



**M215X
USER MANUAL**

**Arima Computer Corp.
Building Your Competitive Advantage**

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Technical Support

If a problem arises with your system during installation or operation and is unable to be resolved from the user manual, consult the following list of resources for help:

- ✓ Contact the place of purchase for help. This is the recommended solution as they can provide the quickest assistance.
- ✓ Visit Arima Computer Corp. website for up to the minute FAQ, guides and updates. The website can be found at: <http://www.arima.com.tw/server>
- ✓ Or contact our support staff at: server@arima.com.tw

About this User Guide

This manual contains some special icons that accompany special sections that are meant to help you along in the installation process. The special sections contain useful and/or critical information that you should know. Watch for these icons as you read through the manual.

Type of icons:	Description:
NOTE 	This icon indicates useful and timely information that will aid you in the setup.
WARNING 	This icon indicates information on dangerous and/or costly behavior to avoid.

Safety Instruction

- ✓ Keep this manual for future reference.
- ✓ Keep the equipments in a safe, cool, dry place.
- ✓ Perform the installation on a dry, flat surface.
- ✓ Ground yourself by touching a plugged-in power supply, which displaces static electricity.
- ✓ Adjust the power source to the proper voltage before connecting the equipment to the power outlet.
- ✓ Place the power cord in such a manner as to ensure that no one can step on it or trip over it.
- ✓ Always unplug the power cord when performing installation.
- ✓ Do not have liquid nearby as electrical shock can occur if liquid spills onto the equipment.
- ✓ Pay attention to the warnings in the installation instructions when appropriate.
- ✓ In the following cases, do not try to fix the problem yourself, contact a party in Technical Support
 - The power cord or plug is damaged.
 - Liquid has been spilled onto the equipment.
 - Obvious sign of damage can be detected on the equipment.
- ✓ Operating temperature

Operating	10°C to 35°C	50°F to 95°F
-----------	--------------	--------------

	WARNING: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacture's instructions.
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Chapter 1. Getting Started

1.1 Congratulations

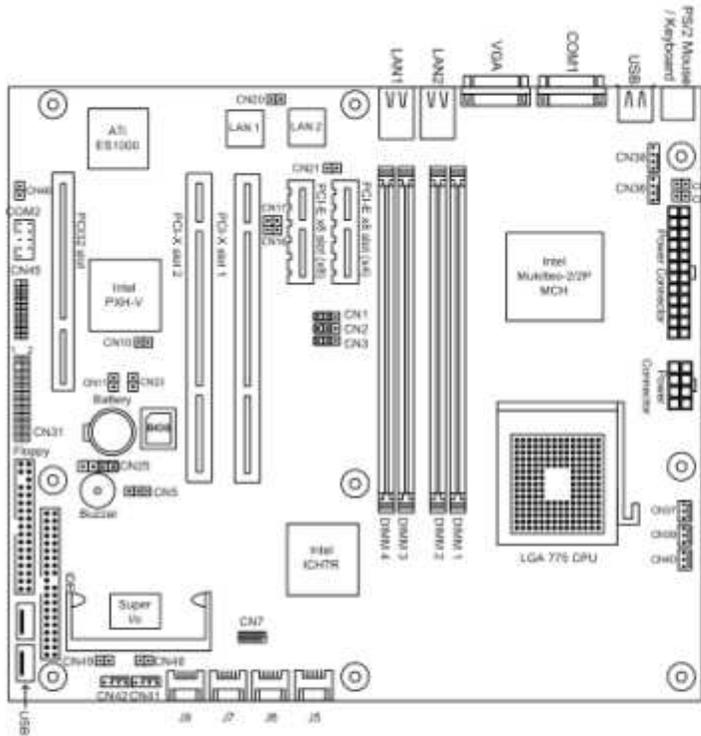
Congratulations on your purchase of our Arima M215X, one of the most versatile and powerful motherboard solutions available for the Pentium processors. The M215X is equipped with the flexibility of supporting 533/800/1066 MHz FSB, PCI-X, and four SATA 3Gbps ports. The M215X also benefits with the PCI-X slot, PCI-Express x8 slot for 1U riser card, onboard dual Gigabit Ethernet ports, and dual channel DDR2 DIMM memory slots. With so many powerful components, M215X will surely satisfy your server/workstation needs.

1.2 Unpacking

Arima Computer Corp. provides a number of accessories for your convenience. Below is a checklist of the things that are included in this purchase:

- Quick Installation Guide
- Driver and user Guide CD
- 1 x IDE cable
- 1 x I/O shield
- 4 x SATA cables
- 2 x SATA power cable
- 1 bag of jumpers (3 pcs)

1.2.1 Quick Installation Guide



CN5 Clear CMOS Select Jumper

Open	1-2	2-3
Normal (Default)	Clear CMOS by Scorpio	Clear CMOS

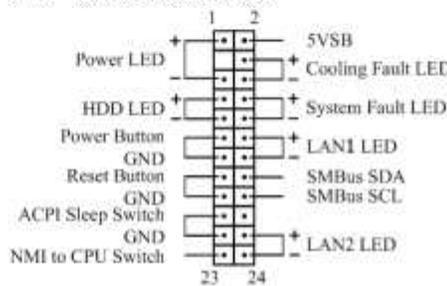
CN17; CN20 LAN1 and LAN2 Select Jumper

Open	Short
Normal (Default)	LAN Disabled

CN23 On-Board VGA Select Jumper

Open	Short
VGA Enabled (Default)	VGA Disabled

CN31 Front Panel Connectors



CN1, 2, and 3 CPU FSB Setting

CN1	CN2	CN3	FSB Clock/Speed
1-2	1-2	1-2	Auto (Set by CPU)
2-3	2-3	Open	Force 133 MHz / 533
2-3	Open	2-3	Force 200 MHz / 800
2-3	2-3	2-3	Force 266 MHz / 1066

CN27 COM2 Header

Pin	Description	Pin	Description
1	DCD	2	DSR
3	Serial In	4	RTS
5	Serial Out	6	CTS
7	DTR	8	RI
9	GND		

CN7 USB Headers

Pin	Description	Pin	Description
1	VCC 1	2	VCC 2
3	Data - 1	4	Data - 2
5	Data + 1	6	Data + 2
7	Ground 1	8	Ground 2
9		10	NC/Key

LAN Connector Indicator Light

State of Link	Link/Activity LED (Green)	Speed LED (Green/Orange)
No Link	OFF	OFF
Link @ 10Mbps	On/Blm	OFF
Link @ 100Mbps	On/Blm	ON / Green
Link @ 1000Mbps	On/Blm	ON / Orange
Activity	Blm	On

CN10 PCI-X Frequency Select Jumper

Open	Short
133MHz (Default)	100MHz

CN25 Speaker Header

Pin	Description
1	Speaker Power
2	NC
3	Internal Power
4	GND

CN35, 47, 48 and 49 CPU 3/4 pin FAN Select Jumper

Open	Short
For 3-pin CPU fan (Default)	For 4-pin CPU fan

CN18; CN21 LAN1 and LAN2 EEPROM Write Protector

Open	Short
Write Protected	Write Enabled (Default)

M2150 - PCI-X, LAN V+L, SUSE, IPMI
M2151 - LAN V+L, SUSE, IPMI
M2153 - LAN V+L, SUSE, IPMI
M2154 - LAN L+L, +USB

The Power Supply can select ATX12V V2.0 (24+4 pin) or SSI EPS (2+8 pin).

The Latest BIOS, Manual, Recommended Memory, Drivers and Utility can be downloaded from <http://www.arima.com.tw/efaxer>

Recommended Memory Configurations

Dual-Channel Mode	Channel A		Channel B		System Density
	DIMM 1	DIMM 2	DIMM 3	DIMM 4	
One DIMM Only	●				512MB-2GB
Two DIMM Symmetrical	●		●		1GB+GB
Two DIMM Symmetrical		●		●	1GB+GB
Four DIMM Symmetrical	●	●	●	●	2GB-8GB

- Note**
- Each bullet point represents a 512MB-2GB memory module.
 - Symmetrical DIMMs must be identical.
 - Same System Density (512MB, 1GB, 2GB, etc)
 - Matched Sided DIMMs (Single sided or Double Sided)
- PS: We recommend you to use symmetrical DIMMs of the same brand/model.

Esart1.03



1.3 Features Highlight

CPU:

- ✓ Supports 533/800/1066 MHz Front Side Bus

CHIPSET:

- ✓ Intel 3010/3000 (Mukilteo-2P / Mukilteo-2 (MCH)) chipset

SYSTEM MEMORY:

- ✓ Four 240-pin 1.8-Volt DDR2 DIMM sockets

EXPANSION SLOTS:

- ✓ Two PCI-X slots, PCI-Express x8 slot with x8 ,x4 signal, and 32bit PCI slot.

STORAGE:

- ✓ Total support of hard disk formats from SATA II, SATA, and to ATA.

INTEGRATED LAN CONTROLLER:

- ✓ Intel Dual Gigabit Ethernet Ports

SYSTEM MANAGEMENT:

- ✓ SMBIOS 2.3.3 and DMI 2.0 compliant
- ✓ 64 bit OS ready
- ✓ Soft Power-down
- ✓ Multiple boot support (with BIOS Boot Specification v3.1 (BBS) support
- ✓ PXE

1.4 Motherboard Specification

Processors

- ✓ Supports Intel Kentsfield Quad core Processors LGA775
- ✓ Supports Intel Pentium 4 processors (Prescott, Cedar Mill) LGA775
- ✓ Supports Intel Pentium D processors (Smithfield, Presler, Conroe) LGA775
- ✓ Supports Intel Celeron D processors LGA775
- ✓ Supports 1066/800/533 MHz FSB
- ✓ Supports Intel *Ts: EM64T, HT, VT, EIST, XD and Lagrande (depends on processors)
- ✓ Onboard 5/6-phase VRD 11

Chipsets

- ✓ Intel 3010/3000 (Mukilteo-2P / Mukilteo-2 (MCH)) chipset
- ✓ MCH + ICH7R + PXH-V + FWH
- ✓ SMSC SCH5027 Super I/O chip

Memory

- ✓ Four 240-pin 1.8-Volt DDR2 DIMM sockets
- ✓ Dual channel memory bus
- ✓ Supports DDR2-533/667 memory
- ✓ Supports Un-Buffered ECC type memory modules only
- ✓ Supports up to 8 GB
- ✓ Supports single DIMM operation

Expansion Slots

- ✓ One PCI-E x8 (x4 signal) from ICH7R – Slot 7 (white color for a physical slot with different speed)
- ✓ One PCI-E x8 from MCH – slot 6 (black color for normal slot)
- ✓ Two PCI-X 64/133 slot from PXH-V – Slot 4,5 (white color for normal slot)
- ✓ One 32-bit 33MHz (5V) PCI slot – Slot 1 (white color normal slot)

Integrated Graphics (Optional)

- ✓ ATI ES1000 with 32MB DDR memory

Dual Gigabit Ethernet Controller

- ✓ Dual Intel 82573 PCI-Express x1 Gigabit Ethernet Controllers
- ✓ Few combination for different customer requirement:
 - 82573V + 82573L (Default) support teaming or IPMI
 - 82573L + 82573L Support teaming only
- ✓ RJ-45 connector with LEDs
- ✓ PXE option ROM solution
- ✓ Two 2-pin headers for front panel LED Link/ Act. Output

ICH7R Integrated Serial ATA Controller (3.0Gb/s)

- ✓ 4 ports data transfers up to 3.0Gb/s (300MB/s)
- ✓ Supports Intel RAID 0, 1, 5, 10 and Intel Matrix RAID (Windows only)

ICH7R Integrated ATA Controller

- ✓ One PCI bus master channel for up to two enhanced IDE devices
- ✓ Support for Ultra DMA 100/66/33 IDE drives and ATAPI compliant devices
- ✓ Tri-state modes to enable swap bay

ICH7R USB 2.0

- ✓ Front ~ One 2x5 pin header + Two type-A USB connectors (M2150 only)

- ✓ Rear ~ Dual-layout (4/2 stacked USB connector) - optional

Super I/O

- ✓ SMSC SCH5017 Super I/O chip
- ✓ One floppy connector supports one drive
- ✓ PS/2 mouse and PS/2 keyboard rear panel connectors (M2154 removed)
- ✓ Two 9-pin serial ports (one rear panel connector and one internal header) (M2154 has remove the rear one)

Rear Panel I/O

- ✓ Stacked PS/2 mouse and PS/2 keyboard rear panel connectors (M2154 removed)
- ✓ One DB9 serial connector (M2154 removed)
- ✓ One DB15 Video connector (M2154 removed)
- ✓ One stacked USB-2.0 connectors with 4 ports (M2150, M2151)
- ✓ One stacked USB-2.0 connectors with 2 ports (M2153, M2154)
- ✓ Two side-by-side RJ-45 connectors with LEDs

BIOS

- ✓ 8 Mb Phoenix BIOS
- ✓ Legacy USB support, all ports
- ✓ SMBIOS 2.3.3 and DMI 2.0 compliant
- ✓ Plug and Play (PnP)
- ✓ APM 1.2
- ✓ DMI 2.1
- ✓ ACPI 1.0
- ✓ Fan Speed Control
- ✓ PXE
- ✓ Soft Power-down
- ✓ Multiple boot support (with BIOS Boot Specification v3.1 (BBS) support)
- ✓ Supports S0, S4, S5 support (Depends on customer)
- ✓ BIOS default "Always On" (For M2154)

System Management (BIOS/Utility/BMC assignment)

- ✓ Support ARIMA BMC Scorpio card (option part), IPMI 2.0 compliant (M2154 removed)
- ✓ Support ARIMA SmartWatch software
- ✓ CPU and Chassis environment temperature monitoring
- ✓ Fan speed and status monitoring
- ✓ Motherboard voltage monitoring
- ✓ Chassis intrusion detection
- ✓ HDD monitoring (Logic definition)

Internal header / connectors / Fans

- ✓ SSI-compliant connectors for SSI interface support
- ✓ Total four 4-pin fan and three 3-pin connectors (For Processor, Cooling fans)
- ✓ Arima Server 24 pins Front Panel
(Cooling Fault LED, System Fault LED, SMBus, Chassis Intrusion, NMI must work)
- ✓ Speaker header
- ✓ SATA & SAS LEDs header
- ✓ Power fail LED and alarm header for redundant power supply

Form Factor

- ✓ ATX form factor with size: 12" x 9.6" (6 layers)
- ✓ P4 12V power connectors (24pin + 8/4pin)

Riser Card

- ✓ 1U PCI-E x8 slot (use 3rd party riser card which bought from outside)

SKU

- ✓ M2150, PCI-X, LAN V+L, 8USB,IPMI
- ✓ M2151, LAN V+L, 8USB,IPMI
- ✓ M2153, LAN V+L, 6USB,IPMI
- ✓ M2154, LAN L+L, 4USB
- ✓ Arima Scorpio Card, IPMI 2.0 compliance

1.5 Barebone

1.5.1 1/2 1U

Model Name		M215x1S
Description		
Chassis Model		Chenbro RM12500
Color		Black
Dimension (D*W*H)		393 x 435 x 43.5 mm, 15.5 x 16.9 x 1.7"
Integrated Board		M2150/1/3
Power Supply		Zippy 200/250W
Backplane		N/A
Peripheral Drives	Slim FDD	N/A
	Standard FDD	N/A
	Slim ODD	1(w/2.5" HDD)
Drive Bays	Hot-swappable	N/A
	Cold-swappable	1
LED Indicator	System Power On/Off	1
	System error	1
	Chassis Intrusion alert	1
	HDD LED	1
	NIC Link/Activity	2
	Fan Fail	1
	Infiniband Link/Activity	N/A
Switches/ Controls	Power On/Off	1
	System Reset button	1
	Alert Reset button	1
	USB 2.0	2
Riser Card		*
System Management	Fan control	Y
	Power supply monitor	N/A
	Chassis Intrusion	Y
Rear I/O	VGA, KB, MS	3
	Serial Port	1
	Parallel Port	N/A
	USB 2.0	2/4
	LAN	2
	SCSI	N/A
	SAS	N/A
	Infiniband	N/A
	Fan	Middle (Non-hotswap)
Rear (Non-hotswap)		3x 4056mm
Accessories	Quick Installation Guide (Motherboard)	1

Model Name		M215x1S
	Quick Installation Guide (Barebone)	1
	Driver and Manual CD	1
	OOB Checklist (Paper)	1
	Heat Sink Kit	2
	Jumper	1 Bag
	Power Cord	*
	Sliding rails kit	1
Component (Optional)	CPU	Supports Intel Kentsfield Quad core Processors LGA775
		Supports Intel Pentium 4 processors (Prescott, Cedar Mill) LGA775
		Supports Intel Pentium D processors (Smithfield, Presler, Conroe) LGA775
	Memory	DDR2-667/533 memory (up to 2 DIMMs/ch)
		Un-Buffered ECC/Non-ECC type memory module
		up to 8 GB
	HDD	3.5" SATA II 80GB 7200RPM
		3.5" SATA II 160GB 7200RPM
		3.5" SATA II 250GB 7200RPM
	OPMA	Scorpio Card
	ODD	Slim DVDROM
	FDD	N/A
	Riser Card	1 * PCI-E x8 slot
	Power Cord	Power cord for US
		Power cord for Japan
	Integrated Board	M2150
		M2151
		M2153
Backplane	N/A	

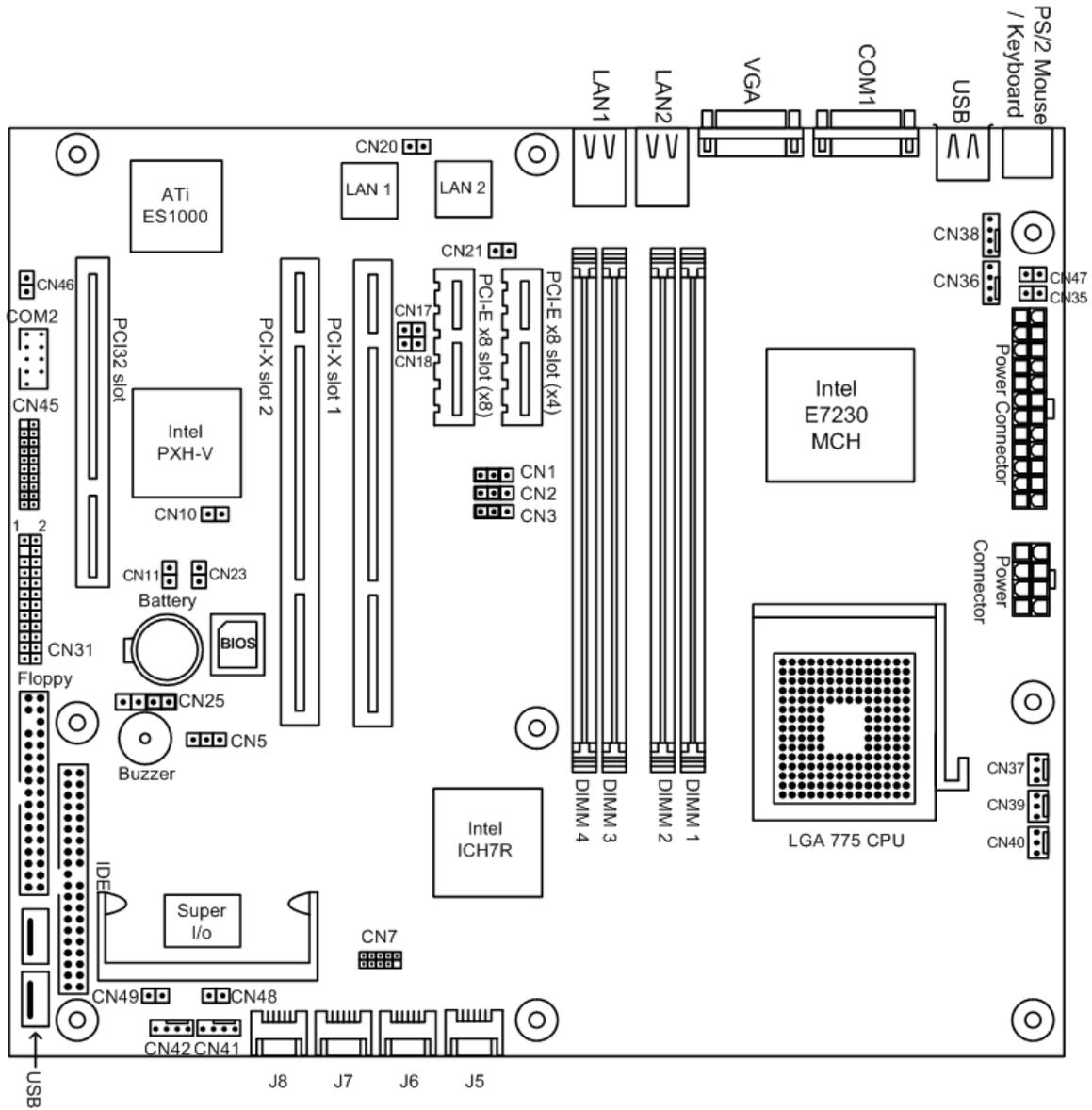
1.5.1 Tower

Model Name		M215x1T
Description		
Chassis Model		MACS CK1026-13
Color		Black
Dimension (D*W*H)		220 x 220 x 30 mm
Integrated Board		M2150/1/3
Power Supply		TBD
Backplane		N/A
Peripheral Drives	Slim FDD	N/A
	Standard FDD	Y
	Slim ODD	N/A
Drive Bays	Hot-swappable	N/A
	Cold-swappable	3
LED Indicator	System Power On/Off	1
	System error	N/A
	Chassis Intrusion alert	N/A
	HDD LED	1
	NIC Link/Activity	N/A
	Fan Fail	N/A
	Infiniband Link/Activity	N/A
Switches/ Controls	Power On/Off	1
	System Reset button	N/A
	Alert Reset button	N/A
	USB 2.0	2
Riser Card		N/A
System Management	Fan control	Y
	Power supply monitor	N/A
	Chassis Intrusion	N/A
Rear I/O	VGA, KB, MS	3
	Serial Port	1
	Parallel Port	N/A
	USB 2.0	2/4
	LAN	2
	SCSI	N/A
	SAS	N/A
	Infiniband	N/A
Fan	Middle (Non-hotswap)	N/A
	Rear (Non-hotswap)	1x 220mm
Accessories	Quick Installation Guide (Motherboard)	1
	Quick Installation Guide (Barebone)	1

Model Name		M215x1T
	Driver and Manual CD	1
	OOB Checklist (Paper)	1
	Heat Sink Kit	2
	Jumper	1 Bag
	Power Cord	*
	Sliding rails kit	1
Component (Optional)	CPU	Supports Intel Kentsfield Quad core Processors LGA775
		Supports Intel Pentium 4 processors (Prescott, Cedar Mill) LGA775
		Supports Intel Pentium D processors (Smithfield, Presler, Conroe) LGA775
	Memory	DDR2-667/533 memory (up to 2 DIMMs/ch)
		Un-Buffered ECC/Non-ECC type memory module
		up to 8 GB
	HDD	3.5" SATA II 80GB 7200RPM
		3.5" SATA II 160GB 7200RPM
		3.5" SATA II 250GB 7200RPM
	OPMA	Scorpio Card
	ODD	Standard 5.25" DVDROM
	FDD	Standard 3.5" FDD
	Riser Card	N/A
	Power Cord	Power cord for US
		Power cord for Japan
	Integrated Board	M2150
		M2151
		M2153
Backplane	N/A	

1.6 Motherboard Layout [Major Components]

The following diagram indicates all the major components of the motherboard.



Chapter 2. Hardware Installation

2.1 Mounting the Motherboard

The M215X conforms to the ATX specification format. Before continuing on with installation, please confirm that your chassis supports a standard ATX motherboard. If you are unsure, contact your dealer for more information.

Precautions:

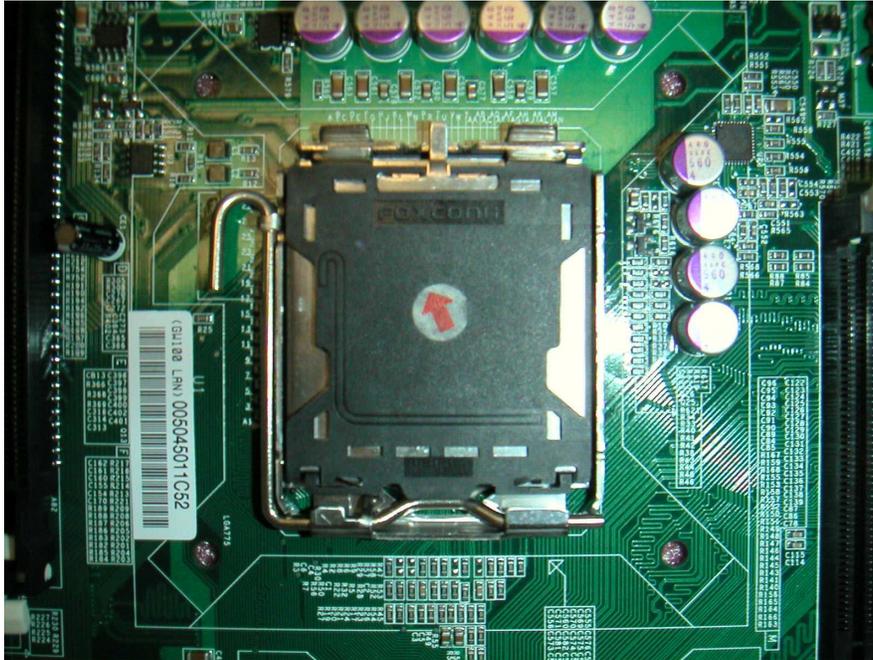
- ✓ Static electricity can damage components on your motherboard. Before touching the motherboard, discharge any static build-up in yourself by touching a grounded object.
- ✓ Disconnect your computer from any power supply if disassembly is needed.
- ✓ Try to avoid touching the surface or back of the motherboard, for chips and other components on the motherboard are very fragile.
- ✓ Before the motherboard is ready for immediate installation, place the motherboard on the Mylar Sheet (antistatic bag) in which the board was shipping.
- ✓ Before installing, inspect the motherboard for any possible flaws.

2.3 Installing the Processor

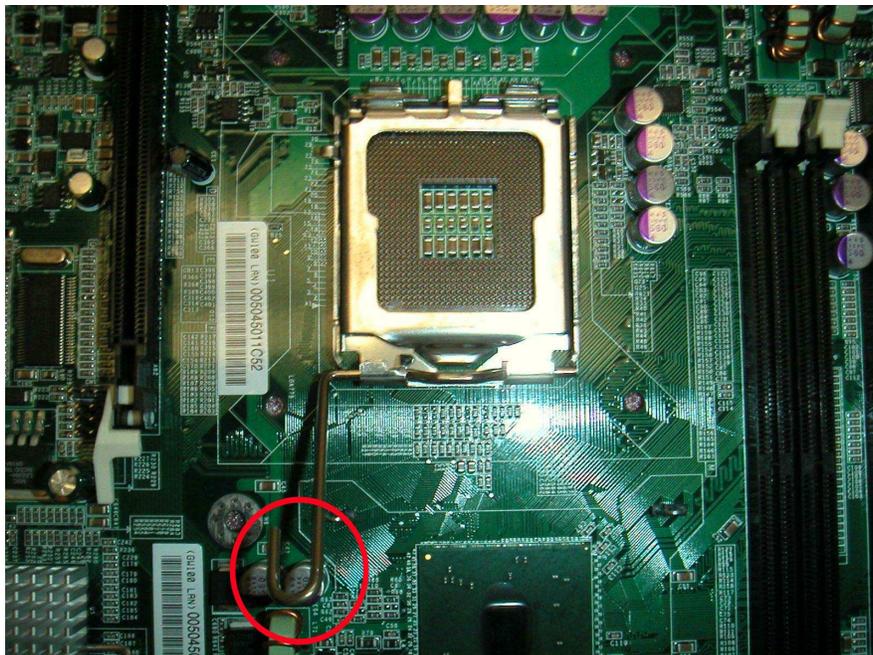
Procedure:

First read the instructions that came with the CPU. Follow the procedures below step by step.

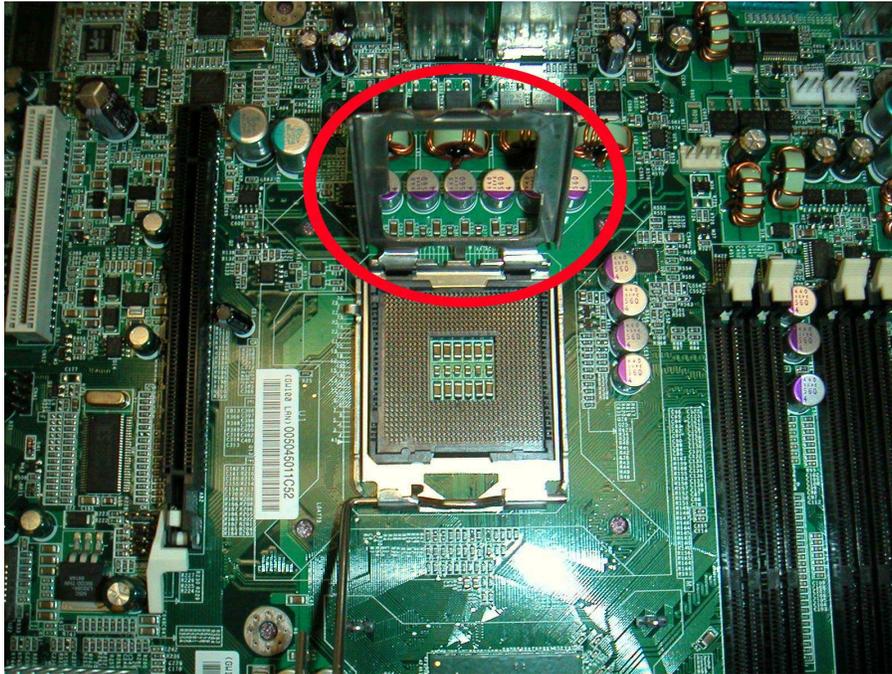
1. Locate the processor socket on the motherboard and carefully remove the protective cover.



2. Pull the lever out of its locked position and let it spring into its open position.

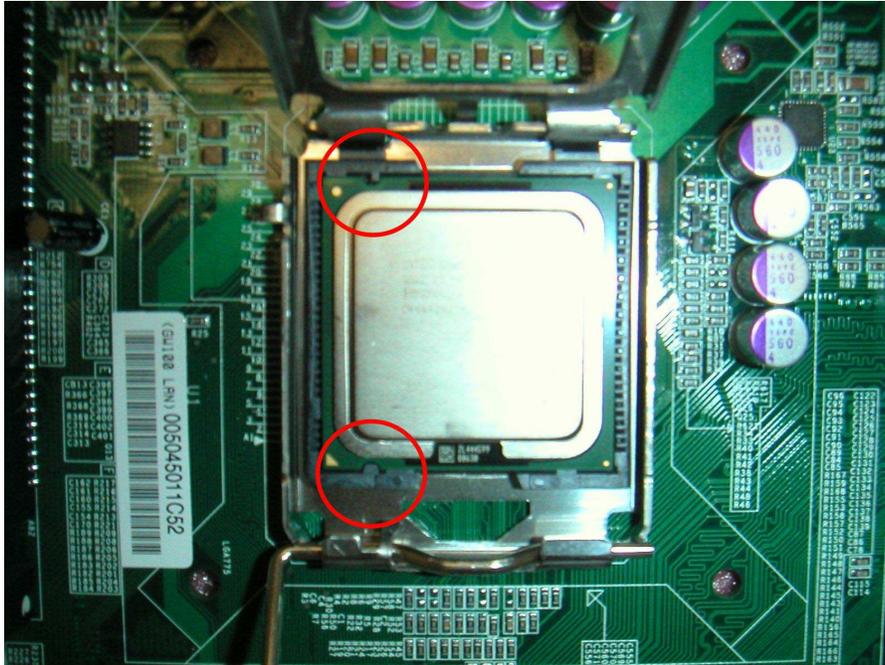


3. Now that the lever is in its unlocked position, lift up the metal cover to reveal the CPU socket.

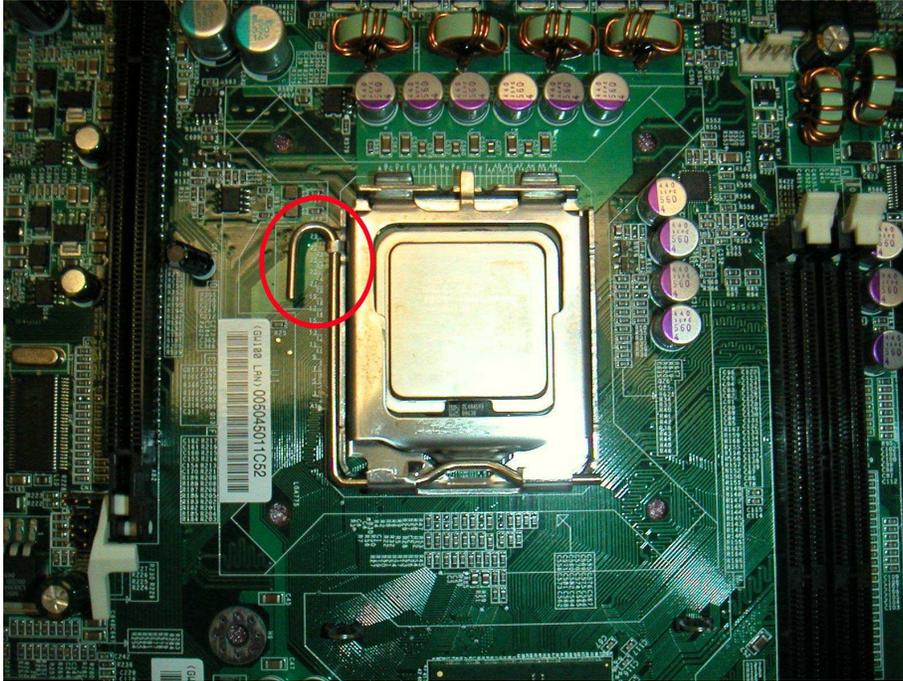


- Place the CPU into the socket with the arrows pointing to the bottom left of the socket as shown (there are two gaps on either sides of the CPU, make sure they fit perfectly into the socket. If it is placed correctly, the CPU pins should be able to fit into the socket perfectly).

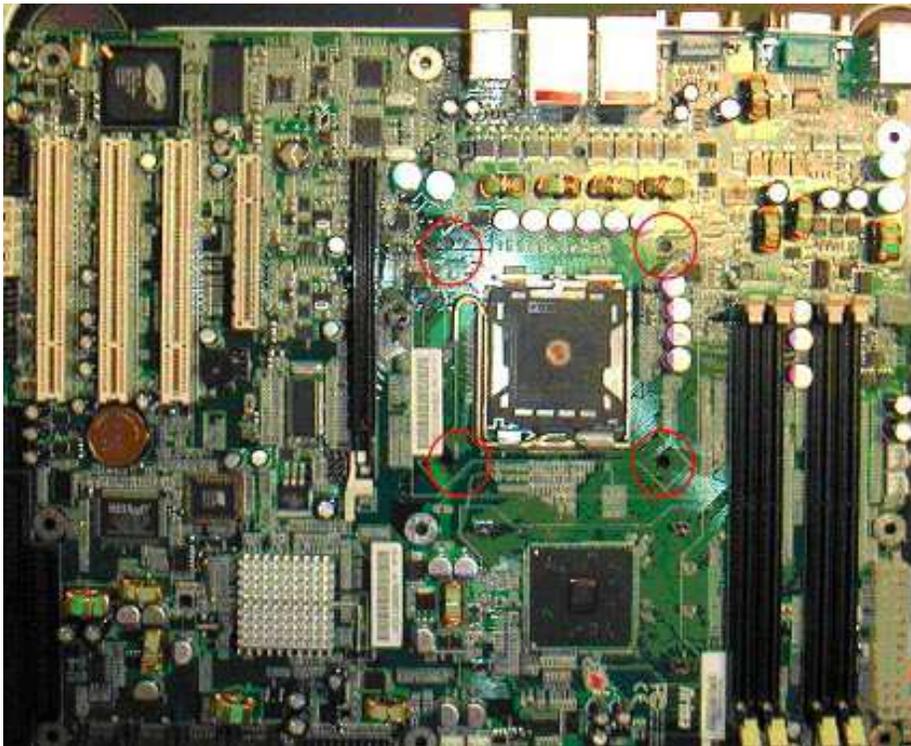
	<p>The CPU will not fit if the orientation is wrong. Do not try to force the CPU into the socket; it could result in irreparable damage to the CPU.</p>
---	---



5. Close the metal cover and return the lever into its original locked position.



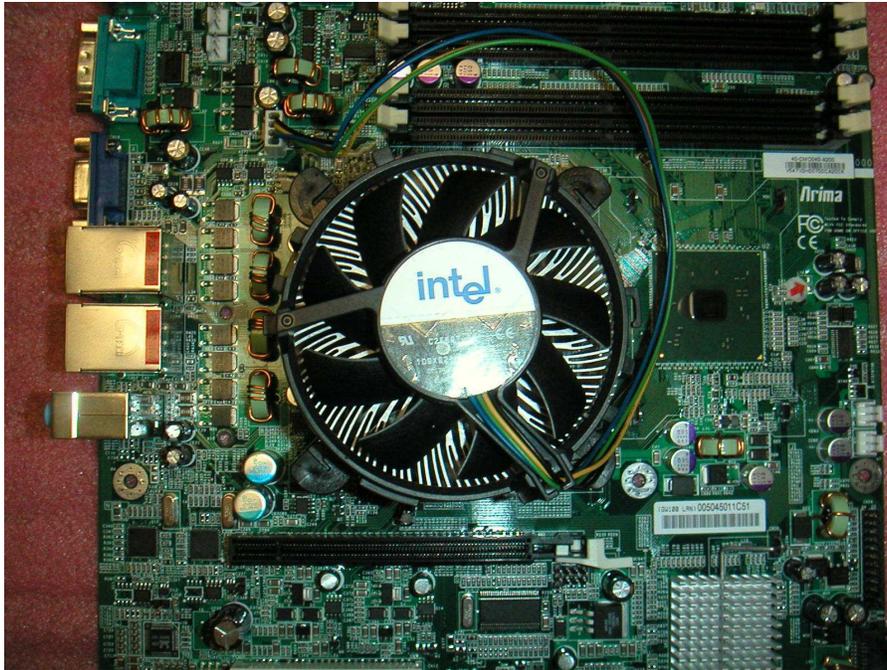
6. Now, rest the motherboard into the chassis, align the four holes of the backplate with the four bolts of the chassis.





We do not recommend you to apply thermal compound at this point of the installation. The heatsink provided along with your CPU already has thermal grease on the bottom for your convenience. Do not apply more thermal grease if it is already present. Too much thermal grease will spill onto the CPU circuit and damage the CPU.

7. First align the four pegs with the four mounting holes on the motherboard. After you have made sure that the pegs are in their proper positions, push down on the four plastic pegs until you hear clicking sounds, notifying you that the pegs have been securely locked into the mounting holes.



To remove the heatsink, gently turn the pegs until they loosen themselves from the mounting holes. Gently pull up the heatsink, to prevent any damage to the CPU.

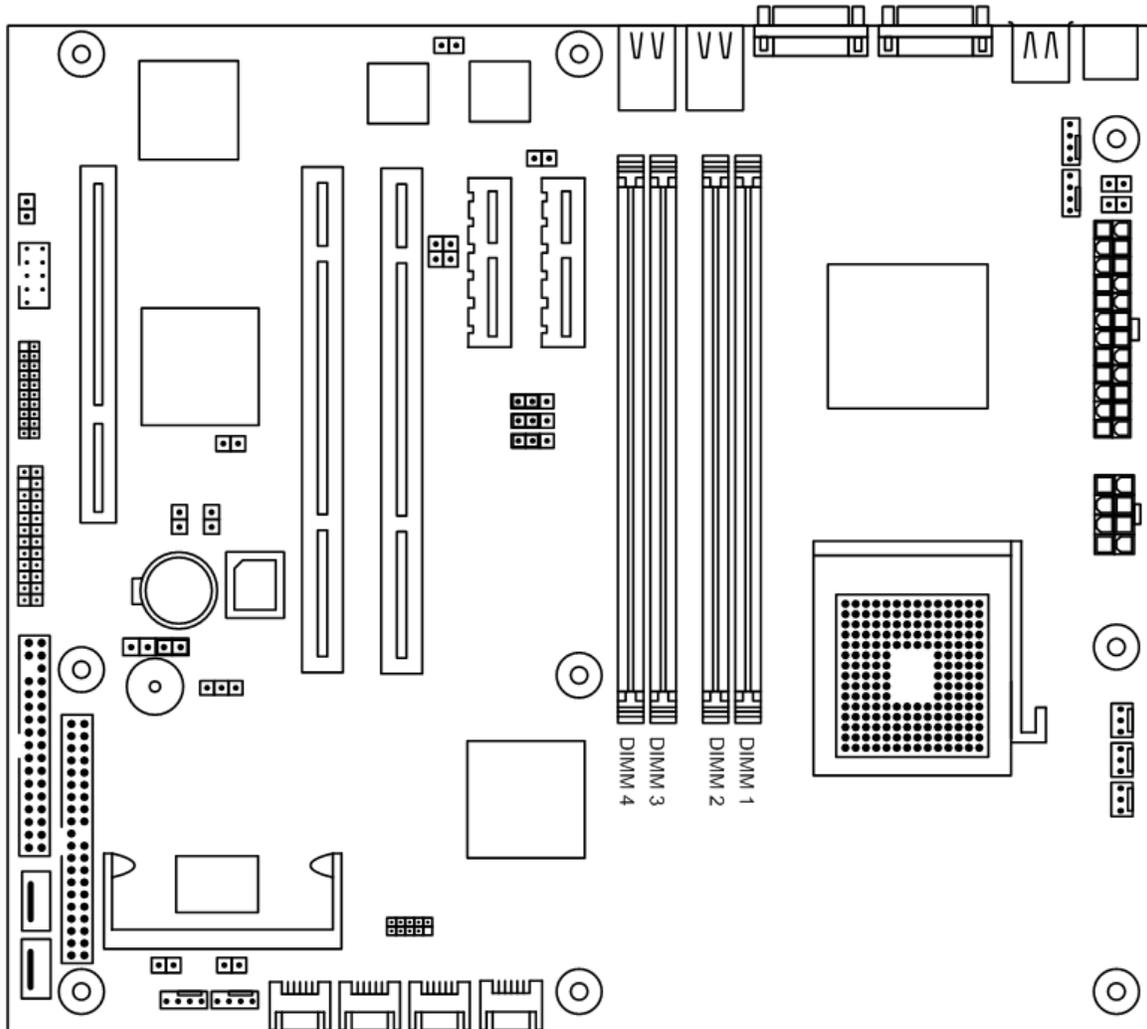


Heatsink not included in the package.

2.4 Installing the Memory

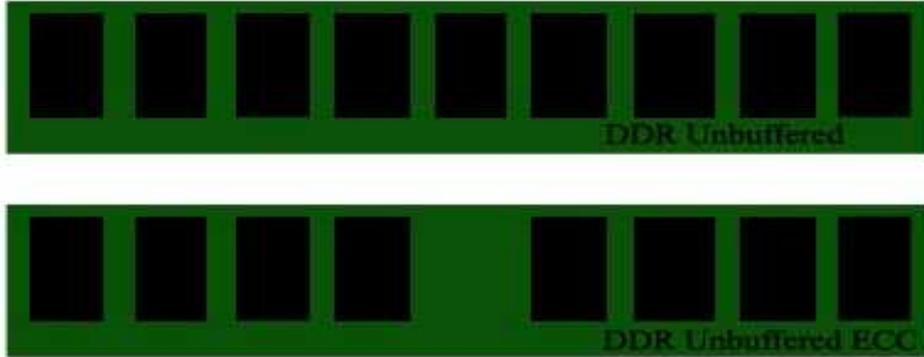
2.4.1 DIMM Combination

The diagram below shows the 4 DIMM slots from 1 to 4.



Types of memory supported:

There are 4 DIMM sockets for 240-pin 1.8-Volt DDR2 DIMMs (WILL ONLY SUPPORT Un-Buffered ECC type memory modules ONLY). Please note the diagrams below to identify if your DIMM memories are ECC or non-ECC.



Before installing your memory sticks, please ensure that the memory sticks you have are compatible with the M215X. The M215X will only support DDR2-533/667 modules. Please study the table below for memory module specification of the M215X.

Key Notes:

- ✓ DDR2 Memory Modules Supported: 512MB – 2GB (Un-Buffered ECC Only)
- ✓ Installed memory will all be automatically detected (No jumpers or settings are needed)
- ✓ M215X supports up to 8GB in total
- ✓ Registered memory is NOT supported
- ✓ Single or double-sided DIMM are both supported. For details, please study the table below

Dual-Channel Mode	Channel A		Channel B		System Density
	DIMM 1	DIMM 2	DIMM 3	DIMM 4	
One DIMM Only	●				512MB-2GB
Two DIMM Symmetrical	●		●		512MB-4GB
Two DIMM Symmetrical		●		●	512MB-4GB
Four DIMM Symmetrical	●	●	●	●	2GB-8GB

Note

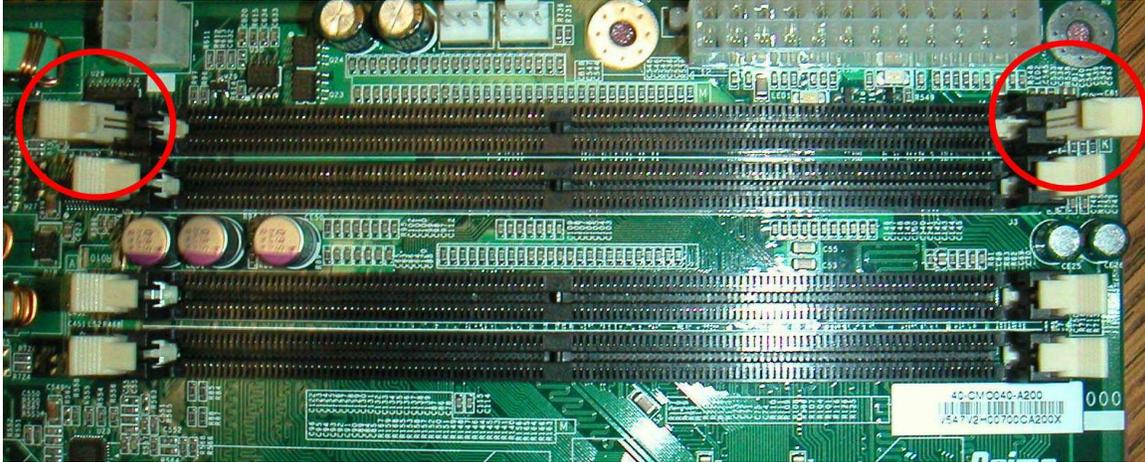
1. Each bullet point represents a 512MB-2GB memory module.
2. Symmetrical DIMMs must be identical.
 - Same System Density (512MB, 1G, 2GB, etc)
 - Matched Sided DIMMs (Single sided or Double Sided)

PS. We recommend you to use symmetrical DIMMs of the same brand/model.

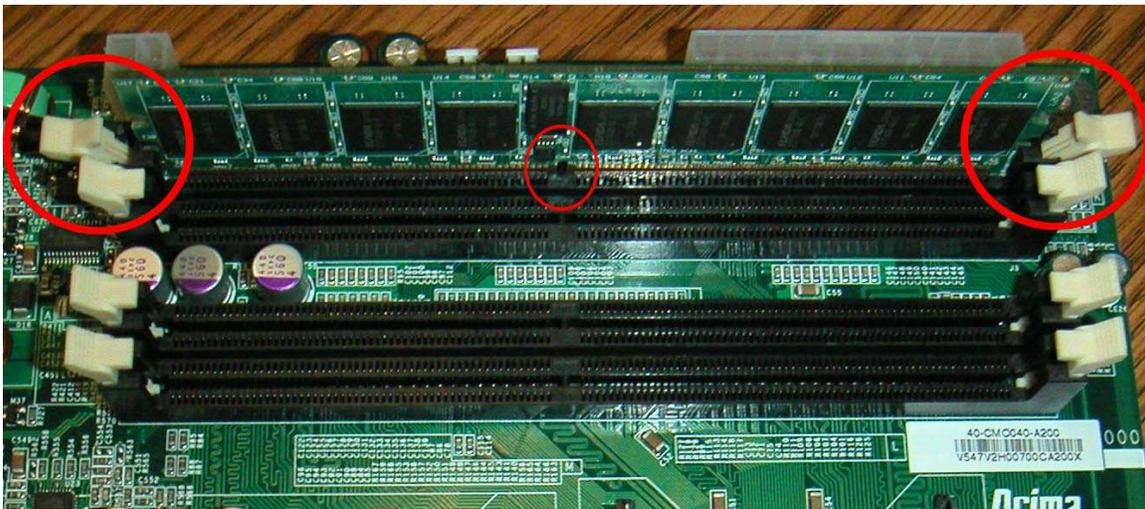
	<p>Any configuration other than the recommended is not guaranteed to work. Please refrain from using those configurations, as we cannot provide technical support on them.</p>
---	--

2.4.2 Installing DIMM modules

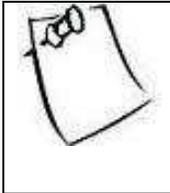
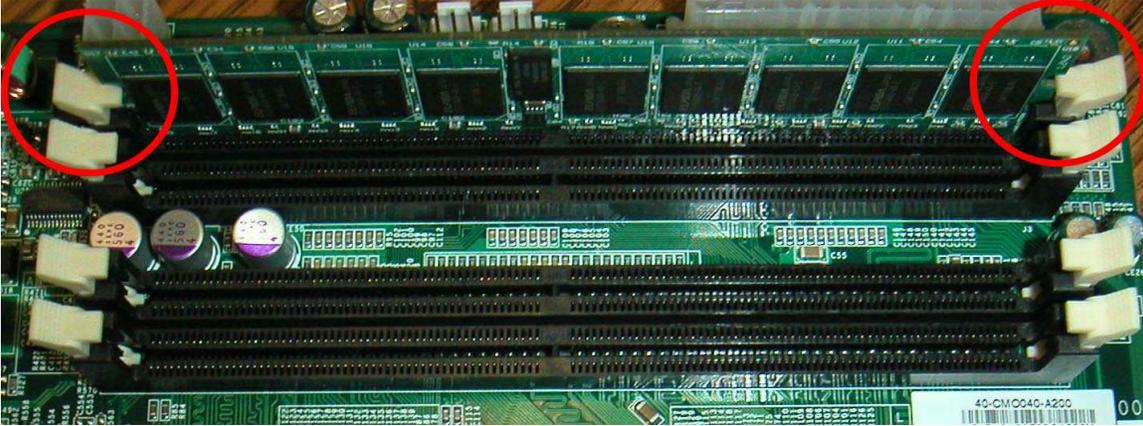
1. Open up the brackets on the sides by flicking them to the sides:



2. Line up the memory with socket. Make sure the gap fits into the socket.



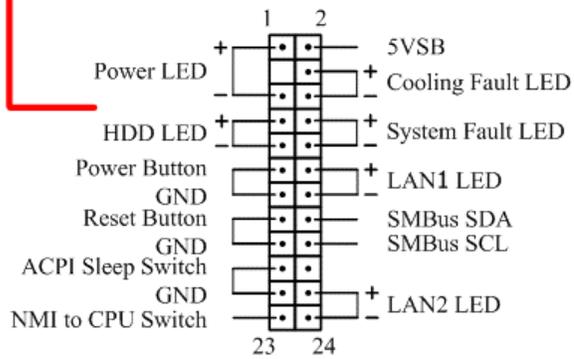
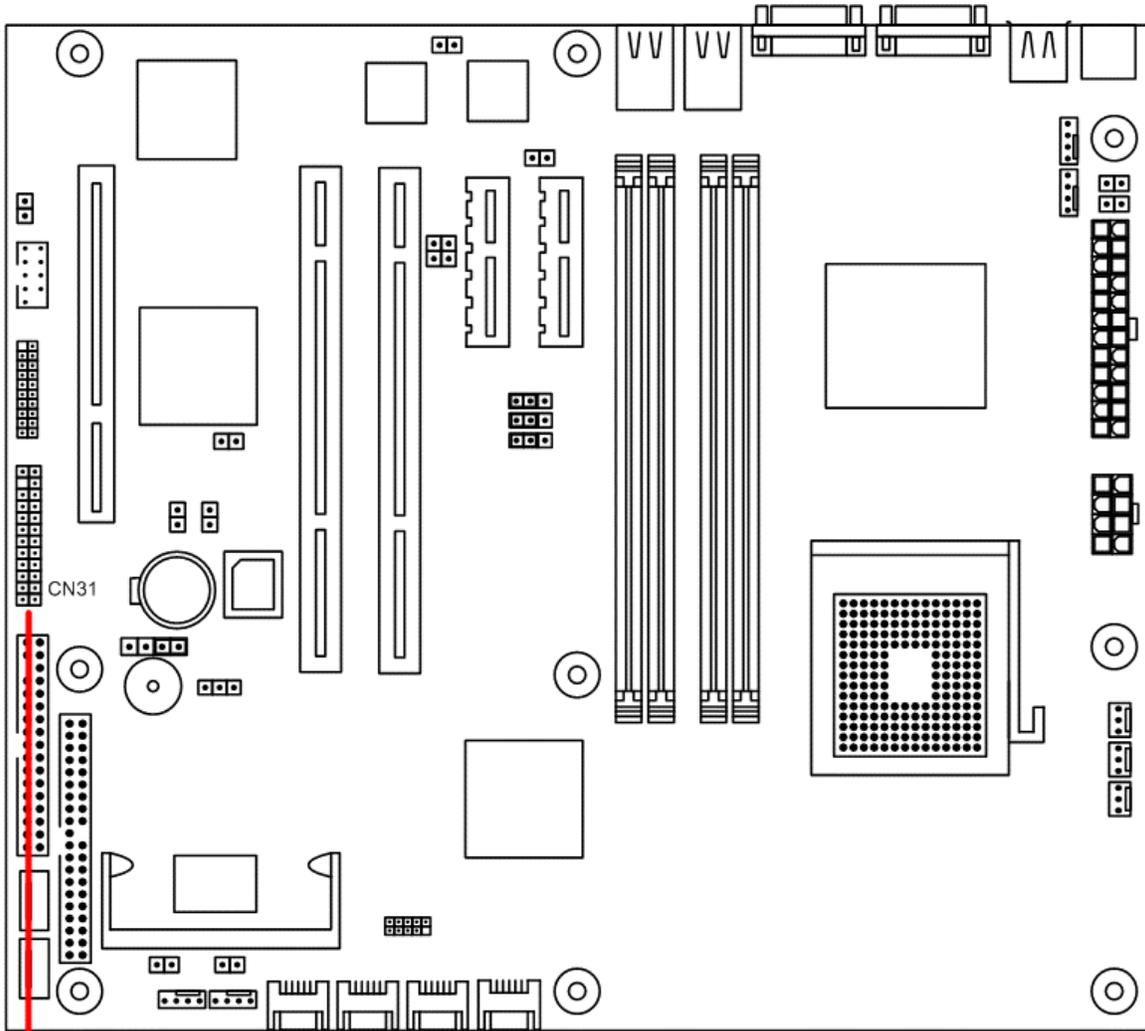
3. Push the memory stick down until the brackets on the sides snap to secure the memory module in place. Make sure the brackets are locked into the memory module.



These pictures only show the procedures for the installation of one memory module. Please refer to section 2.4.1 to make sure the memory module combination is qualified for the motherboard.

2.5 Jumpers Configuration

2.5.1 Front Panel Connectors

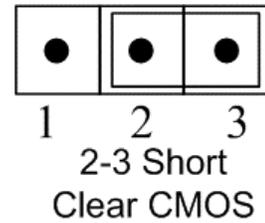
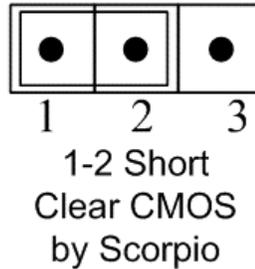
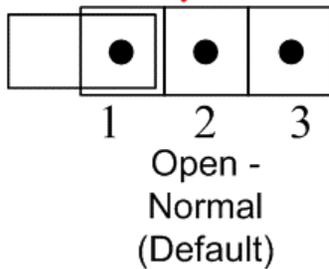
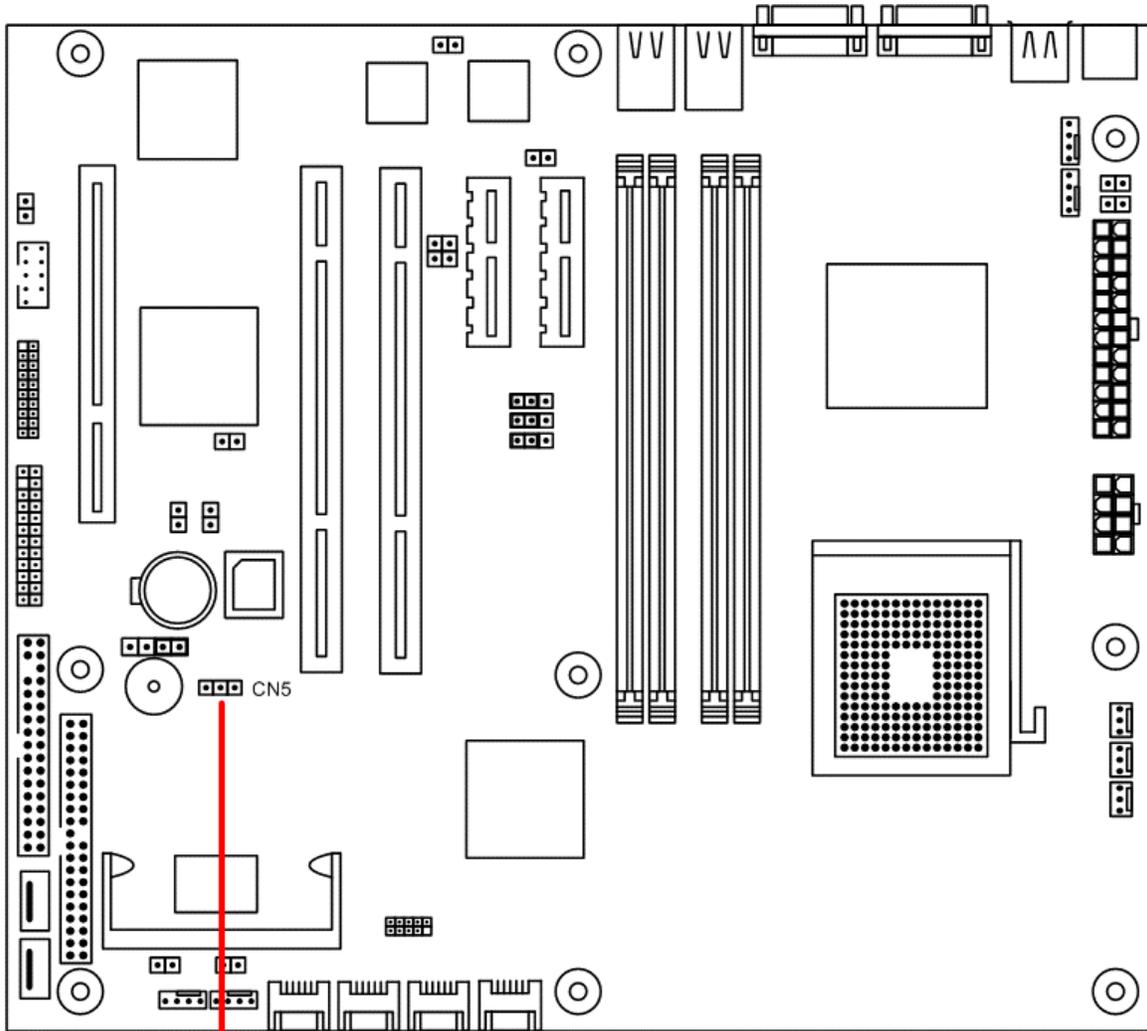


Power LED:	This 3-pin connector attaches to the power LED.
HDD Activity LED:	This 2-pin connector attaches to the LED of the hard disk. The LED lights up when HDD is active.
Power Switch:	This 2-pin connector attaches to the power button of the system.
Reset Switch:	This 2-pin connector attaches to the case-mounted reset switch for rebooting your computer without turning on/off your power switch.
ACPI Sleep Switch:	This 2-pin connector connects to the switch that can take the system into standby mode when pressed.
NMI to CPU Switch:	This 1-pin connector connects to the switch that send Non-Maskable Interrupt to the CPU. User can customize the button to perform a particular function.
5 VSB:	This connector provides the user with power to any extra devices that uses 5 volt power.
Cooling Fault LED:	This connector connects to the LED that lights up when a problem arises with cooling system.
System Fault LED:	This connector connects to the LED that lights up when a problem arises with the system.
NIC#1 Activity LED:	This connector connects to the LED that lights up when there is activity on Gbe 1.
SMBus SDA:	A private bus to BMC chips for serial data, for use with BMC only.
SMBus SCL:	A private bus to BMC chips for serial clock, for use with BMC only.
Chassis Intrusion:	This connects to the mechanical switch that indicates whether the chassis had been opened. User can activate it if desired.
NIC#2 Activity LED:	This connector connects to the LED that lights up when there is activity on Gbe 2.

2.5.2 Clear CMOS header

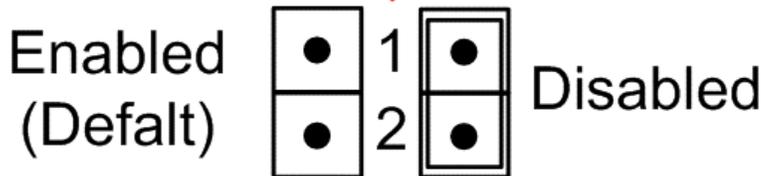
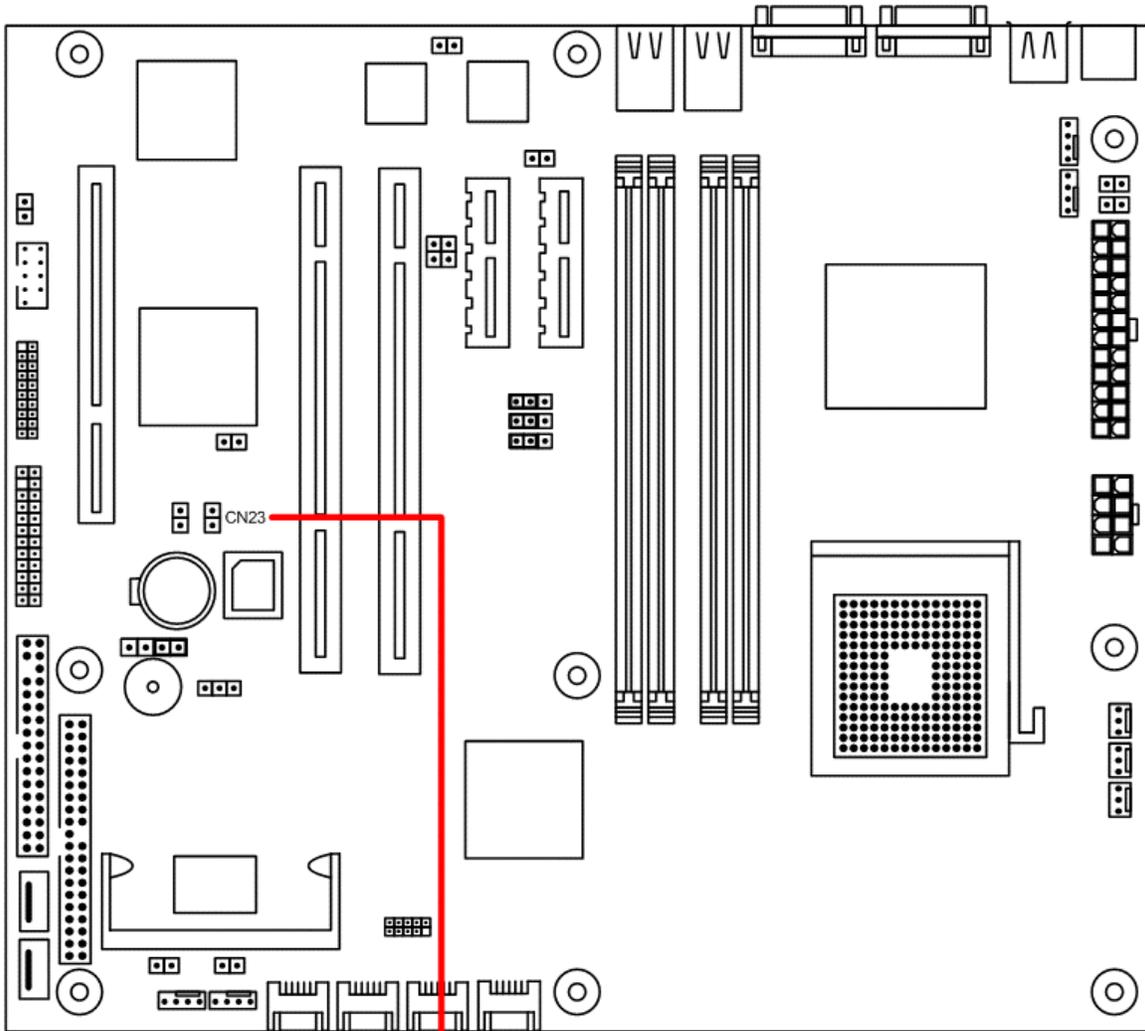
Header CN5 controls CMOS setting. Position your motherboard as it appears in the following diagram. To clear CMOS:

1. Turn off the system; make sure standby power on the power supply has been turned off too.
2. Short pin 2 and pin 3 using a jumper for a few seconds.
3. Take out the jumper.
4. Turn on the system and reconfigure the BIOS.



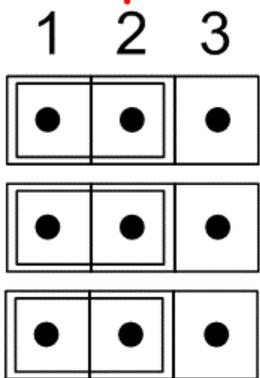
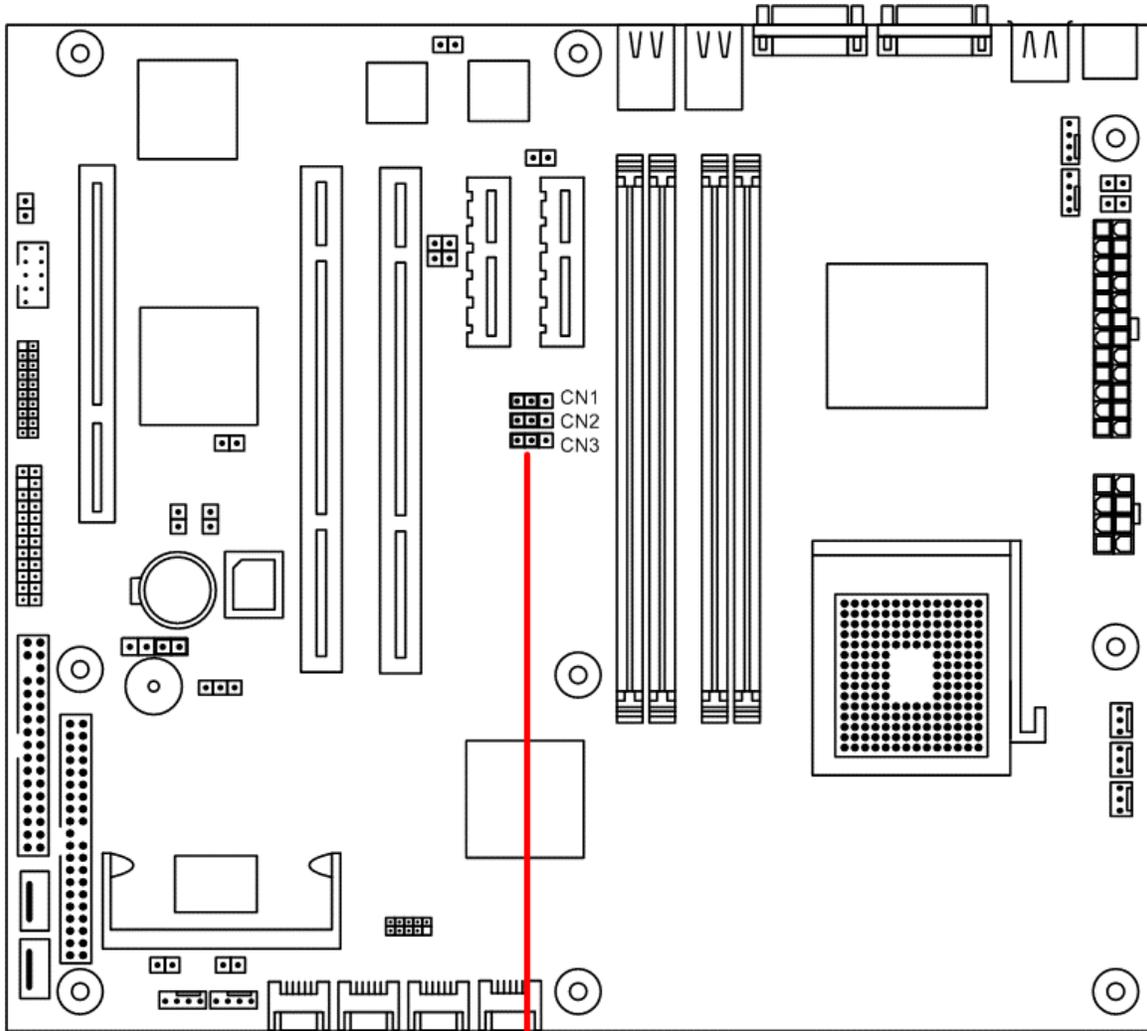
2.5.3 Enable onboard VGA header

Header CN23 controls the onboard VGA setting. When CN23 is open, no jumper, VGA is enabled. When CN23 is closed, VGA is disabled. Refer to the following diagram for CN23 location:



2.5.4 CPU FSB Setting

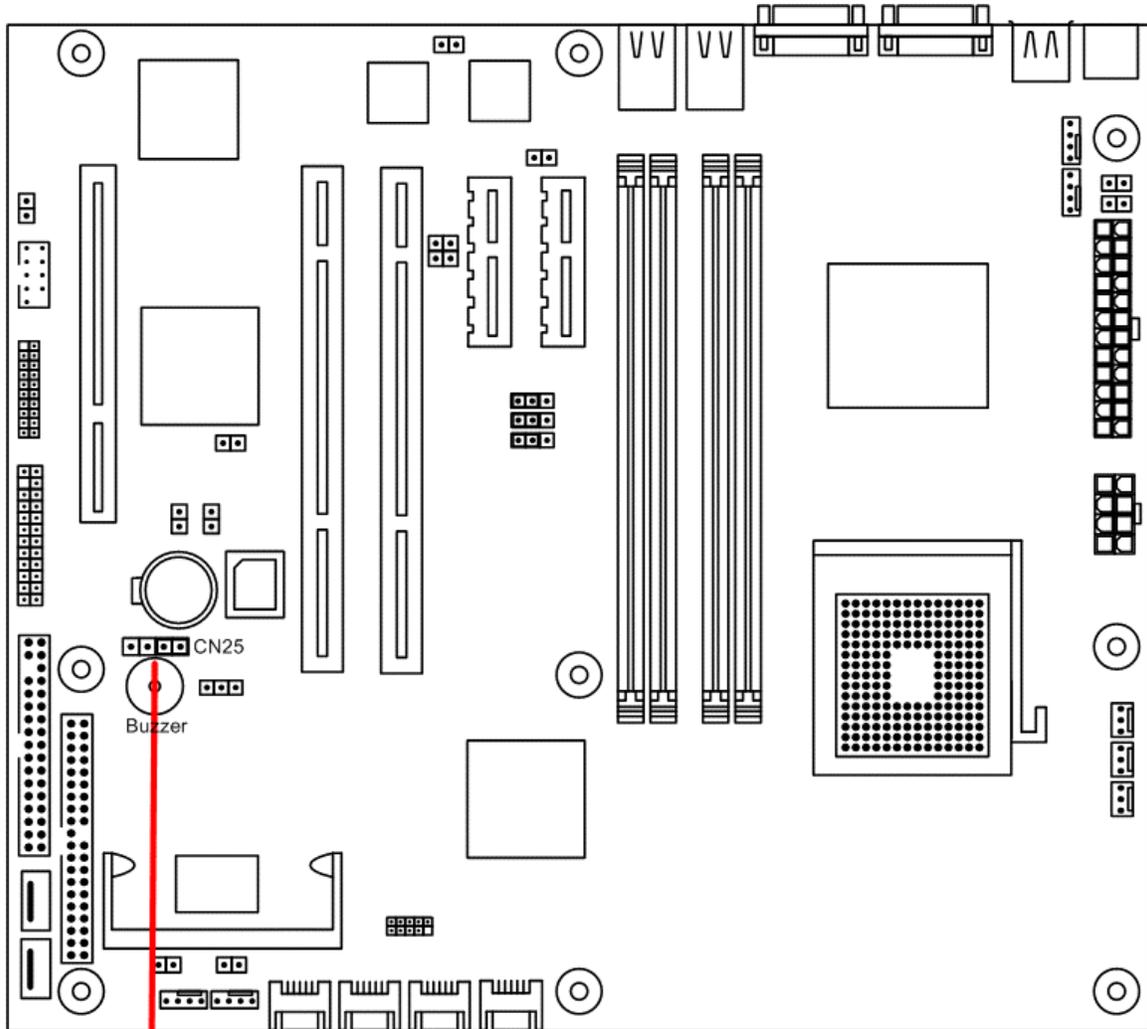
Headers CN1, CN2, and CN3 control the CPU FSB setting. Please refer to the table below for the available CPU FSB settings.



CN1	CN2	CN3	FSB Clock/Speed
1-2	1-2	1-2	Auto (Set by CPU)
2-3	2-3	Open	Force 133 MHz / 533
2-3	Open	2-3	Force 200 MHz / 800
2-3	2-3	2-3	Force 266 MHz / 1066

2.5.5 Onboard Buzzer

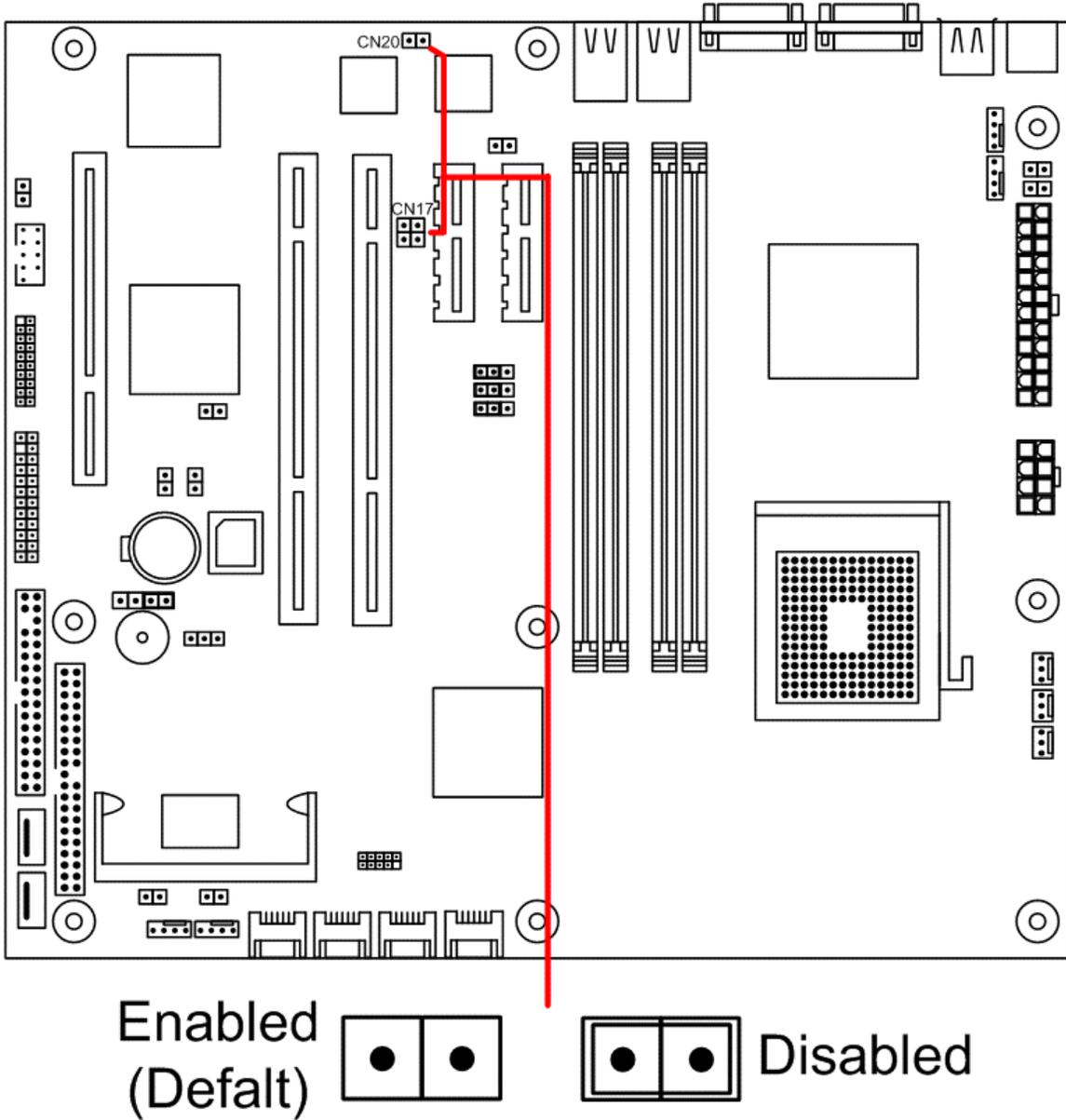
The header, CN25 controls the on and off state of the onboard buzzer. Jumper 3-4 enables the buzzer, and open sets it off.



- | | | |
|---|---|-----------------|
| 1 | ● | Speaker Power |
| 2 | ● | N/C |
| 3 | ● | Internal Buzzer |
| 4 | ● | GND |

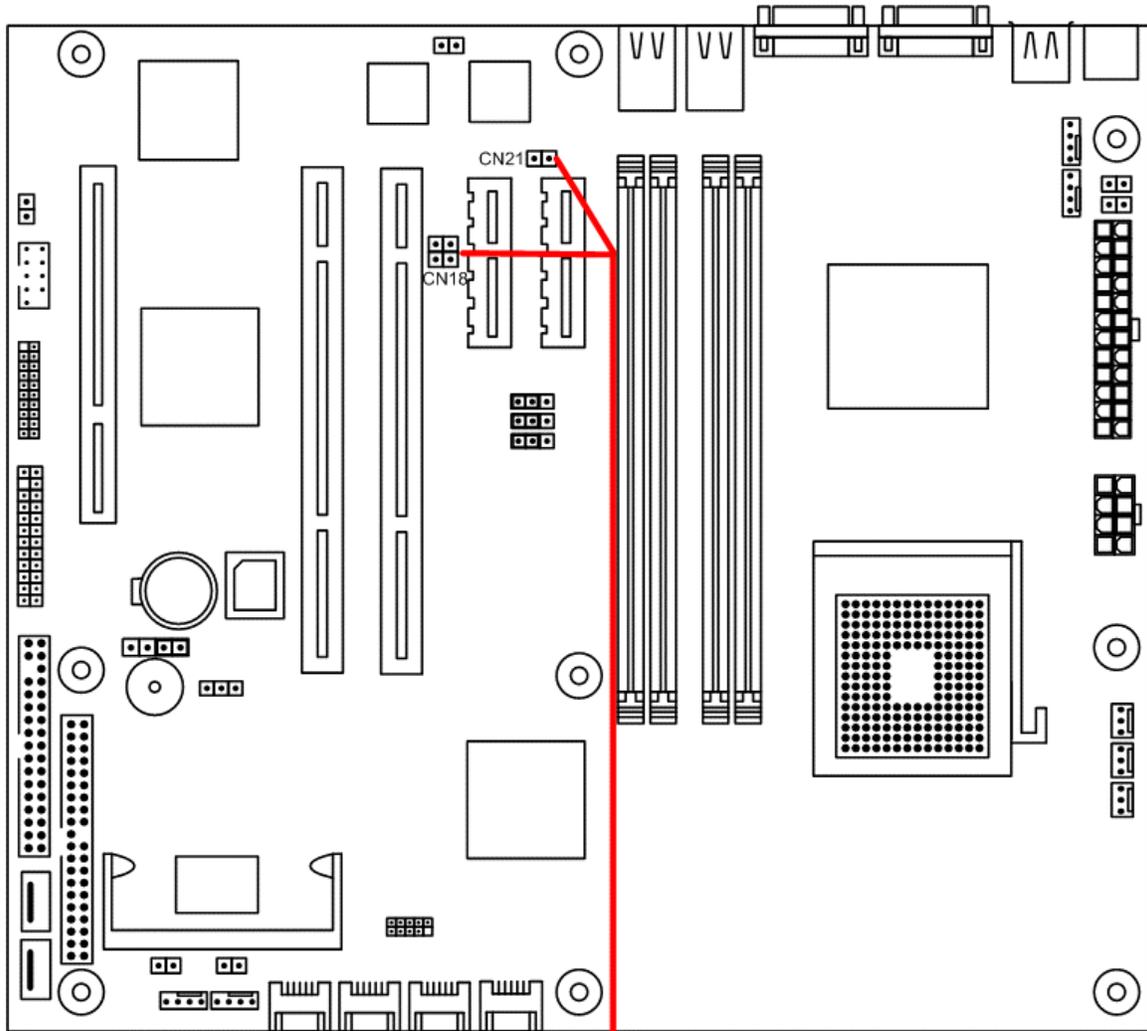
2.5.6 Gigabit Ethernet LAN Chips

Header CN17 and CN20, that control the two Gigabit Ethernet chips. CN17 controls LAN1 chip, CN20 controls LAN2 chip. Each can be enabled or disabled by setting the jumper by the given configuration below. Refer to the diagram below for the locations of the headers.

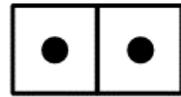
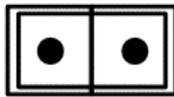


2.5.7 EEPROM Write Protector of Gigabit Ethernet LAN

Header CN18 and CN21 are EEPROM Write Protector for the two Gigabit Ethernet chips. CN18 is LAN1 protector; CN21 is LAN2 protector. Each can be enabled or disabled by setting the jumper by the given configuration below. Refer to the diagram below for the locations of the headers.



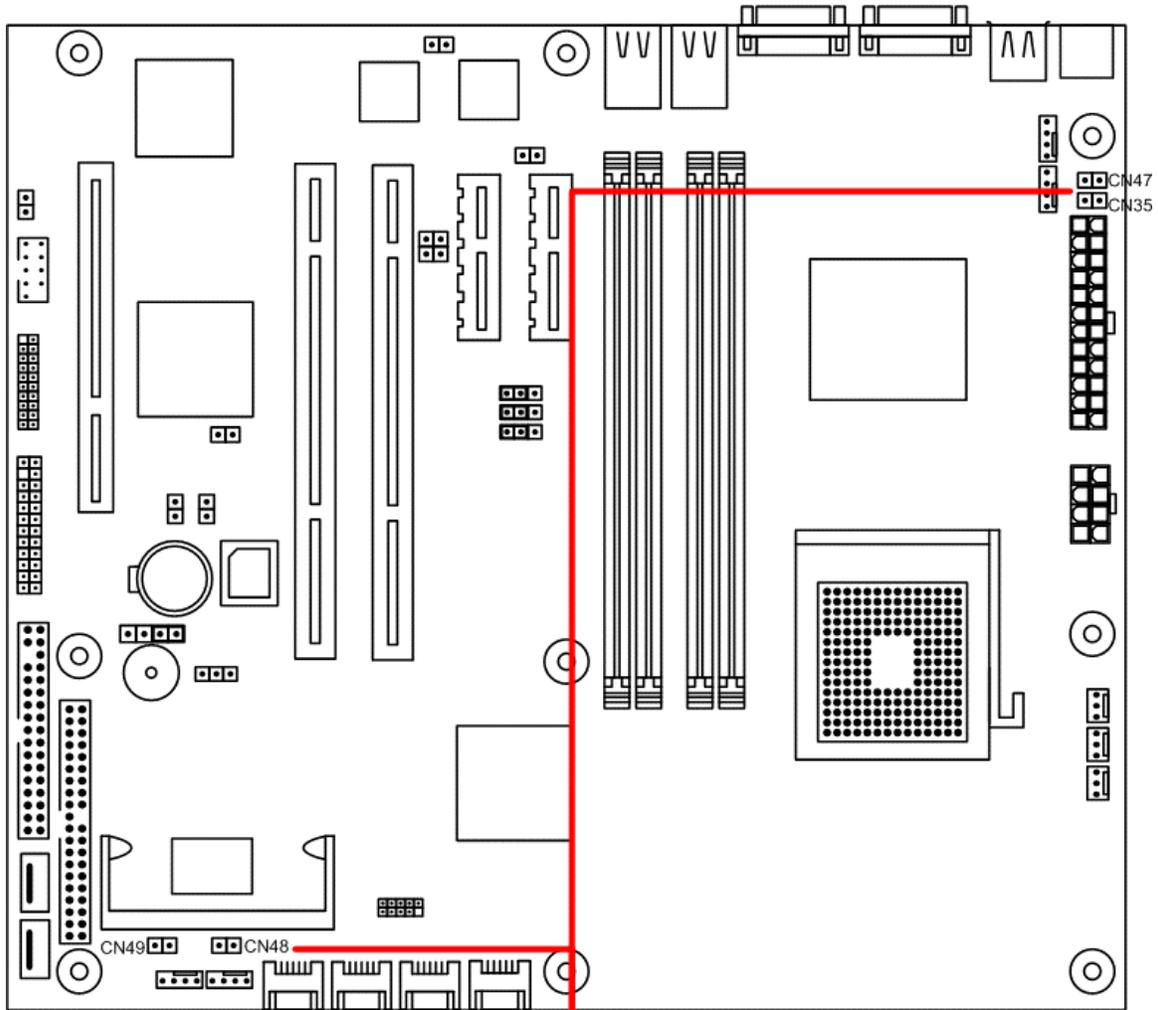
Write Enabled
(Default)



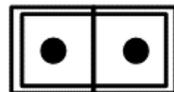
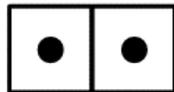
Write
Protected

2.5.8 CPU 3/4 pin FAN Select Jumper

Header CN35, CN47, CN48 and CN49 are CPU 3/4-pin fan select jumper. Each can be enabled or disabled by setting the jumper by the given configuration below. Refer to the diagram below for the locations of the headers.



For 3-pin
CPU fan
(Default)



For 4-pin
CPU fan

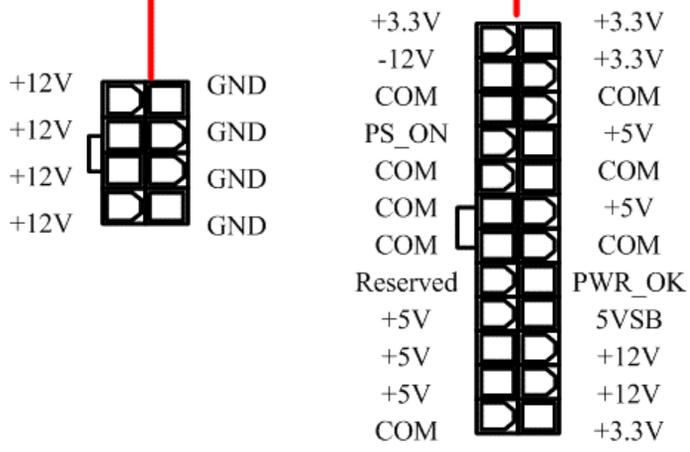
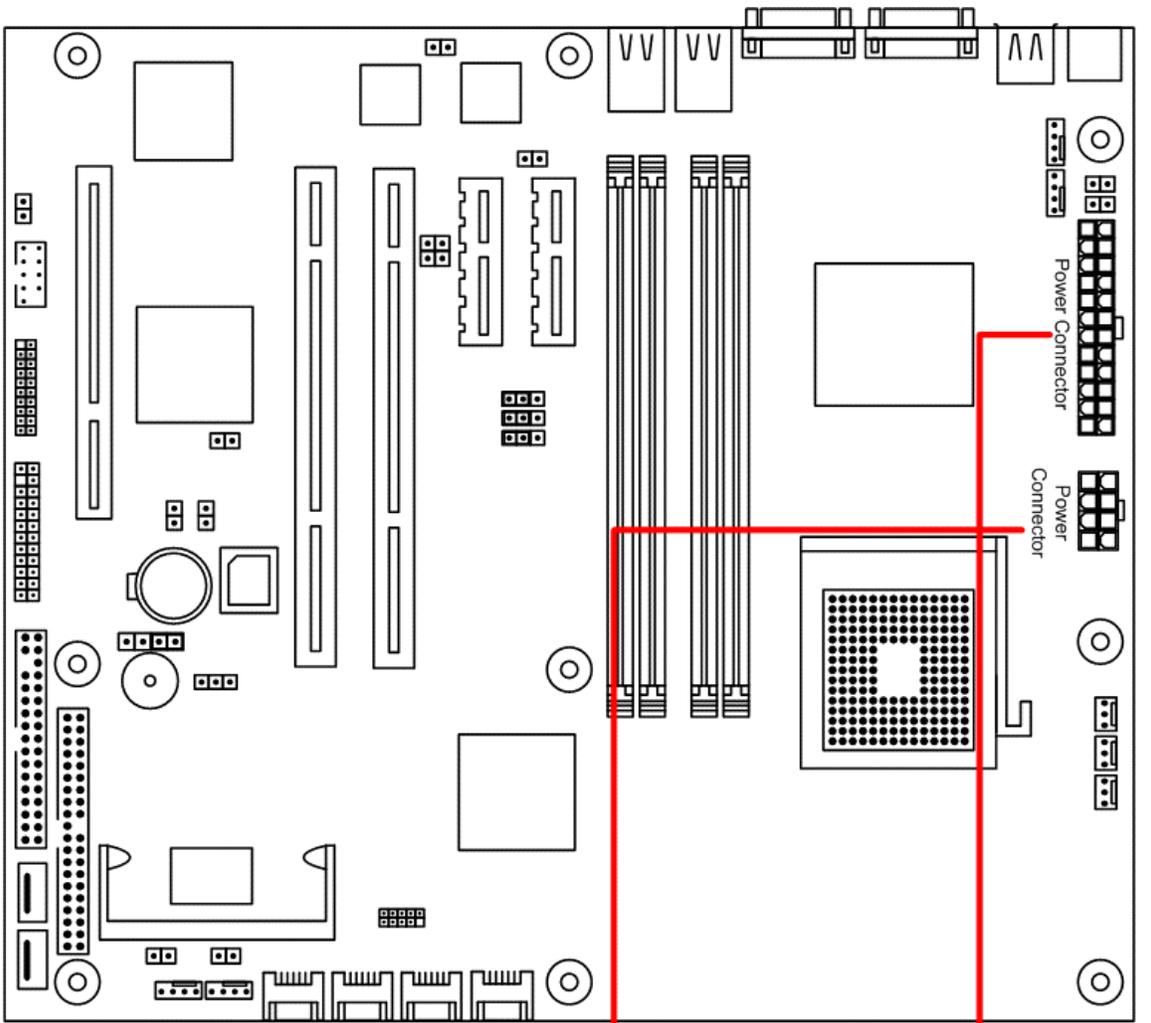
2.6 Power Supply

2.6.1 ATX 24-pin power connector and CPU 8/4-pin connector

There are one 24-pin power input connection and one 8/4-pin power input connection on the motherboard. The 24-pin power connection is used to connect to the power supply, while the 8/4-pin power connection is used to power up the CPU. BOTH must be connected in order for the system to boot up. Make sure the plugs are inserted into the connectors properly, to prevent any damage.

Please make sure your power supply can support at least 2 amps standby power for the Advanced Configuration and Power Interface (ACPI) functions.

Refer to the following diagram below for the connector locations.

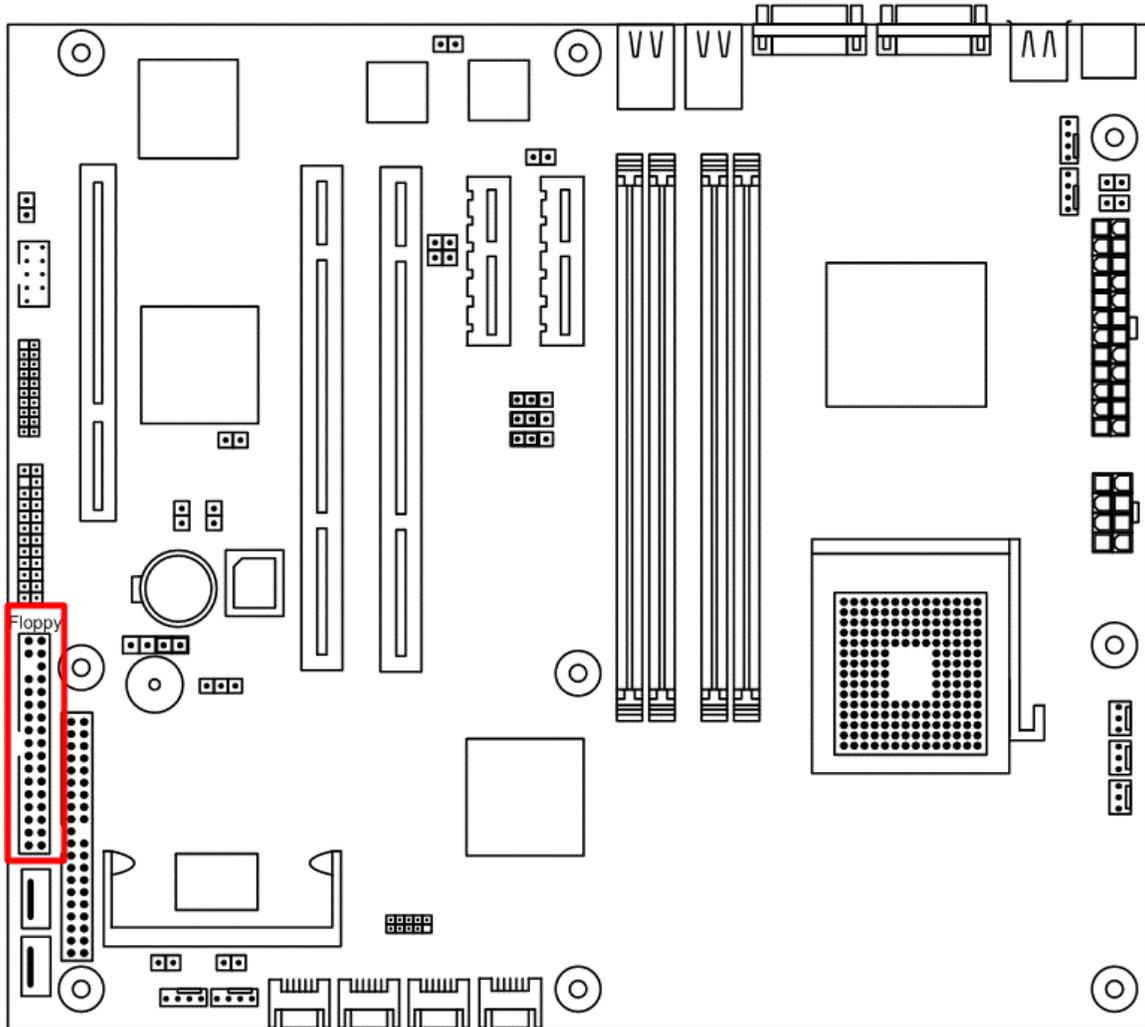



Make sure the AC adapter is not plugged into the wall outlet during installation. The electric current could damage the motherboard.

2.7 Cables & Connectors

2.7.1 Floppy disk drive connector

The following diagram indicates the location of the floppy drive connector:



To install the floppy drive, first refer to the instructions that come with the floppy drive. Then follow the instructions here.

Attaching a floppy drive can be done in a similar manner to an IDE drive. Most of the current floppy drives on the market require that the cable be installed with the colored stripe positioned next to the power connector. In most cases, there will be a key pin on the cable, which will force proper connection of the cable.

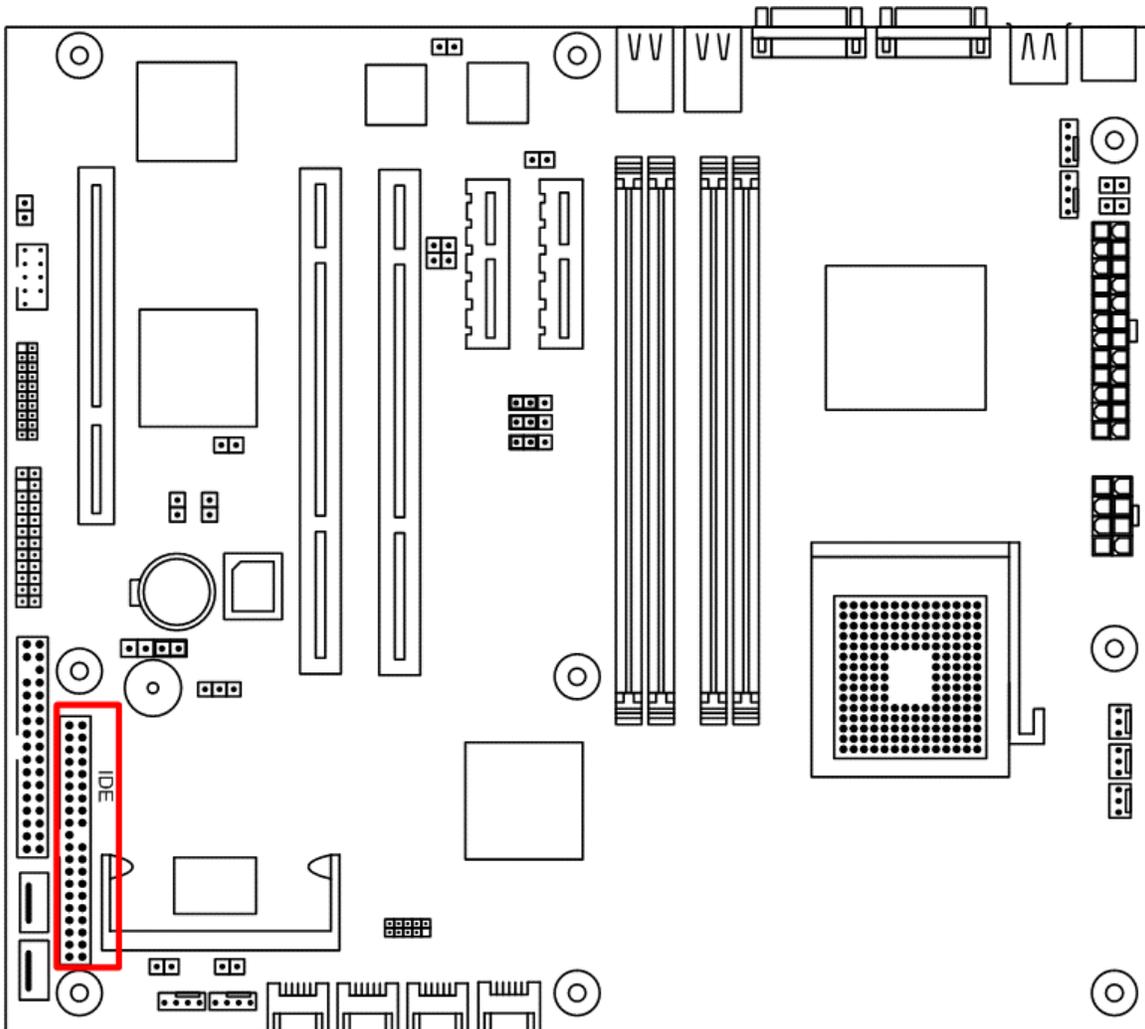
The motherboard supports only one floppy connector, and the connector can support only one floppy drive. Below are some symptoms of incorrectly installed floppy drives. Wrong installation should not cause severe damage but it may cause your system to freeze or crash when trying to read and/or write to the floppy diskette.

Diagnosing an incorrectly installed floppy drive

Drive is not automatically detected.	Usually caused by faulty cables, cables put in backwards or a bad floppy drive or motherboard. Try another floppy drive to verify the problem if the cable is properly installed or try replacing the actual cable. Also check to see if the onboard floppy controller is enabled in the BIOS setup.
Drive Fail message at boot-up.	The cable, floppy drive or motherboard may be faulty. Try another drive or cable to verify.
Drive does not power on.	Check power cable and cabling. Maybe a bad power supply or drive cable problem.
Drive activity light is constantly on.	Usually signifies that the cable on the drive is on backwards, which is a common issue. Reverse the cable on the floppy drive end and try again.

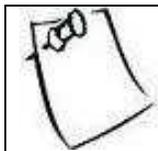
2.7.2 IDE connectors

The following diagram indicates the location of the IDE connector:



Read the instructions that come with the IDE drive and then consult the instructions here.

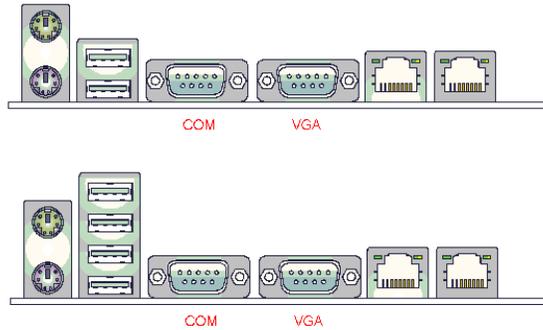
For Parallel ATA, installing IDE drives has become simpler over the years. The cables are now “keyed” to guide the user to the correct installation configuration. Each IDE connector can support two IDE drives. For the first IDE drive you want to use the Pri_IDE connector (setting the drive to Master). For the second IDE drive you can either use the connector (in which case, the second IDE drive should be set to Slave) or you use the Sec_IDE connector (in this case, set the second IDE drive to Master).



Remember to set BIOS to match the configuration that you implement here. Go to Main Menu section of BIOS for detail.

2.7.3 Rear Panel I/O ports

The following illustration displays the motherboard I/O port array.



Type of Port	Function
PS/2 Mouse connector	The system will direct IRQ12 to the PS/2 mouse if one is detected. If not detected, IRQ12 can be used for expansion slot.
PS/2 Keyboard connector	This connection is for a standard keyboard using a PS/2 plug (mini DIN). This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.
USB Ports	Two or four external USB 2.0 ports that allow simultaneous connections of 2 USB devices.
Serial Port connector (9-pin male)	This serial port can be used for pointing devices or other serial devices. See BIOS setup.
VGA connector (15-pin female)	The VGA port connects display devices such as a monitor. See the BIOS setup.
Gigabit Ethernet Port 1 & 2	These ports are RJ-45. The motherboard uses the Intel Marvell dual channel Gigabit Ethernet.

2.7.4 Back Panel LAN LED

Back Panel LAN LED:

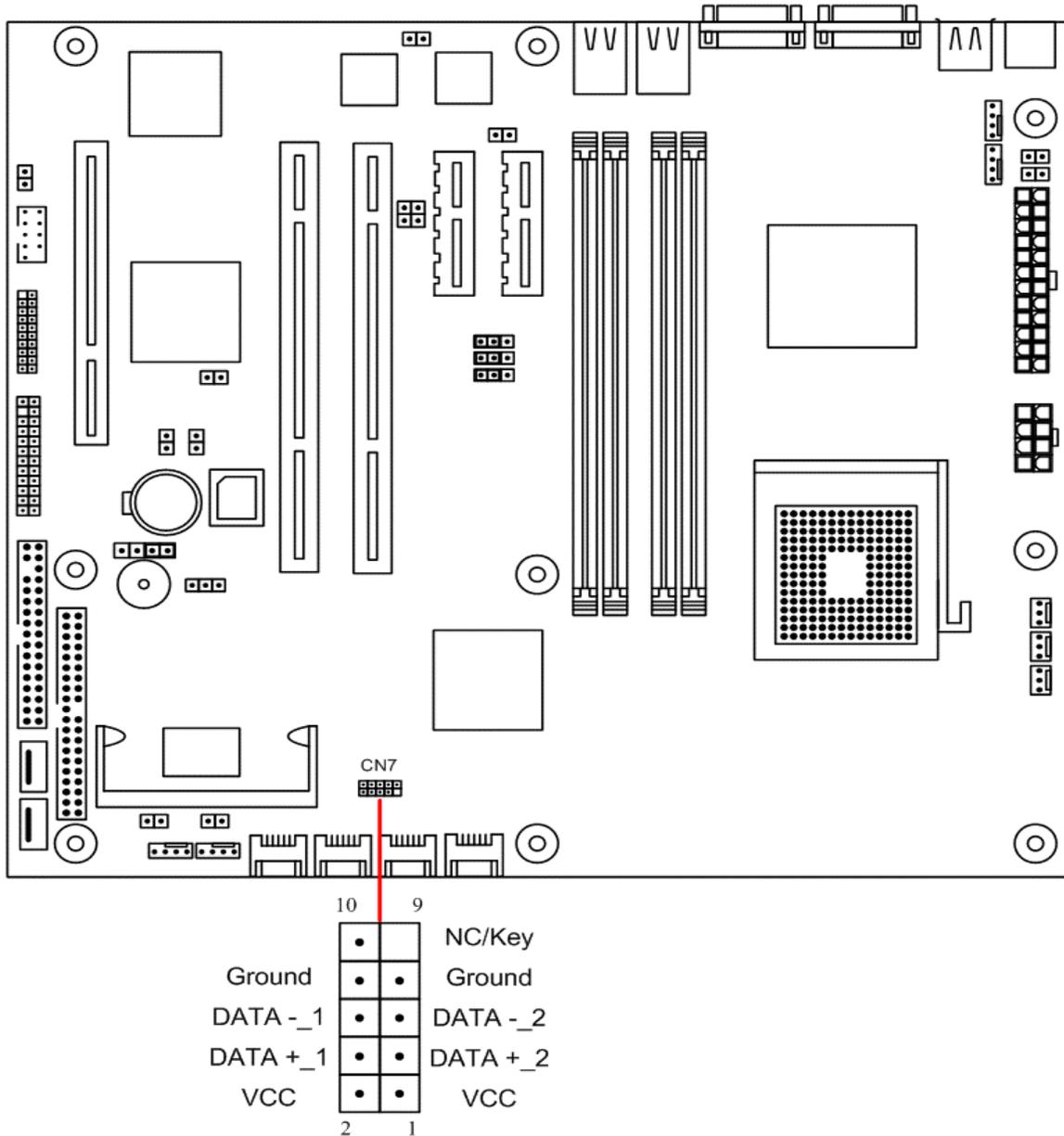
The table below will allow the user to monitor LAN activities from the back of the system.

	State of Link	Link/Activity LED (Green)	Speed LED (Green/Orange)
	No link	OFF	OFF
	Link @ 10Mbps	On/Blink	OFF
	Link @ 100Mbps	On/Blink	ON (Green)
	Link @ 1000Mbps	On/Blink	ON (Orange)
	Activity	BLINK	ON

2.7.5 Front USB Connector

Header CN7 controls the two front USB connections.
To activate the front USB, connect the USB wires to CN7.

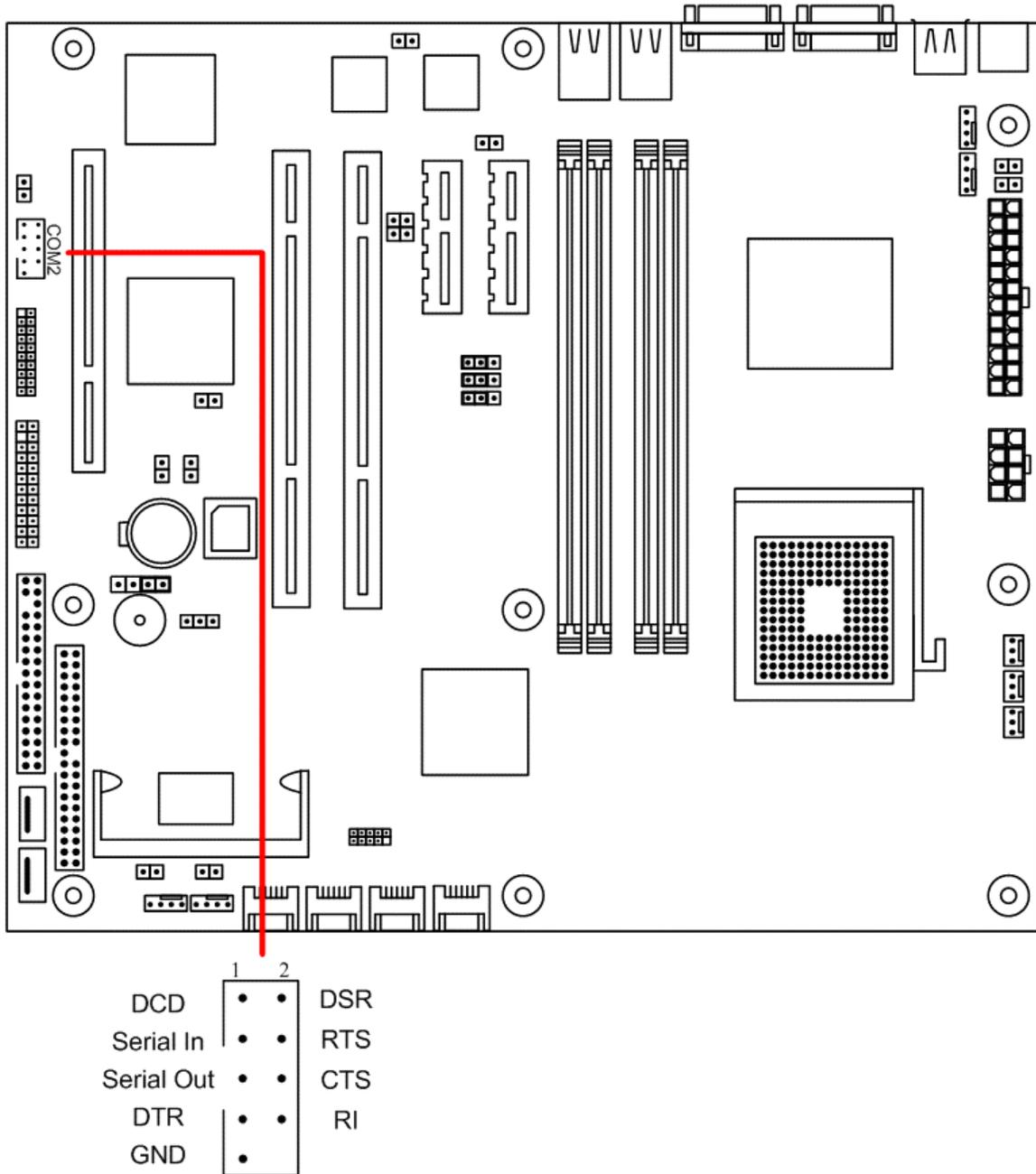
Refer to the following diagram for the location of CN7.



Side A shares the same bus as USB A, therefore two USB devices cannot use side A and USB A together. Only one device will work at a time. The same goes for Side B and USB B.

2.7.6 Front Panel Serial Port Connector

Header CN27 controls the activation of front panel serial port.
In the specification, front panel serial port is COM2; the back panel is COM1.
Refer to the following diagram for location and orientation of CN27.



CHAPTER 3. BIOS SETUP

This chapter discusses the PhoenixBIOS setup program built into the ROM BIOS.

BIOS is the basic input/output system, the firmware on the motherboard that enables the hardware to interact with the software. The setup program allows the users to modify the basic system configurations according to their needs. The configuration is then stored in a battery-backed NVRAM so that it retains the configuration even when the power is turned off. The PhoenixBIOS installed in the motherboard's ROM is a custom version of an industry standard BIOS.

The rest of the chapter will list all the menus and sub-menus in the BIOS. Along with them, you can also find the list of varieties for any configurable item in the BIOS.

3.1 ENTERING BIOS SETUP

The PhoenixBIOS is activated when the system powers on. The BIOS reads the system information contained in the CMOS and begins the process of checking the system and configuring it. After finishing configuring the whole system, BIOS will seek an OS on disk and turn over control of the system to the OS found.

While BIOS is in control, the Setup menu can be accessed by pressing the <F2> key when the following message appears briefly at the bottom of the screen during Power On Self Test: "Press <F2> to enter SETUP."

3.2 Using Setup

The following table provides details about how to navigate the Setup program using keyboard.

KEY	FUNCTION
Up Arrow ↑	Move to the previous item.
Down Arrow ↓	Move to the next item.
Left Arrow ←	Move to the previous menu.
Right Arrow →	Move to the next menu.
Esc	In the submenu: Exit the submenu. In the main menu: Exit without saving.
Enter	Select the item. A pop-up window will appear to allow setting of the item's value. If the item has a 4 in front of it, it means that the item leads to a sub-menu. Pressing <Enter> will take you to the sub-menu.
+ or -	Move the device up or down.
F1	General help on setup navigation keys. Press <F1> key to pop up a small help window that describe the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <ESC> key or <F1> key again.
F9	Setup Defaults.
F10	Save and Exit.

3.3 Troubleshooting

In case the system cannot be booted after some changes in BIOS, use the clear CMOS jumper setting to reset the BIOS to default (See Page 31). To avoid such problem, configure only the items that you thoroughly understand and refrain from modifying the advanced settings.

3.4 Main Menu:

When Serial ATA is disabled:

PhoenixBIOS Setup Utility							
Main	Advanced	Security	Power	Boot	Server	Exit	
							Item Specific Help
System Time		[12:59:59]					<Tab>, <Shift-Tab>, or <Enter> selects field.
System Date		[11/30/2002]					
Legacy Diskette A:		[1.44/1.25 MB 3½]					
▶ IDE Primary/Master		[200GB]					
▶ IDE Primary/Slave		[CD-ROM]					
▶ IDE Secondary/Master		[None]					
▶ IDE Secondary /Master		[None]					
▶ Memory Cache							
▶ Boot Features							
Installed memory:		2024 MB					
. Available to OS:		2024 MB					
. Used by devices:		2 MB					
F1 Help	↑↓ Select Item	-/+ Change Values		F9 Setup Defaults			
ESC Exit	←→ Select Menu	Enter Select ▶ Sub-Menu		F10 Save and Exit			

When Serial ATA is enabled:

PhoenixBIOS cME FirstBIOS Pro Setup Utility							
Main	Advanced	Power	Boot	Server	Exit		
							Item Specific Help
System Time		[12:59:59]					<Tab>, <Shift-Tab>, or <Enter> selects field.
System Date		[11/30/2002]					
Legacy Diskette A:		[1.44/1.25 MB 3½]					
▶ IDE Primary/Master		[200GB]					
▶ IDE Primary/Slave		[CD-ROM]					
▶ SATA Port 1		[80026MB SATA1]					
▶ SATA Port 2		[80026MB SATA2]					
▶ SATA Port 3		[None]					
▶ SATA Port 4		[None]					
▶ Memory Cache							
▶ Boot Features							
Installed memory:		2024 MB					
. Available to OS:		2024 MB					
. Used by devices:		2 MB					
F1 Help	↑↓ Select Item	-/+ Change Values		F9 Setup Defaults			
ESC Exit	←→ Select Menu	Enter Select ▶ Sub-Menu		F10 Save and Exit			

The following table shows the items that you can customize on the Main menu page:

Item	Options	Description
System Time	No options.	Shows the time of the day in the format of Hour/Min/Sec.
System Date	No options.	Shows the date in the format of MM/DD/YYYY.
Legacy Diskette A	Disabled 360 Kb 1.2 MB 720 Kb 1.44/1.25 MB 2.88 MB	Selects floppy type. Note that 1.25 MB 3½" references a 1024 byte/sector Japanese media format. The 1.25 MB, 3½" diskette requires a 3-Mode floppy-disk drive.
System Memory	No options.	This item is not configurable to user.
Extended Memory	No options.	This item is not configurable to user.

3.4.1 IDE Channel Sub-Menu:

When there is a drive installed on an IDE or SATA, the sub menu will look like the following:

PhoenixBIOS eME FirstBIOS Pro Setup Utility		
Main		
IDE PrimaryMaster [200GB]		Item Specific Help
Type:	[Auto] LBA Format	User = you enter parameters of hard disk drive installed at this connection. Auto = autotypes hard disk drive install here. 1-39 = you select pre-determined type of hard-disk drive installed here. CD-ROM = a CD-ROM drive is installed here. ATAPI Removable = removable disk drive is installed here.
Total Sectors:	390721968	
Maximum Capacity:	200GB	
Multi-Sector Transfers:	[16 Sectors]	
LBA Mode Control:	[Enabled]	
32 Bit I/O:	[Disabled]	
Transfer Mode:	[FPIO 4 / DMA 2]	
Ultra DMA Mode:	[Disabled]	
F1 Help ESC Exit	↑↓ Select Item ←→ Select Menu	-/+ Change Values Enter Select ► Sub-Menu F9 Setup Defaults F10 Save and Exit

The following table shows the items that you can customize on the IDE/SATA sub-menu page:

Item	Options	Description
Type	Auto None ATAPI Removable CD-ROM IDE Removable Other ATAPI User	User = you enter parameters of hard disk drive installed at this connection. Auto = autotypes hard disk drive installed here. 1-39 = you select pre-determined type of hard-disk drive installed here. CD-ROM = a CD-ROM drive is installed here. ATAPI Removable = removable disk drive is installed here.
Multi-Sector Transfers	Disabled 2 sectors 4 sectors 8 sectors 16 sectors	Specify the number of sectors per block for multiple sector transfers. 'Max' refers to the size the disk returns when queried.
LBA Mode Control	Disabled Enabled	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads & Sectors.
32 Bit I/O	Disabled Enabled	This setting enables or disables 32 bit IDE data transfers.

Transfer Mode	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4 FPIO 3/ DMA 1 FPIO 4/ DMA 2	Select the method for moving data to/from the drive. Autotype the drive to select the optimum transfer mode.
Ultra DMA Mode	Disabled Mode 0 Mode 1 Mode 2 Mode 3 Mode 4 Mode 5	Selects the Ultra DMA mode used for moving data to/from the drive. Autotype the drive to select the optimum transfer mode.



All the IDE Channel sub-menus and SATA sub-menus have the same sub-menu layout as the one shown above..

3.4.2 Memory Cache Sub-Menu

PhoenixBIOS cME FirstBIOS Pro Setup Utility			
Main			
Boot Features		Item Specific Help	
Cache System Bios area:	[Write Protect]	Controls caching of system BIOS area.	
Cache Video BIOS area:	[Write Protect]		
Cache Base 0-512k:	[Write Back]		
Cache Base 512k-640k:	[Write Back]		
Cache Extended Memory Area:	[Write Back]		
Cache A000-AFFF:	[Disabled]		
Cache B000-BFFF:	[Disabled]		
Cache C800-CBFF:	[Disabled]		
Cache CC00-CFFF:	[Disabled]		
Cache D000-D3FF:	[Disabled]		
Cache D400-D7FF:	[Disabled]		
Cache D800-DBFF:	[Disabled]		
Cache DC00-DFFF:	[Disabled]		
Cache E000-E3FF:	[Disabled]		
Cache E400-E7FF:	[Write Protect]		
Cache E800-EBFF:	[Write Protect]		
Cache EC00-EFFF:	[Write Protect]		
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults
ESC Exit	←→ Select Menu	Enter Select ► Sub-Menu	F10 Save and Exit

3.4.3 Boot Feature Sub-Menu:

PhoenixBIOS cME FirstBIOS Pro Setup Utility			
Main			
Boot Features		Item Specific Help	
Floppy check:	[Disabled]	Enabled Verifies floppy type on boot; disabled speeds boot.	
Summary screen:	[Disabled]		
Boot-time Diagnostic Screen	[Enabled]		
QuickBoot Mode:	[Enabled]		
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults
ESC Exit	←→ Select Menu	Enter Select ► Sub-Menu	F10 Save and Exit

The following table shows the items that you can customize on the Boot Features sub-menu page:

Item	Options	Description
Floppy check	Disabled Enabled	Enabled verifies floppy type on boot; disabled speeds up boot process.
Summary screen	Disabled Enabled	Display system configuration on boot.
Boot-time Diagnostic Screen	Disabled Enabled	Display the diagnostic screen during boot.
QuickBoot Mode	Disabled Enabled	Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

3.5 Advanced Menu

PhoenixBIOS Setup Utility						
Main	Advanced	Security	Power	Boot	Server	Exit
						Item Specific Help
<p style="text-align: center;">Setup Warning</p> <p>Setting items on this menu to incorrect values may cause your system to malfunction.</p> <ul style="list-style-type: none"> ▶ PCI Configuration ▶ Advanced Chipset Control ▶ Advanced Processor Options ▶ I/O Device Configuration ▶ Console Redirection ▶ DMI Event Logging <p>Installed O/S: [WIN2000] Reset Configuration Data: [NO] Large Disk Access Mode: [DOS]</p> <p>Enable ACPI (debug only): [Yes]</p> <p>Route Port 80h cycles to: [PCI] Legacy USB Support: [Enabled] Option ROM Placement [Enabled]</p>						Select options for Advanced Chipset features.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit						

The following table shows the items that you can customize in the “Advanced” menu page:

Item	Options	Description
Installed O/S	Other Win95 Win98 WinMe Win2000	Select the operating system installed on your system which you will use most commonly. Note: An incorrect setting can cause some operating systems to display unexpected behavior.
Reset Configuration Data	Yes No	Select ‘Yes’ if you want to clear the extended system configuration data (ESCD) area.
Large Disk Access Mode	Other DOS	UNIX, Novell NetWare, or other operating systems, select ‘Other’. If you are installing new software and the drive fails, change this selection and try again. Different operating systems require different representations of drive geometries.

Item	Options	Description
Enable ACPI (debug only)	Yes No	En/Disable ACPI Bios (Advanced Configuration and Power Interface) Debug only, removes this option for production.
Route Port 80h cycles to	LPC PCI	Disabled – Port always LPC – Routes Port 80h I/O cycles to the LPC bus PCI – Routes Port 80h I/O cycles to the PCI bus
Legacy USB Support		Enable support for Legacy Universal Serial Bus
Option ROM Placement	Disabled E000 Extension by PFA Temporary Relocation by PFA E000 Extension by Size Temporary Relocation by Size	You chose to apply option ROM placement feature, while you know it was risky. If the system hangs during boot, please restart the system and come here to change the setting.

Special Explanation regarding Native Mode, Serial ATA and Parallel ATA:

In native mode, devices are assigned by PCI; it can support up to six devices, four on Parallel ATA, two on Serial ATA. Native mode is the default BIOS selection. It is represented by “Parallel ATA = BOTH“, “Serial ATA = Enabled“ and “Native Mode Operation = Both”.

M215X also supports legacy mode where devices be assigned by I/O, IRQ. Legacy mode can support up to 4 devices. Legacy mode is enabled by a combination of selections on Native Mode Operation, Serial ATA and Parallel ATA items.

The following list shows the various combinations for legacy mode:

1. “Parallel ATA = BOTH“, “Serial ATA = “Disabled””: in this combination, Parallel ATA supports all four devices on channel 0 and 1.
2. “Parallel ATA = channel 0“, “Serial ATA = Enabled“, “Native Mode Operation = Auto””: in this combination, Parallel ATA supports two devices on channel 0 and Serial ATA supports two devices.
3. “Parallel ATA = channel 1“, “Serial ATA = Enabled“, “Native Mode Operation = Auto””: in this combination, Parallel ATA supports two devices on channel 1 and Serial ATA supports two devices.

3.5.1 PCI Configuration

The PCI Configuration Menu looks like the following:

PhoenixBIOS cME FirstBIOS Pro Setup Utility Advanced		
Advanced Chipset Control		Item Specific Help
<ul style="list-style-type: none"> ▶ Slot #1 – PCI 32 –bit ▶ Slot #4 – PCI-X 64 –bit ▶ Slot #5 – PCI-X 64 –bit 		Additional setup menus to configure PCI devices
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		

The following table shows the items that you can customize on the PCI Configuration Menu page:

Item	Options	Description
Slot #1 – PCI 32 –bit		Setup items for configuring the specific PCI device
Option ROM Scan	Enabled Disabled	Initialize device expansion ROM
Slot #4 – PCI-X 64 –bit		Setup items for configuring the specific PCI device
Option ROM Scan	Enabled Disabled	Initialize device expansion ROM
Slot #5 – PCI-X 64 –bit		Setup items for configuring the specific PCI device
Option ROM Scan	Enabled Disabled	Initialize device expansion ROM

3.5.2 Advanced Chipset Control

The Advanced Chipset Control Menu looks like the following:

PhoenixBIOS cME FirstBIOS Pro Setup Utility Advanced		
Advanced Chipset Control		Item Specific Help
<p>▶ Integrated Device Control Sub-Menu ▶ PCI Express Sub-Menu</p> <p>Default Primary Video Adapter [Auto]</p> <p>Parallel ATA [Enabled] Serial ATA [Enabled] Native Mode Operation [Auto] SATA Controller Mode Option [Compatible]</p>		These items determine whether the integrated PCI devices will be enabled in PCI config space.
<p>F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit</p>		

The following table shows the items that you can customize on the Advanced Chipset sub-menu page:

Item	Options	Description
Default Primary Video Adapter	IGD PEG PCI Auto	This allows you to select the Video device used by the BIOS during POST. The default is AUTO. Auto – PEG, PCI, IGD IGD – IGD, PCI PEG – PEG, PCI PCI – PCI, PEG, IGD
Parallel ATA	Disable Enable	Enable the PATA
Serial ATA	Disable Enable	Enable the SATA
Native Mode Operation	Auto Serial ATA	Choose Native Mode for ATA Note: Certain OS is not supported under native mode
SATA Controller Mode Option	Compatible Enhanced	Compatible mode: SATA and PATA drives are auto-detected and placed in Legacy mode. Enhanced (non-AHCI) mode: SATA and PATA drives are auto-detected and placed in Native IDE mode Note: Pre-Win2k OS's do not work in Enhanced mode.

Item	Options	Description
SATA Raid Enable	Disabled Enabled	Enable SATA RAID functionality
SATA AHCI Enable	Disabled Enabled	Enable AHCI: WinXP-SP1 +IAA driver supports AHCI mode

3.5.3 Turning on RAID or AHCI

ATTENTION: To turn on Raid or AHCI (the SATA RAID Enable and SATA AHCI Enable options will **ONLY** appear if SATA Controller Mode Option is turned to Enhanced). Raid will **ONLY** be turned on if SATA RAID Enable is enabled. The system should be restarted after it has been enabled. The raid setup menu can be accessed with CTRL+I during boot up:

The Advanced Chipset Control Sub-Menu should look like this if RAID or AHCI are to be enabled:

PhoenixBIOS cME FirstBIOS Pro Setup Utility Advanced		
Advanced Chipset Control		Item Specific Help
▶ Integrated Device Control Sub-Menu ▶ PCI Express Sub-Menu Default Primary Video Adapter [Auto] Parallel ATA [Enabled] Serial ATA [Enabled] SATA Controller Mode Option [Enhanced] SATA RAID Enable [Disabled] SATA AHCI Enable [Disabled]		These items determine whether the integrated PCI devices will be enabled in PCI config space.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		

The table below is the options you can customize after changing the option of **SATA Controller Mode Option** to **Enhanced**.

Item	Options	Description
SATA Controller Mode Option	Compatible Enhanced	Compatible mode: SATA and PATA drives are auto-detected and placed in Legacy mode. Enhanced (non-AHCI) mode: SATA and PATA drives are auto-detected and placed in Native IDE mode Note: Pre-Win2k OS's do not work in Enhanced mode.
SATA Raid Enable	Disabled Enabled	Enable SATA RAID functionality
SATA AHCI Enable	Disabled Enabled	Enable AHCI: WinXP-SP1 +IAA driver supports AHCI mode

3.5.4 Integrated Device Control Sub-Menu

The integrated device control sub-menu looks like the following:

PhoenixBIOS eME FirstBIOS Pro Setup Utility Advanced		
Advanced Chipset Control		Item Specific Help
USB Device 29, Function 3: [Enabled] USB Device 29, Function 2 & 3: [Enabled] USB Device 29, Function 1 & 2 & 3: [Enabled] USB Device 29, Function 0&1&2&3: [Enabled] USB Device 29, Function 7: [Enabled]		Enable or Disable this USB Device by setting item to the desired value.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ► Sub-Menu F10 Save and Exit		

The table below is a list of things that you can customize in the integrated device control sub-menu.

Item	Options	Description
USB Device 29, Function 3	Disabled Enabled	Enable or Disable this USB Device by setting item to the desired value.
USB Device 29, Function 2 & 3	Disabled Enabled	Enable or Disable this USB Device by setting item to the desired value.
USB Device 29, Function 1 & 2 & 3	Disabled Enabled	Enable or Disable this USB Device by setting item to the desired value.
USB Device 29, Function 0&1&2&3	Disabled Enabled	Enable or Disable this USB Device by setting item to the desired value.
USB Device 29, Function 7	Disabled Enabled	Enable or Disable this USB Device by setting item to the desired value.

3.5.5 Express Sub-Menu

The PCI Express Sub Menu looks like the following:

PhoenixBIOS eME FirstBIOS Pro Setup Utility Advanced	
PCI Express Device Control	Item Specific Help
PCI Express Base Address = E000000h GMCH Base Address = FED14000h PCI Express Base Address = FED18000h PCI Express Base Address = FED19000h <hr/> ► PEG Port Sub-Menu ► PEG1 Port Sub-Menu ICH7 RCB Base Address = FED1C000h <hr/> ► Root Port #1 Sub-Menu ► Root Port #5 Sub-Menu ► Root Port #6 Sub-Menu	These items are for debugging the PCI Express Graphics Port.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ► Sub-Menu F10 Save and Exit	

The following table shows the items that you can customize on the PCI Express Device Control sub-menu page:

Item	Options	Description
PEG Port Sub-Menu	Enabled Disabled	Disabled – Port always disabled. Enabled – Port always enabled. Auto – Only enable if card found. Debug – Only enable if card found. Don't force link width.
PEG1 Port Sub-Menu		All items on this menu cannot be modified in user mode. If any items require changes, please consult your system Supervisor.
Root Port #1, #5, and #6 Sub Menu	Auto Disabled Enabled	Disabled – Port always disabled (If Port #1 is disabled, then the rest of the Ports will also be disabled.) Enabled – Port always enabled. Auto – Only enable if card found.

3.5.6 Advanced Processor Options Sub Menu

The Advanced Processor Options Sub Menu looks like the following:

PhoenixBIOS cME FirstBIOS Pro Setup Utility Advanced		
Advanced Processor Options		Item Specific Help
Single Logical Proc. Mode	[Disabled]	Multi Core Processor Only single thread and core is enabled
Intel Enhanced Debug	[Enabled]	
Machine Checking	[Enabled]	
Fast String operations	[Enabled]	
Compatible FPU Code	[Disabled]	
Adjacent Cache Line Prefetch	[Enabled]	
Set Max Ext CPUID = 3	[Disabled]	
Echo TPR	[Enabled]	
C1 Enhanced Mode	[Disabled]	
Intel (R) Virtualization Technology	[Disabled]	
No Execute Mode Men Protection	[Enabled]	
Frequency Ratio	[Default]	
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ► Sub-Menu F10 Save and Exit		

The following table shows the items that you can customize on the Advanced Processor sub-menu page:

Item	Options	Description
Single Logical Proc. Mode	Disabled Enabled	Multi Core Processor Only single thread and core is enabled
Intel Enhanced Debug	Disabled Enabled	[FOR DEBUG ONLY]
Machine Checking	Disabled Enabled	[FOR DEBUG ONLY]
Fast String operations	Disabled Enabled	[FOR DEBUG ONLY]
Compatible FPU Code	Disabled Enabled	[FOR DEBUG ONLY]
Adjacent Cache Line Prefetch	Disabled Enabled	[FOR DEBUG ONLY]
Set Max Ext CPUID = 3	Disabled Enabled	Sets Max CPUID extended function value to 3.

Item	Options	Description
Echo TPR	Disabled Enabled	[FOR DEBUG ONLY]
C1 Enhanced Mode	Disabled Enabled	
Intel (R) Virtualization Technology	Disabled Enabled	Vanderpool Technology
No Execute Mode Mem Protection	Disabled Enabled	
Frequency Ratio	Default X 14 X 15 X 16 X 17 X 18	Select the internal frequency multiplier of the CPU ¹

3.5.7 I/O Device Configuration Sub Menu

The I/O Device Configuration Sub Menu looks like the following:

PhoenixBIOS cME FirstBIOS Pro Setup Utility Advanced			
I/O Device Configuration		Item Specific Help	
Serial port A:	[Enabled]	Configure serial port A using options: [Disabled] No configuration [Enabled] User configuration [Auto] BIOS or OS chooses configuration (OS Controlled) Displayed when controlled by OS	
Base I/O Address:	[3F8]		
Interrupt:	[IRQ 4]		
Serial port B:	[Enabled]		
Mode:	[Normal]		
Base I/O Address:	[2F8]		
Interrupt:	[IRQ 3]		
Floppy disk controller:	[Enabled]		
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ► Sub-Menu F10 Save and Exit			

The following table shows the items that you can customize on the I/O Device Configuration sub-menu page:

Item	Options	Description
Serial port	Disabled Enabled Auto	Configure serial port using options: [Disabled]: No configuration. [Enabled]: User configuration. [Auto]: BIOS or OS chooses configuration. (OS controlled): Displays when controlled by OS.
Serial Port Base I/O Address	3F8 2F8 3E8 2E8	Set the base I/O address for serial port.
Serial Port Mode:	Normal IrDA ASK-IR	Set the mode for serial port.
Serial Port Interrupt	IRQ 3 IRQ 4	Set the interrupt for serial port.
Floppy disk controller	Disabled Enabled Auto	Configure using options: [Disabled]: No configuration. [Enabled]: User configuration. [Auto]: BIOS or OS chooses configuration. (OS controlled): Displays when controlled by OS.

3.5.8 Console Redirection Sub Menu

The Console Redirection Sub Menu looks like the following:

PhoenixBIOS cME FirstBIOS Pro Setup Utility Advanced		
Console Redirection		Item Specific Help
Com Port Address	[Disabled]	If enabled, it will use a port on the motherboard.
Baud Rate	[19.2K]	
Console Type	[PC ANSI]	
Flow Control	[CTS/RTS]	
Console connection	[Direct]	
Continue C.R. after POST	[Off]	
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ► Sub-Menu F10 Save and Exit		

The following table shows the items that you can customize on the Console Redirection sub-menu page:

Item	Options	Description
Com Port Address	Disabled On-board COM A On-board COM B	If enabled, it will use a port on the motherboard.
Baud Rate	300 1200 2400 9600 19.2K 38.4K 57.6K 115.2K	Enables the specified baud rate.
Console Type	VT100 VT100, 8bit PC-ANSI, 7bit PC-ANSI VT100+ VT-UTF8	Enables the specified console type.
Flow Control	None XON/XOFF CTS/RTS	Enables flow control
Console connection	Direct Via modem	Indicate whether the console is connected directly to the system or a modem is used to connect.
Continue C.R. after POST	Off On	Enables Console Redirection after OS has loaded.

3.5.9 DMI Event Logging Sub Menu

The DMI even logging sub-menu looks like the following:

PhoenixBIOS cME FirstBIOS Pro Setup Utility Advanced		
DMI Event Logging		Item Specific Help
Event log validity Valid Event log capacity Space Available		View the contents of the DMI event log.
View DMI event log [Enter] Event Logging [Enabled]		
Mark DMI events as read [Enter] Clear all DMI events logs [No]		
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select ► Sub-Menu F10 Save and Exit		

The table below is the options that you can customize under the DMI Event Logging sub-menu:

Item	Options	Description
View DMI event log	Enter	View the contents of the DMI event log.
Event Logging	Disabled Enabled	Select 'Enabled' to allow logging of DMI events.
Mark DMI events as read	Enter	Press Enter to mark all DMI events in the event log as read.
Clear all DMI event logs	No Yes	Setting this to 'Yes' will clear the DMI event log after rebooting.

3.6 Security Menu:

PhoenixBIOS Setup Utility						
Main	Advanced	Security	Power	Boot	Server	Exit
						Item Specific Help
Supervisor Password Is:		Clear				
User Password Is:		Clear				
Set Supervisor Password:		[Enter]				
Set User Password:		[Enter]				
Diskette access:		[Supervisor]				
Fixed disk boot sector:		[Normal]				
Virus check reminder:		[Disabled]				
System backup reminder:		[Disabled]				
Password on boot:		[Disabled]				
FirstWare Authentication Level		[High]				
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults			
ESC Exit	←→ Select Menu	Enter Select ► Sub-Menu	F10 Save and Exit			

The following table shows the items that you can customize on the Security menu page:

Item	Options	Description
Supervisor Password Is	Clear Set	Displays the password if there is one.
User Password Is	Clear Set	Displays the password if there is one.
Set Supervisor Password	Enter	Supervisor Password controls access to the setup utility.
Set User Password	Enter	*Note: to use this feature, you must first set supervisor password.
Diskette access	User Supervisor	Controls access to diskette drives
Fixed disk boot sector	Normal Write Protect	Write protects boot sector on hard disk to protect against viruses
Virus check reminder	Disabled Daily Weekly Monthly	Displays reminder message at boot (daily, every Monday or 1 st of every month)
System backup reminder	Disabled Daily Weekly Monthly	Displays reminder message at boot (daily, every Monday or 1 st of every month)
Password on boot	Disabled Enabled	Enables password entry on boot
FirstWare Authentication Level	High Medium Low	Select FirstWare authentication level

3.7 Power Menu:

PhoenixBIOS Setup Utility						
Main	Advanced	Security	Power	Boot	Server	Exit
						Item Specific Help
Power Saving:		[Disabled]				Maximum Power Savings conserves the greatest amount of system power. Maximum performance conserves power but allows greatest system performance. To alter these settings, choose Customized. To turn off power management, choose Disabled.
Power Button Behavior:		[On/Off]				
After Power Failure:		[Last State]				
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults			
ESC Exit	←→ Select Menu	Enter Select ► Sub-Menu	F10 Save and Exit			

The following table shows the items that you can customize on the Power menu page:

Item	Options	Description
Power Saving	Disabled Customized Maximum Power Savings Maximum Performance	Maximum Power Savings conserves the greatest amount of system power. Maximum Performance conserves power but allows greatest system performance. To alter these settings, choose Customized. To turn off power management, choose Disabled.
Power Button Behavior	On/Off Wake/Sleep	Select the desired system power state after pressing power button. On/Off: System powers off. Wake/Sleep: System enter sleep mode.
After Power Failure	Stay Off Last State Power On	Sets the mode of operation IF an AC/Power Loss occurs. The two modes are: 'Stay Off' keeps the power off until power button is pressed; 'Last State' restores previous power state before loss occurred; 'Power On' turns on the system when AC power becomes available.

3.8 Boot Menu:

All the possible devices that you can boot from are automatically detected and listed on the page. The items with a '+' in front of it indicates that the item is a category with more devices nested under it. You can use <Enter> to display the nested devices. The first device listed is the first boot device. In the example shown below, the CD-ROM is the first boot device, followed by the ST380023AS- (P0) in the category of hard drive.

PhoenixBIOS Setup Utility						
Main	Advanced	Security	Power	Boot	Server	Exit
						Item Specific Help
Boot priority order: 1: Legacy Floppy Drives 2: IDE 0: ST380023AS-(S1) 3: IDE 1: 4: IDE 2: 5: IDE 3: 6: IDE 4: 7: IDE 5: 8: All IDE HD Excluded from boot order: : PCI BEV: IBA GE Slot 0400 v1228 : PCI BEV: IBA GE Slot 0600 v1228 : Legacy Network Card:						Keys used to view or configure devices: <Enter> expands or collapses devices with a + or - <Ctrl-Enter> expands all <Shift-1> enables or disables a device. <+> and <-> moves the device up or down. <n> may move removable device between Hard Disk or Removable Disk. <d> Remove a device that is not installed.
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults			
ESC Exit	←→ Select Menu	Enter Select ► Sub-Menu	F10 Save and Exit			

3.9 Server Menu:

PhoenixBIOS Setup Utility							
Main	Advanced	Security	Power	Boot	Server	Exit	
							Item Specific Help
▶ Hardware Monitor							Show hardware monitor Current state
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults				
ESC Exit	←→ Select Menu	Enter Select ▶ Sub-Menu	F10 Save and Exit				

3.9.1 Hardware Monitor

The Hardware Monitor looks like the following:

PhoenixBIOS cME FirstBIOS Pro Setup Utility Server		
Hardware Monitor		Item Specific Help
CPU Fan Speed = 3827 RPM CN38 Fan Speed = No Function CN41 Fan Speed = No Function CN42 Fan Speed = No Function CPU Temperature = 127 (°C) DIMM Temperature = 31 (°C) On-Chip Temp. = 127 (°C) VCC to Processor = +1.4875 V +5.0 Volt = +5.294 V +5.0 Volt Standby = +5.10 V +3.3 Volt = +3.450 V +3.3 Volt Standby = +3.354 V +12.0 Volt = +12.24 V Battery (3.0V) = +3.450 V		All items on this menu cannot be modified in user mode. If any items require changes, please consult your system Supervisor.
F1 Help ESC Exit	↑↓ Select Item ←→ Select Menu	-/+ Change Values Enter Select ► Sub-Menu F9 Setup Defaults F10 Save and Exit

3.10 Exit Menu:

PhoenixBIOS Setup Utility							
Main	Advanced	Security	Power	Boot	Server	Exit	
							Item Specific Help
Exit Saving Changes Exit Discarding Changes Load Setup Defaults Discard Changes Save Changes							Exit System Setup and save your changes to CMOS.
F1 Help	↑↓ Select Item	-/+ Change Values	F9 Setup Defaults				
ESC Exit	←→ Select Menu	Enter Select ► Sub-Menu	F10 Save and Exit				

APPENDIX I: 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.

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.

DMI: A specification that establishes a standard framework for managing networked computers. DMI covers hardware and software, desktop systems and servers, and defines a model for filtering events and describing interfaces.

DRAM (Dynamic RAM): widely available, very affordable form of RAM, which loses 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.

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.

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): the 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.

OPROM: Firmware on adapter cards that control bootable peripherals. The system BIOS interrogates the option ROMs to determine which devices can be booted.

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: allow you to connect multiple PCI devices onto one PCI slot.

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.

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.

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).

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

SRAM (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.

SMBIOS: The system management specification addresses how motherboard and system vendors present management information about their products in a standard format by extending the BIOS interface on Intel architecture systems.

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.

ZCR (Zero Channel RAID): ZCR card provides RAID-5 solution by working with the onboard SCSI/SATA/SATA-II chip through special PCI-X slot with Intel RAIDIOS logic, thus lowering cost of RAID-5 solution