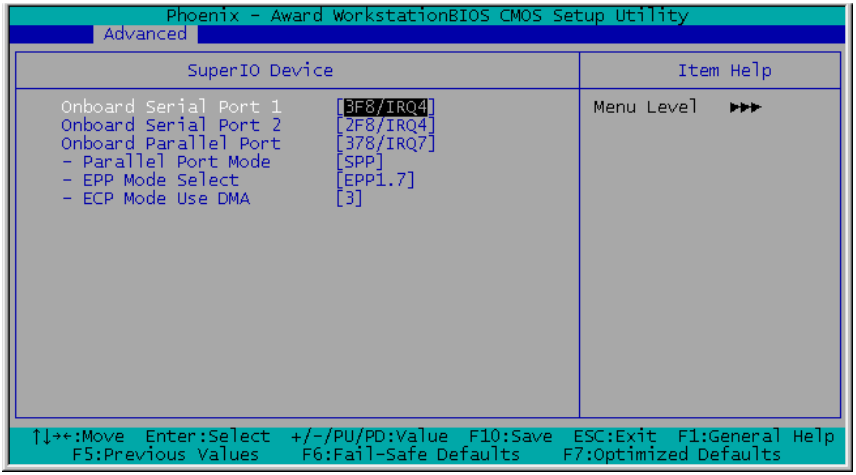
OnChip USB Controller
This option enables or disables the USB controller.

✸ **USB 2.0 Controller:**
This option enables or disables the USB 2.0 controller.

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

✸ **USB Mouse Support Via:**
This item allows you to select [BIOS] for using USB mouse in DOS environment, or [OS] in OS environment. _

SuperIO Device:
Click <Enter> key to enter its submenu:



Onboard Serial Port 1 / Onboard Serial Port 2:
This item determines which I/O addresses the onboard Serial Port controller will access.
[Auto]: The system automatically select an I/O address for the onboard Serial Port.
[3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3]: Allows you to manually select an I/O address for the onboard Serial Port.
[Disabled]: Disables the onboard Serial Port.

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/IRQ7]: This option allows the parallel port to use [378/IRQ7] 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/IRQ5]: This option allows the parallel port to use [278/IRQ5] as its I/O port address.
[3BC/IRQ7]: This option allows the parallel port to use [3BC/IRQ7] as its I/O port address.

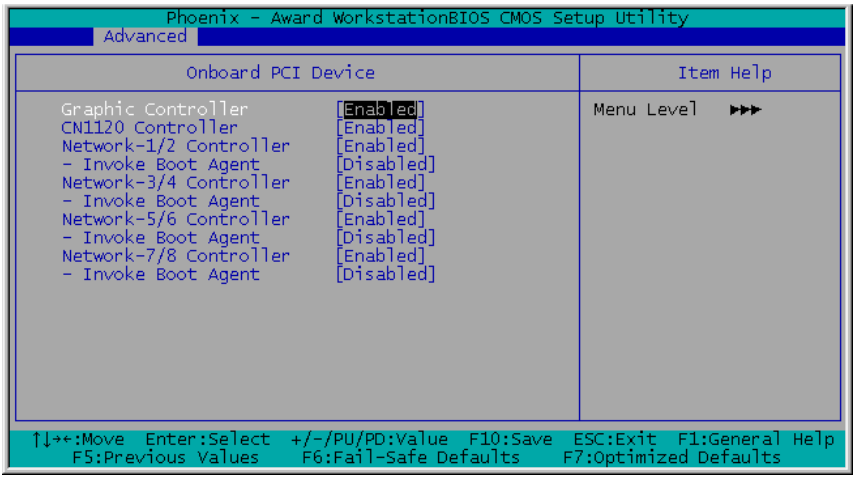
✸ Parallel Port Mode:
This item specifies the parallel port mode.
[SPP]: (Standard Parallel Port) Allows bi-directional parallel port operation at normal speed.
[EPP]: (Enhanced Parallel Port) Allows bi-directional parallel port operation at maximum speed.
[ECP]: (Extended Capabilities Port) Allows bi-directional parallel port operation at a speed faster than the normal mode's data transfer rate.
[ECP+EPP]: Allows parallel port operation at ECP and EPP mode.

✸ EPP Mode Select:
This item selects the EPP mode.

✸ ECP Mode Use DMA:
This item selects the DMA channel of the parallel port.

↳ Onboard PCI Device:

Click <Enter> key to enter its submenu:



Graphic Controller

This item enables or disables the onboard graphic controller.

CN1120 Controller

This item enables or disables the onboard security processor.

Network-1/2 Controller

This item enables or disables the onboard LAN1/LAN2 Controller.

✷ **Invoke Boot Agent**

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.

Network-3/4 Controller

This item enables or disables the onboard LAN3/LAN4 Controller.

✷ **Invoke Boot Agent**

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.

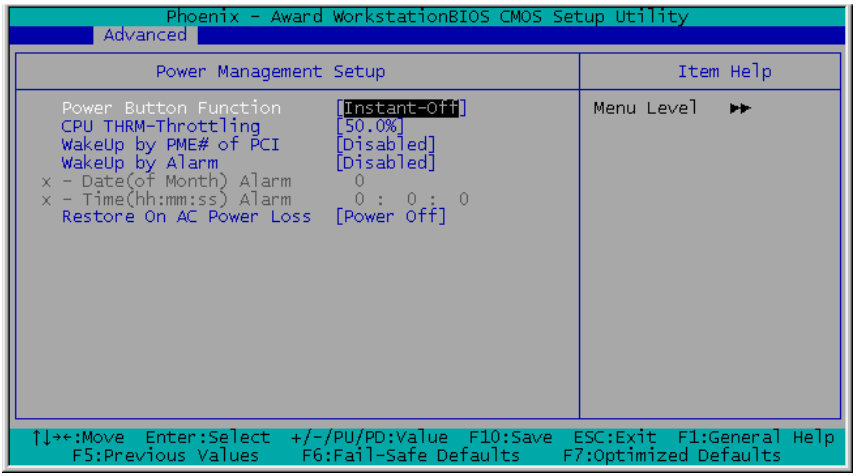
Network-5/6 Controller
This item enables or disables the onboard LAN5/LAN6 Controller.

✷ **Invoke Boot Agent**
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.

Network-7/8 Controller
This item enables or disables the onboard LAN7/LAN8 Controller.

✷ **Invoke Boot Agent**
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.

3.2.4. Power Management Setup



Power Button Function
This item selects the method of powering off your system.
[Delay 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.

CPU THRM-Throttling
This item controls the CPU speed by cutting down its regular power to a percentage during the STR (Suspend To RAM) state.

Wake-Up by PME# of PCI
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.

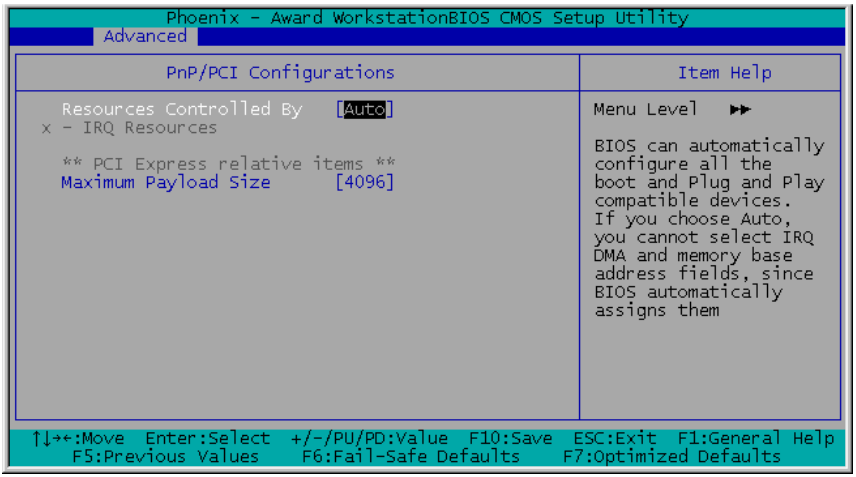
WakeUp by Alarm
When set to [Enabled], you can set the date and time you would like the Soft-Off PC to power-on in the "Date (of Month) Alarm" and "Time (hh:mm:ss) Alarm" items. However, if the system is being accessed by incoming calls or the network (Resume On Ring/LAN) prior to the date and time set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

✸ Resume Time (hh:mm:ss)
This item sets the time you would like the system to power-on.

Restore On AC Power Loss
This item selects the system action after an AC power failure.
[Power Off]: When power returns after an AC power failure, the system's power remains off. You must press the Power button to power-on the system.
[Power On]: When power returns after an AC power failure, the system's power will be powered on automatically.
[Last State]: When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power on when power returns.

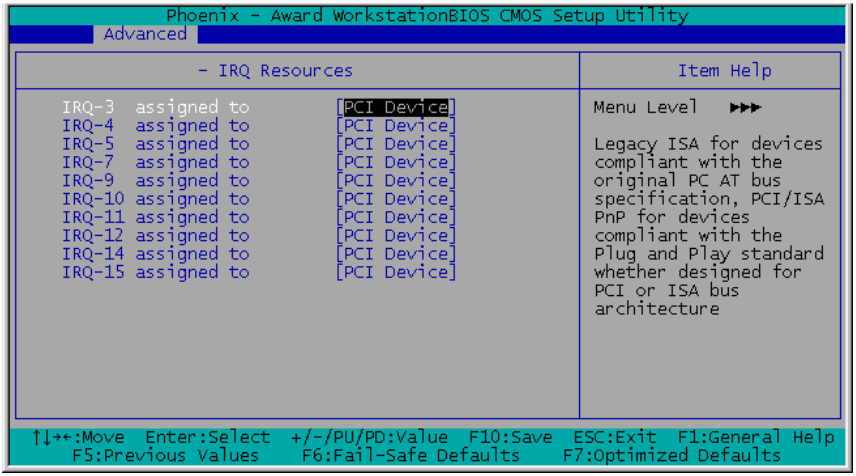
3.2.5. PnP/PCI Configurations



Resources Controlled By
This item configures all of the boot and Plug-and-Play compatible devices.
[Auto]: The system will automatically detect the settings.
[Manual]: Choose the specific IRQ resources in the “IRQ Resources” menu.

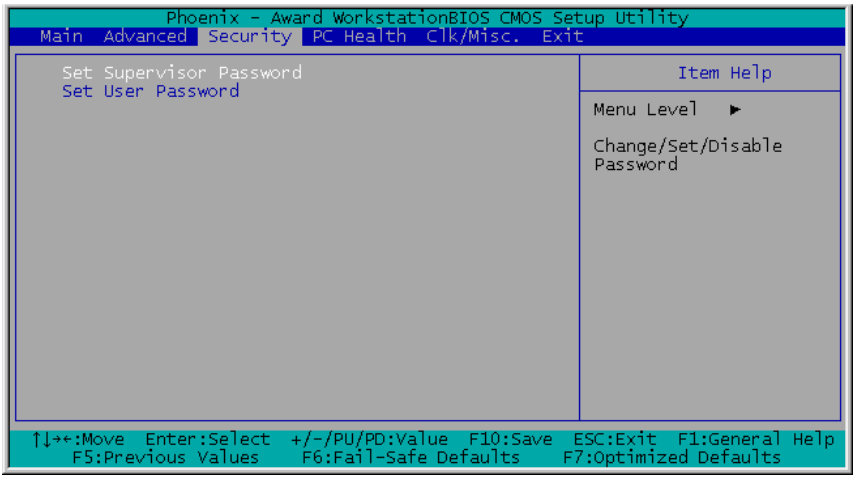
IRQ Resources

Click <Enter> key to enter its submenu:
This item sets each system interrupt to either [PCI Device] or [Reserved].



Maximum Payload Size:
This item sets the maximum TLP payload size for the PCI Express devices.

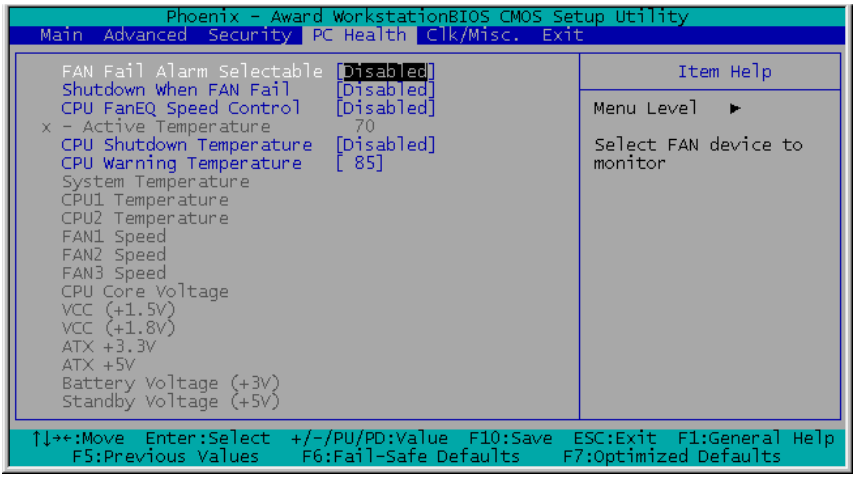
3.3. Security Menu



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



FAN Fail Alarm Selectable
This item selects the fan that will be monitored for malfunction.

Shutdown When CPUFAN Fail
When set to [Enabled], the system will be shut down if the CPU fan is not running.

CPU FanEQ Speed Control
This item allows you to control the CPU fan speed down to a specific percentage.

When set to a specific percentage, the CPU fan speed will run at the percentage you set in this item if the temperature limit set in the item “Active Temperature” is not exceeded.

The CPU fan speed will run at 100% regardless of what the percentage you set in this item if the temperature limit set in the item “Active Temperature” is exceeded.

✷ **Active Temperature**
This item sets the temperature limit that would activate the function of “CPU FanEQ Speed Control” option.

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

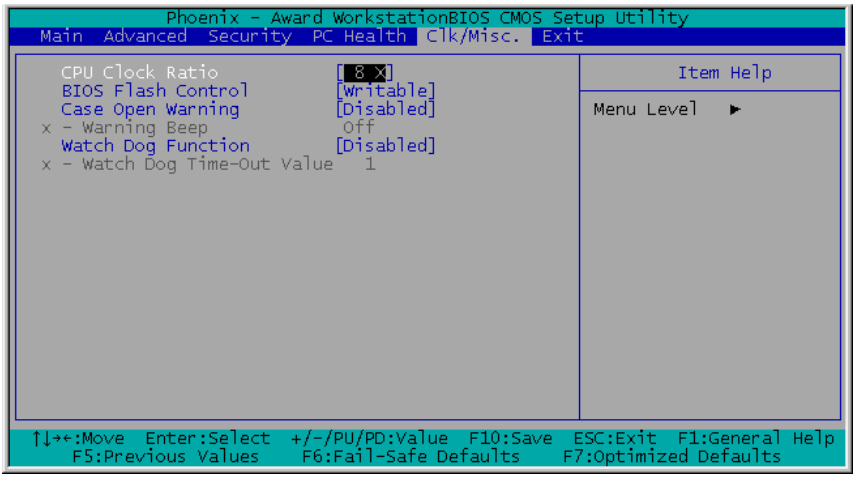
CPU Warning Temperature:
This item selects the CPU's warning temperature limit. Once the system has detected that the CPU's temperature exceeded the limit, warning beeps will sound.

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.

BIOS Flash Control
This option protects the BIOS contents from accidentally writing attempt.

NOTE: Make sure to set this item to “Non-Protected” when flashing the BIOS.

Case-Open Warning
This option controls the function for case-opening detection device connected at pin-7 and pin-8 at FPIO1 header.
[Disabled]: Disable the Case-Open Detection.
[Enabled]: Enable the Case-Open Detection.
[Cleared]: Clear the warning message when the case-opening situation is detected.

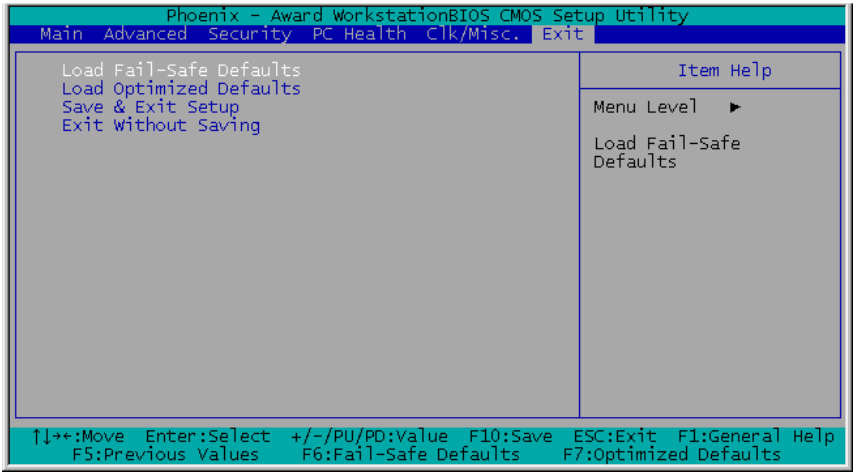
✷ **Warning Beep**
This option controls the onboard buzzer to beep when the case-opening situation is detected.

Watch Dog Function
This option controls the function for Watch Dog.
[Disabled]: Disable the Watch Dog function.
[Enabled/Sec.]: Enable the Watch Dog function by the timer based on seconds.
[Enabled/Min.]: Enable the Watch Dog function by the timer based on minutes.

✷ **Watch Dog Time-Out Value**
Type in the Time-Out value for your Watch Dog function.

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.

Glossary

ACPI (Advanced Configuration and Power Interface): a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

AGP (Accelerated Graphics Port): a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs only at 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

ATAPI (AT Attachment Packet Interface): also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

ATX: the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

Bandwidth: refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path can carry. Greater bandwidth results in greater speed.

BBS (BIOS Boot Specification): a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails. At that point, the next IPL device is called upon to attempt loading of the OS.

BIOS (Basic Input/Output System): the program that resides in the ROM chip, which provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

Buffer: a portion of RAM which is used to temporarily store data; usually from an application though it is also used when printing and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it to a disk drive. While

this improves system performance (reading to or writing from a disk drive a single time is much faster than doing so repeatedly) there is the possibility of losing your data should the system crash. Information in a buffer is temporarily stored, not permanently saved.

Bus: a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

Bus mastering: allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

Cache: a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times since the information is stored in SRAM instead of slower DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

Closed and open jumpers: jumpers and jumper pins are active when they are “on” or “closed”, and inactive when they are “off” or “open”.

CMOS (Complementary Metal-Oxide Semiconductors): chips that hold the basic startup information for the BIOS.

COM port: another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

DDR (Double Data Rate): a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

DIMM (Dual In-line Memory Module): faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

DIMM bank: sometimes called DIMM socket because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

DMA (Direct Memory Access): channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other

tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.
DRAM (Dynamic RAM): widely available, very affordable form of RAM which looses data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

ECC (Error Correction Code or Error Checking and Correcting): allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they're found.

EEPROM (Electrically Erasable Programmable ROM): also called Flash BIOS, it is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN's BIOS updates can be found at http://www.tyan.com

ESCD (Extended System Configuration Data): a format for storing information about Plug-n-Play devices in the system BIOS. This information helps properly configure the system each time it boots.

Firmware: low-level software that controls the system hardware.

Form factor: an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX.

Global timer: onboard hardware timer, such as the Real-Time Clock (RTC).

HDD: stands for Hard Disk Drive, a type of fixed drive.

H-SYNC: controls the horizontal synchronization/properties of the monitor.

HyperTransport™: a high speed, low latency, scalable point-to-point link for interconnecting ICs on boards. It can be significantly faster than a PCI bus for an equivalent number of pins. It provides the bandwidth and flexibility critical for today's networking and computing platforms while retaining the fundamental programming model of PCI.

IC (Integrated Circuit): the formal name for the computer chip.

IDE (Integrated Device/Drive Electronics): a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

IDE INT (IDE Interrupt): a hardware interrupt signal that goes to the IDE.

I/O (Input/Output): the connection between your computer and another piece of hardware (mouse, keyboard, etc.)

IRQ (Interrupt Request): an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

Latency: the amount of time that one part of a system spends waiting for another part to catch up. This occurs most commonly when the system sends data out to a peripheral device and has to wait for the peripheral to spread (peripherals tend to be slower than onboard system components).

NVRAM: ROM and EEPROM are both examples of Non-Volatile RAM, memory that holds its data without power. DRAM, in contrast, is volatile.

Parallel port: transmits the bits of a byte on eight different wires at the same time.

PCI (Peripheral Component Interconnect): a 32 or 64-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

PCI-to-PCI bridge: allows you to connect multiple PCI devices onto one PCI slot.

Pipeline burst SRAM: a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

PXE (Preboot Execution Environment): one of four components that together make up the Wired for Management 2.0 baseline specification. PXE was designed to define a standard set of preboot protocol services within a client with the goal of allowing networked-based booting to boot using industry standard protocols.

RAID (Redundant Array of Independent Disks): a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly and multiple hard drives will appear as a single drive to the operating system. RAID level 0 is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is both striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

RAIDIOS: RAID I/O Steering (Intel)

RAM (Random Access Memory): technically refers to a type of memory where any byte can be accessed without touching the adjacent data and is often referred to the system's main memory. This memory is available to any program running on the computer.

ROM (Read-Only Memory): a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

SDRAM (Synchronous Dynamic RAM): called as such because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one address bank before opening the next.

Serial port: called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

SCSI Interrupt Steering Logic (SISL): Architecture that allows a RAID controller, such as AcceleRAID 150, 200 or 250, to implement RAID on a system board-embedded SCSI bus or a set of SCSI busses. SISL: SCSI Interrupt Steering Logic (LSI) (only on LSI SCSI boards)

Sleep/Suspend mode: in this mode, all devices except the CPU shut down.

SDRAM (Static RAM): unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

SLI (Scalable Link Interface): NVIDIA SLI technology links two graphics cards together to provide scalability and increased performance. NVIDIA SLI takes advantage of the increased bandwidth of the PCI Express bus architecture, and features hardware and software innovations within NVIDIA GPUs (graphics processing units) and NVIDIA MCPs (media and communications processors). Depending on the application, NVIDIA SLI can deliver as much as two times the performance of a single GPU configuration.

Standby mode: in this mode, the video and hard drives shut down; all other devices continue to operate normally.

UltraDMA-33/66/100: a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without a proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

USB (Universal Serial Bus): a versatile port. This one port type can function as a serial, parallel, mouse, keyboard or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

VGA (Video Graphics Array): the PC video display standard

V-SYNC: controls the vertical scanning properties of the monitor.

ZCR (Zero Channel RAID): PCI card that allows a RAID card to use the onboard SCSI chip, thus lowering cost of RAID solution

ZIF Socket (Zero Insertion Force socket): these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shifts the processor over and down, guiding it into the board and locking it into place.

Technical Support

If a problem arises with your system, you should turn to your dealer for help first. Your system has most likely been configured by them, and they should have the best idea of what hardware and software your system contains. Furthermore, if you purchased your system from a dealer near you, you can bring your system to them to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: http://www.tyan.com
3. Contact your dealer for help BEFORE calling TYAN.
4. Check the TYAN user group: alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.

Notice for the USA
Compliance Information Statement (Declaration of Conformity Procedure) DoC
FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

This device may not cause harmful interference, and
This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and the receiver.
Plug the equipment into an outlet on a circuit different from that of the receiver.
Consult the dealer on an experienced radio/television technician for help.

Notice for Canada
This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'ineteference radio.)

Notice for Europe (CE Mark)
This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

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