



**BF55x
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 Temperature	10°C to 35°C	50°F to 95°F
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Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

Chapter 1. Getting Started

1.1 Congratulations

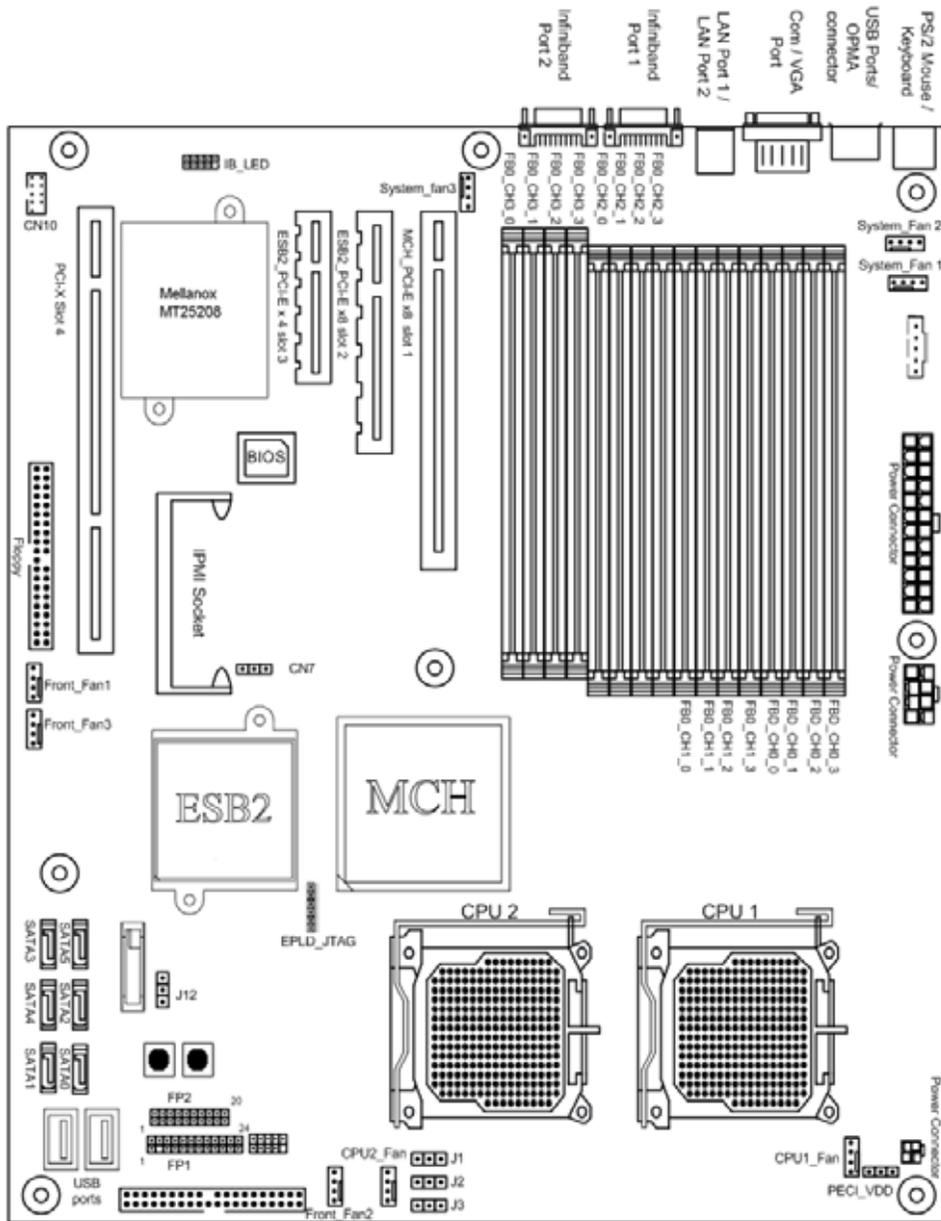
You have in possession one of the most powerful and versatile Intel processor solutions, the BF55x. Powered by cutting edge Intel 5000P and ESB2 chipsets, BF55x server board offers great system and communication performance plus high memory & I/O capacity for High-end HPC server applications. It provides provide, higher throughput, and faster time-to-solution. The Intel® 5000P chipset, offers increased graphics performance, reduced power consumption and improved platform reliability and system manageability. Thank you for purchasing Arima Computer Corp. family of products.

1.2 Unpacking

Arima Computer Corp. provides a number of accessories for your convenience. Check for the following items that come with your motherboard:

- Quick Installation Guide
- Driver and user Guide CD
- 1 x IDE cable
- 1 x FDD cable
- 1 x I/O shield
- 2 x SATA cables
- 1 x SATA power cord
- 1 x Spare jumpers

BF55x Rev. C Quick Installation Guide



J12 Clear CMOS Select Jumper

1-2	2-3
Normal (default)	Clear CMOS

CN7 On-Board VGA Select Jumper

1-2	2-3
VGA Disabled	VGA Enabled (default)

J1, J2, J3 FSB Frequency Selection

J1	J2	J3	Description
2-3	2-3	open	MHz
2-3	open	2-3	166 MHz
2-3	2-3	2-3	266 MHz
open	2-3	2-3	333 MHz

EPLD_JTAG

Pin	Description
1	GND
2	TCK
3	TDO
4	TDI
5	TMS
6	PWR

LAN Connector Indicator Light

Indication	Meaning
Activity LED flashing	Data activity
Link LED lighting up	Connected to Network

Recommended Memory Configurations

1 DIMM	FBD_CH_0_0
2 DIMMs	FBD_CH_0_0, FBD_CH_0_1
4 DIMMs	FBD_CH_0_0, FBD_CH_1_0, FBD_CH_2_0, FBD_CH_3_0
8 DIMMs	FBD_CH_0_0, FBD_CH_0_1, FBD_CH_1_0, FBD_CH_1_1, FBD_CH_2_0, FBD_CH_2_1, FBD_CH_3_0, FBD_CH_3_1

For more detail about the memory configuration, please refer to the user manual.
 The Latest BIOS, Recommended Memory List, Drivers and Utility can be downloaded from <http://www.arima.com.tw/server>

CN10 COM2 Header

Pin	Description	Pin	Description
1	SP_DCD2	2	SP_DSR2
3	SP_RXD2	4	SP_RTS2
5	SP_TXD2	6	SP_CTS2
7	SP_DTR2	8	SP_RI2
9	GND	10	N/A

IB_LED

Pin	Description
1	IB1 LINK
3	IB2 LINK
5	IB1 ACT
7	IB2 ACT
9	

FP1 Front Panel

Power LED Anode	1	2	5VSB
Key	3	4	Cooling Fault LED Anode
Power LED Cathode	5	6	Cooling Fault LED Cathode
HDD Activity LED Anode	7	8	System Fault LED Anode
HDD Activity LED Cathode	9	10	System Fault LED Cathode
Power Switch	11	12	NIC#1 Activity LED Anode
Power Switch (GND)	13	14	NIC#1 Activity LED Cathode
Reset Switch	15	16	SMBus SDA
Reset Switch (GND)	17	18	SMBus SCL
ACPI Sleep Switch	19	20	Chassis Intrusion
ACPI Sleep Switch (GND)	21	22	NIC#2 Activity LED Anode
NMI to CPU Switch	23	24	NIC#2 Activity LED Cathode

FP2 LED Backplane PIN Header

Pin	Description	Pin	Description
1	key	2	SMB_ALERT
3	SM_BUS_SDA	4	GND
5	SM_BUS_SCL	6	key
7	FP_ID_LED	8	Alert/Fault
9	FP_ID_LED	10	NIC#3 act
11	GND	12	GND
13	key	14	Key
15	key	16	HDD1 ACT_N
17	HDD2 ACT_N	18	HDD3 ACT_N
19	HDD4 ACT_N	20	GND



1.3 Features Highlight

CPU:

- Supports Intel LGA771 Socket Processors
- Dual LGA771 sockets
- Digital VRM

CHIPSET:

- Intel 5000P + ESB2 chipset
- Mellanox MT25208 Dual Port Infiniband Controller (optional)
- Super I/O NS PC87427

Main Memory:

- 16 x 240-pin Fully Buffered DIMM sockets
- Four FBD channel with Four DIMMs per channel

SYSTEM MANAGEMENT:

- IPMI 2.0 compliant
- Arima BMC Scorpio II and Aquarius card (option part)
- Arima SmartWatch server management software

1.4 Motherboard Specification

Processors

- ❖ Supports Intel LGA771 Socket Processors
- ❖ Dual LGA771 sockets
- ❖ Digital VRM

Chipsets

- ❖ Intel 5000P
- ❖ ESB2

Memory

- ❖ 16 x 240-pin Fully Buffered DIMM sockets
- ❖ Four FBD channel with Four DIMMs per channel
- ❖ Supports DDRII FBD 667/533 memory
- ❖ Supports Fully-Buffered type memory modules only
- ❖ Supports up to 64GB

IDE Bus

- ❖ Single channel master mode
- ❖ Supports up to two Enhanced IDE devices
- ❖ Ultra DMA 100/66/33 MB/s

PCI Slots

- ❖ 1 PCI-E x16 slot
- ❖ 1 PCI-E x8 slots
- ❖ 1 PCI-E x4 slots
- ❖ 1 PCI-X (64bit/133/100MHz) slots

Integrated Graphics Controller

- ❖ Integrated XGI Z9S Video Controller with 32MB DDR2 memory

InfiniBand

- ❖ Mellanox MT25208 Dual Port InfiniBand controller

LAN

- ❖ Intel (ESB2) 82563EB Dual-Port Gigabit Ethernet Controller

Serial ATA 2

- ❖ Integrated 6 Ports Serial ATA II on Die
- ❖ Supports Intel RAID for 0,1,5,10 and Intel Matrix RAID (Windows Only)

Onboard Multi I/O

- ❖ Two (9-pin) serial ports with UART 16550 (1 rear, 1 front)
- ❖ One DB15 VGA port
- ❖ Two USB2.0 connectors
- ❖ Three RJ-45 LAN ports (1 used for OPMA)
- ❖ Two side by side x4 InfiniBand connector (InfiniBand SKU)
- ❖ PS/2 mouse and keyboard connectors

System Management

- ❖ Super I/O PC87427

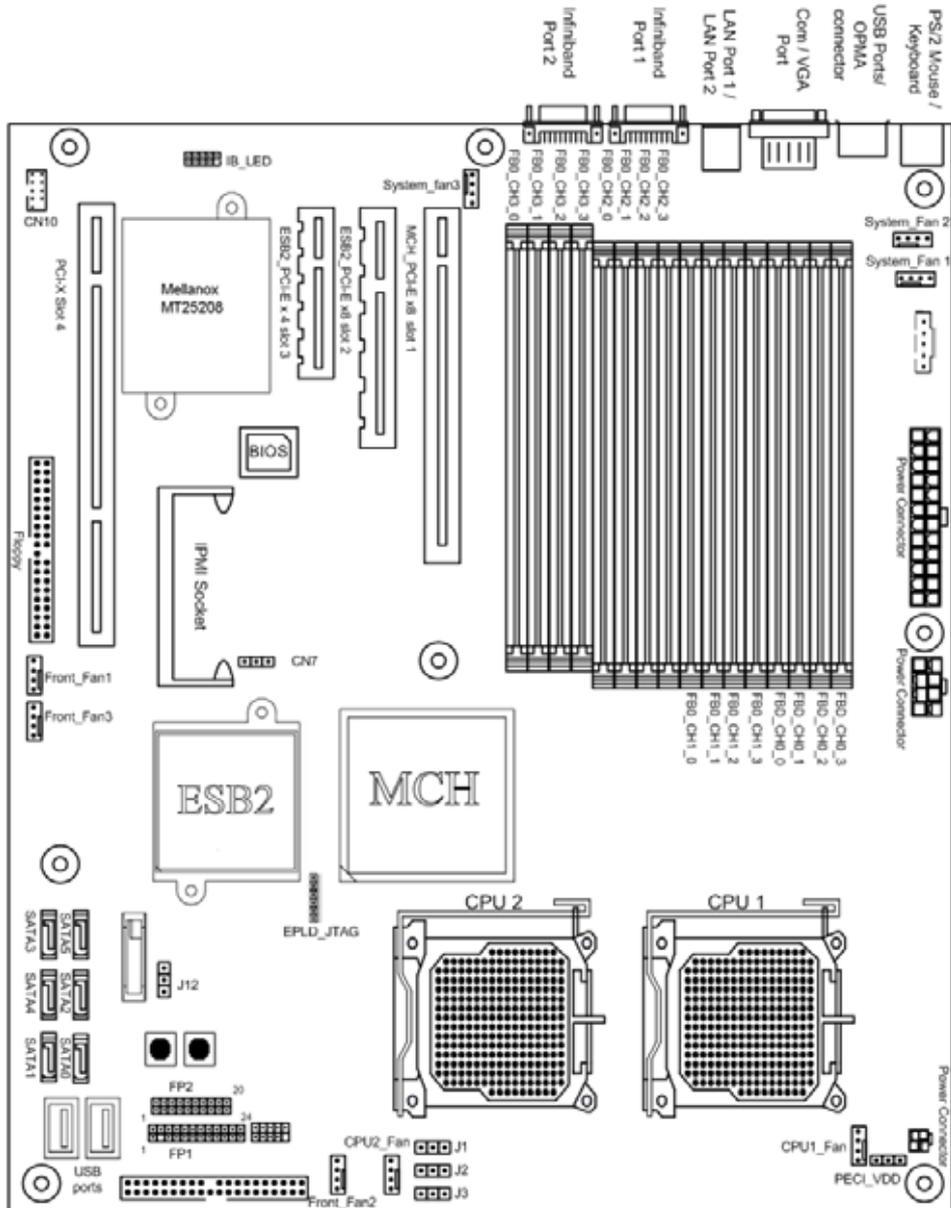
- ❖ Arima BMC Scorpio II and Aquarius card (option part)
- ❖ Arima SmartWatch server management software

M/B Size

- ❖ SSI EEB form factor with size: 12" X 13" 8 layers
- ❖ EPS 12V power connectors (24pin + 8pin + 4Pin)

1.5 Motherboard Layout [major components]

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



Chapter 2. Hardware Installation

2.1 Mounting the motherboard

! INSTALLATION WARNING!

Use Caution When Installing the ServerBoard into the System Chassis

The components underneath the PS/2 Mouse/Keyboard connectors around the mounting hole are very FRAGILE and can be knocked off of their soldered positions, resulting in IRREPARABLE DAMAGE during installation when sliding the board into a system chassis. Gently install the ServerBoard into the chassis, and use a Mylar Sheet to cover and protect the underside of the ServerBoard during installation. Take care NOT to scrape the bottom of the ServerBoard on the chassis stand-offs and mounting holes.

These components are necessary for many different operations, including the Mouse and the Keyboard. If you damage any of these chips, one of the symptoms is that the ServerBoard will NOT respond to keystrokes through the PS/2 port and the ServerBoard will have to be replaced. Other symptoms include the loss of response or functionality in any of the rear I/O ports. Contact your authorized dealer for more information.

The Damage noted here in this WARNING may require the ServerBoard to be replaced. Due to the Nature of the Damage, this may be considered Out-of-Warranty Damage. Make certain that ALL documented procedures are followed correctly.

2.2 Installing the processor

BF55x operates best when dual Intel 771 processors are in use. When using only one processor, install it in CPU1 socket.

Procedure:

First read the instructions that comes with the CPU

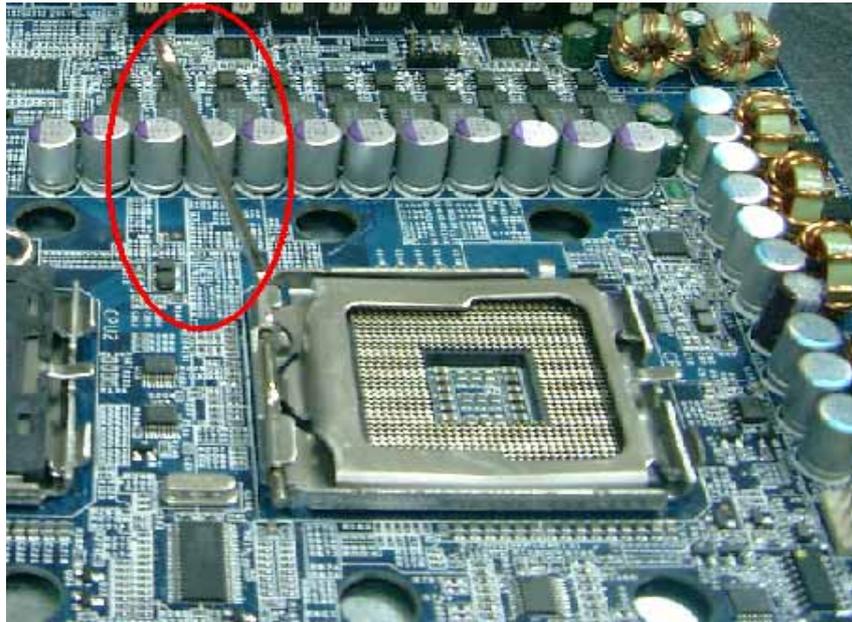
1. Locate the processor socket on the motherboard and carefully remove the protective cover.



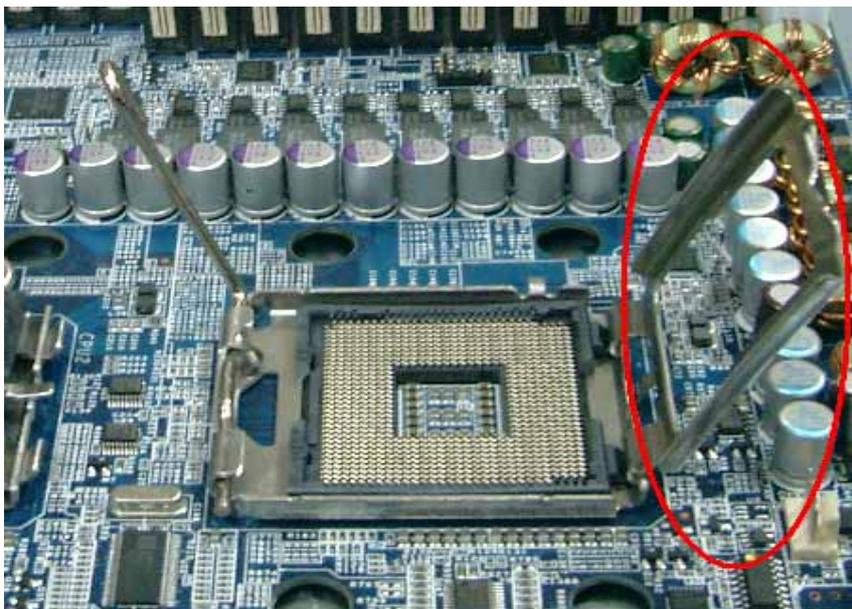


We discourage you from installing in the CPU2 socket if you have only one processor to install. The result may be unpredictable.

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



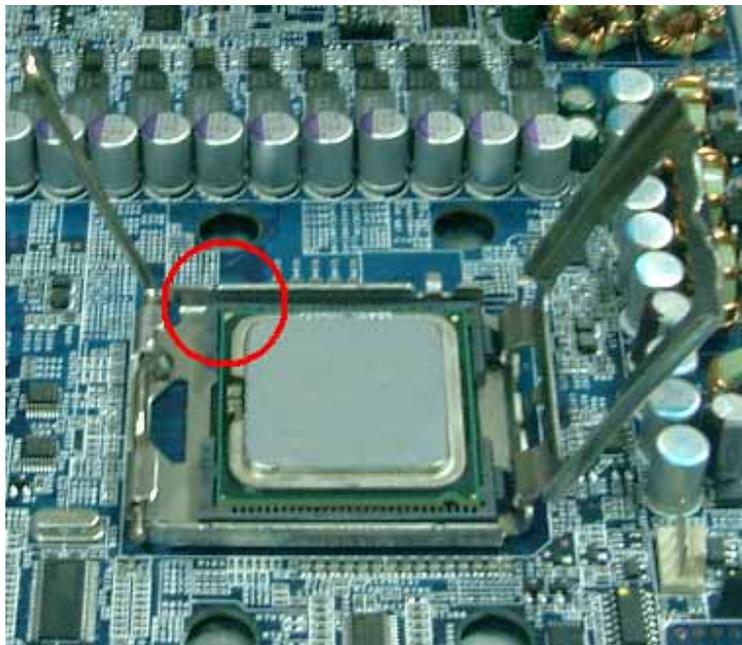
3. Now that the lever is in its unlocked position, lift up the metal cover to reveal the CPU socket.





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

4. 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).

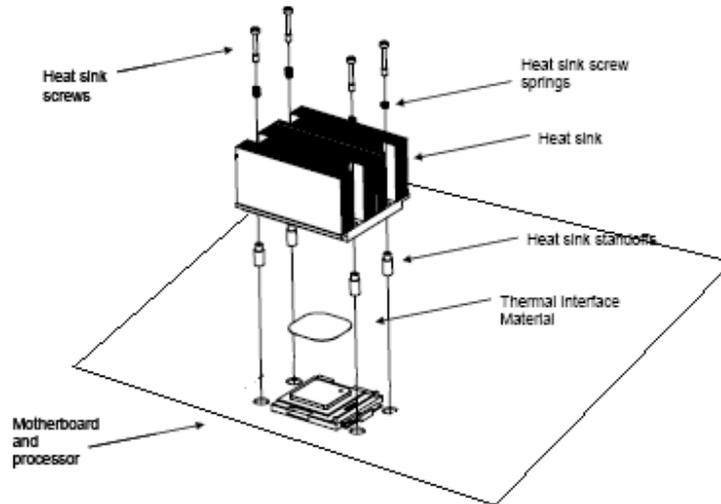


5. Close the metal cover and return the lever into its original locked position.



We do not recommend you to apply thermal grease at this point of the installation. The heat sink provided 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.

6. 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.



7. Connect the 3-wire fan cable to the fan connector on the motherboard.

8. Now, rest the motherboard into the chassis, align the holes of the backplate to the chassis



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 is not included in the package.

Types of memory supported:

Types of memory supported:

There are 16 sockets for 240-pin Fully Buffered DIMM sockets. There are 16 slots 240-pin Fully Buffered DIMM sockets. This system only supports Fully-Buffered type memory modules. Before you started to install the memory module, Please ensure that the memory module are compatible with the BF55x. The BF55x will only support DDRII FBD 533/667 memory modules. The maximum recommended memory is 64GB.

1 DIMM	FBD_CH0_0
2 DIMMs	FBD_CH0_0, FBD_CH0_1
4 DIMMs	FBD_CH0_0, FBD_CH1_0, FBD_CH2_0, FBD_CH3_0
8 DIMMs	FBD_CH0_0, FBD_CH0_1, FBD_CH1_0, FBD_CH1_1, FBD_CH2_0, FBD_CH2_1, FBD_CH3_0, FBD_CH3_1
16 DIMMs	FBD_CH0_0, FBD_CH0_1, FBD_CH0_2, FBD_CH0_3, FBD_CH1_0, FBD_CH1_1, FBD_CH1_2, FBD_CH1_3, FBD_CH2_0, FBD_CH2_1, FBD_CH2_2, FBD_CH2_3, FBD_CH3_0, FBD_CH3_1, FBD_CH3_2, FBD_CH3_3



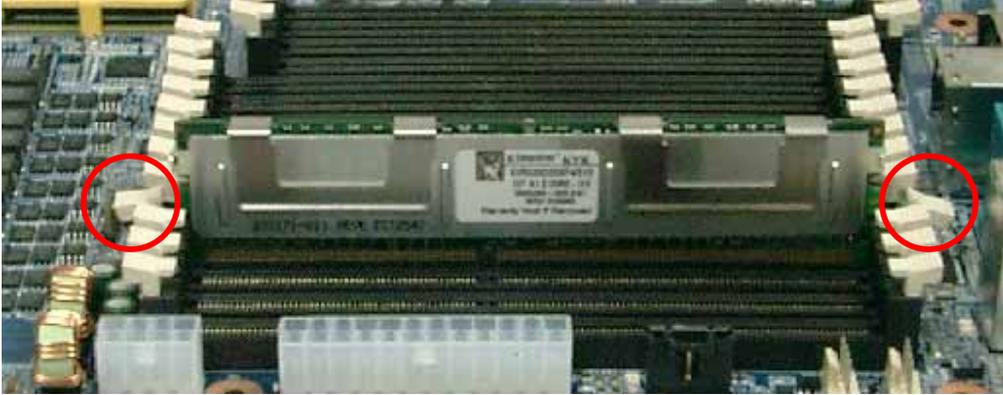
The number of memory chips and how they are stacked on a memory module do not indicate the rank of that memory module. The only way to determine the rank of a memory module is to contact the memory manufacturer for its specification.

2.3.2 Installing DIMM modules

1. Open up the brackets.



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



3. Push in the memory stick until bracket can be closed securely onto the stick. Make sure the brackets hold onto the memory module.



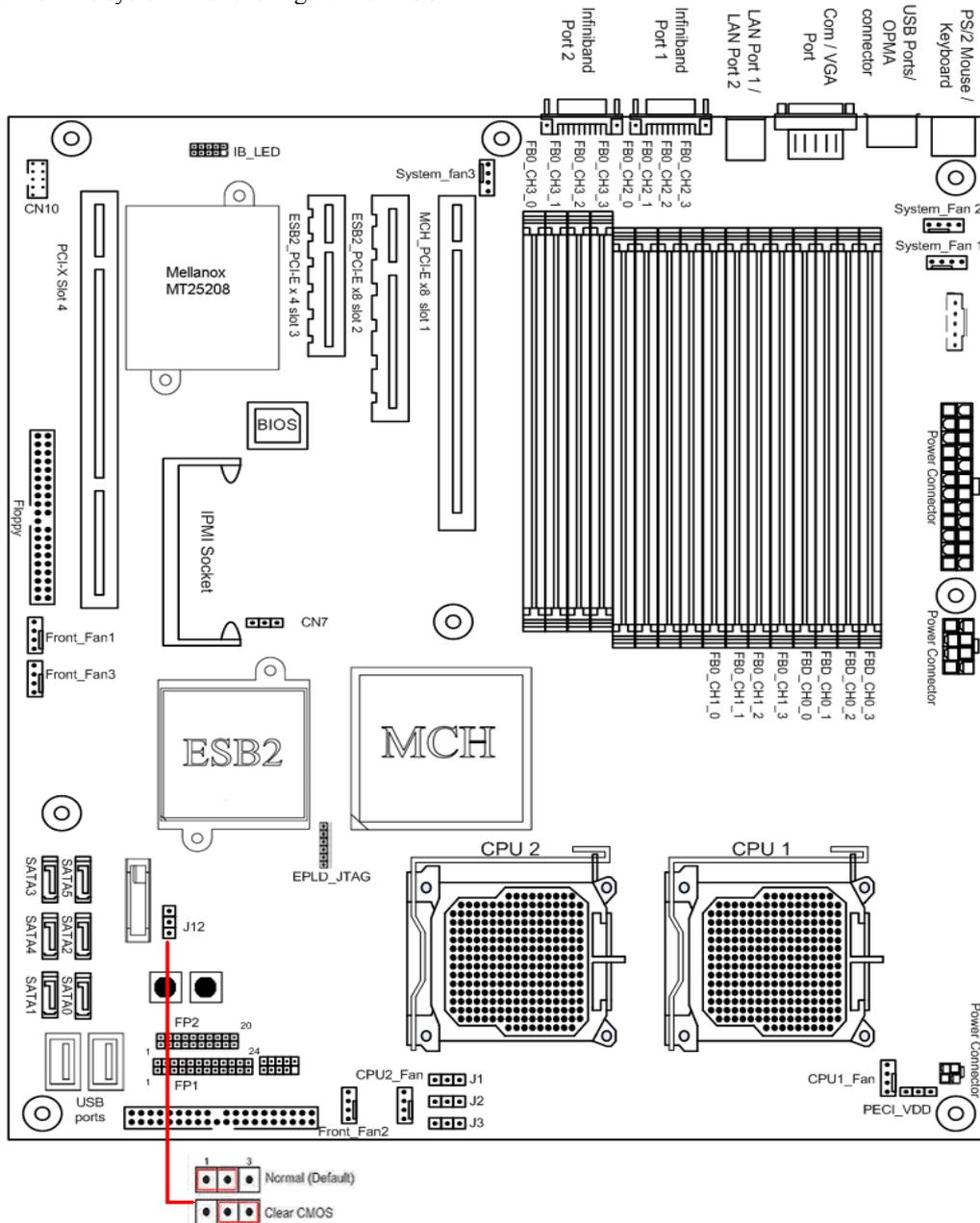
These pictures only show one memory stick but remember to install them in pairs.

2.4 Jumpers Configuration

2.4.1 Clear CMOS header

Header J12 controls CMOS setting. Position your motherboard as it appears in the following diagram. Pin 1 is closer to the on/off switch, whereas pin 3 is closer to the ESB2 chipset. To clear CMOS:

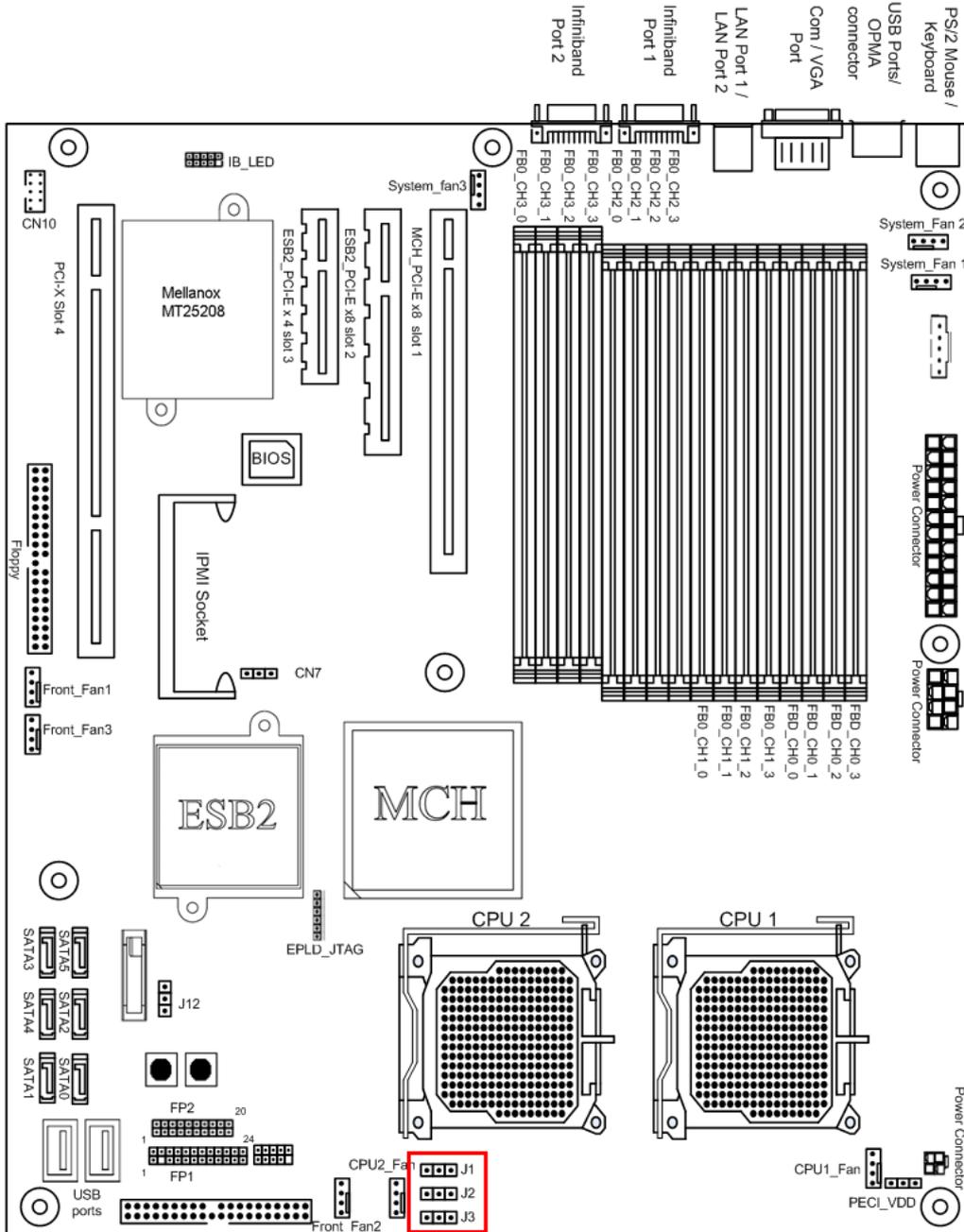
1. Turn off the system.
2. Short pin 2 and pin 3 using a jumper for a few seconds.
3. Take out the jumper.
4. Turn on the system and reconfigure the BIOS.



2.4.2 FSB FREQUENCY SELECT JUMPER

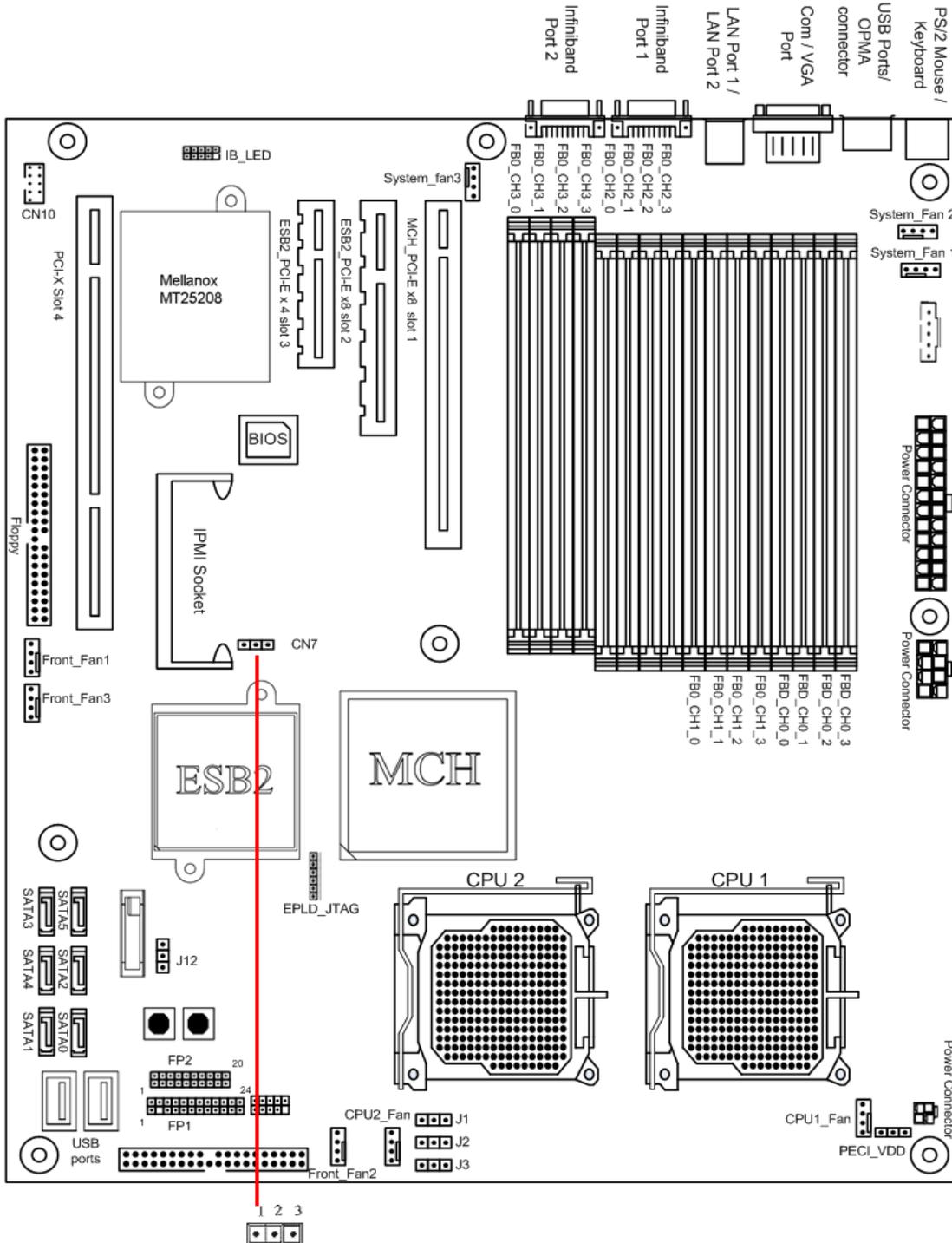
Header J1, J2 and J3 controls the FSB frequency selection setting. Please follow the guidelines specified in the table below.

J1	J2	J3	FSB Frequency
2-3	2-3	open	133 MHz
2-3	Open	2-3	166 MHz
2-3	2-3	2-3	266 MHz
Open	2-3	2-3	333 MHz



2.4.3 On-Board VGA Select Jumper

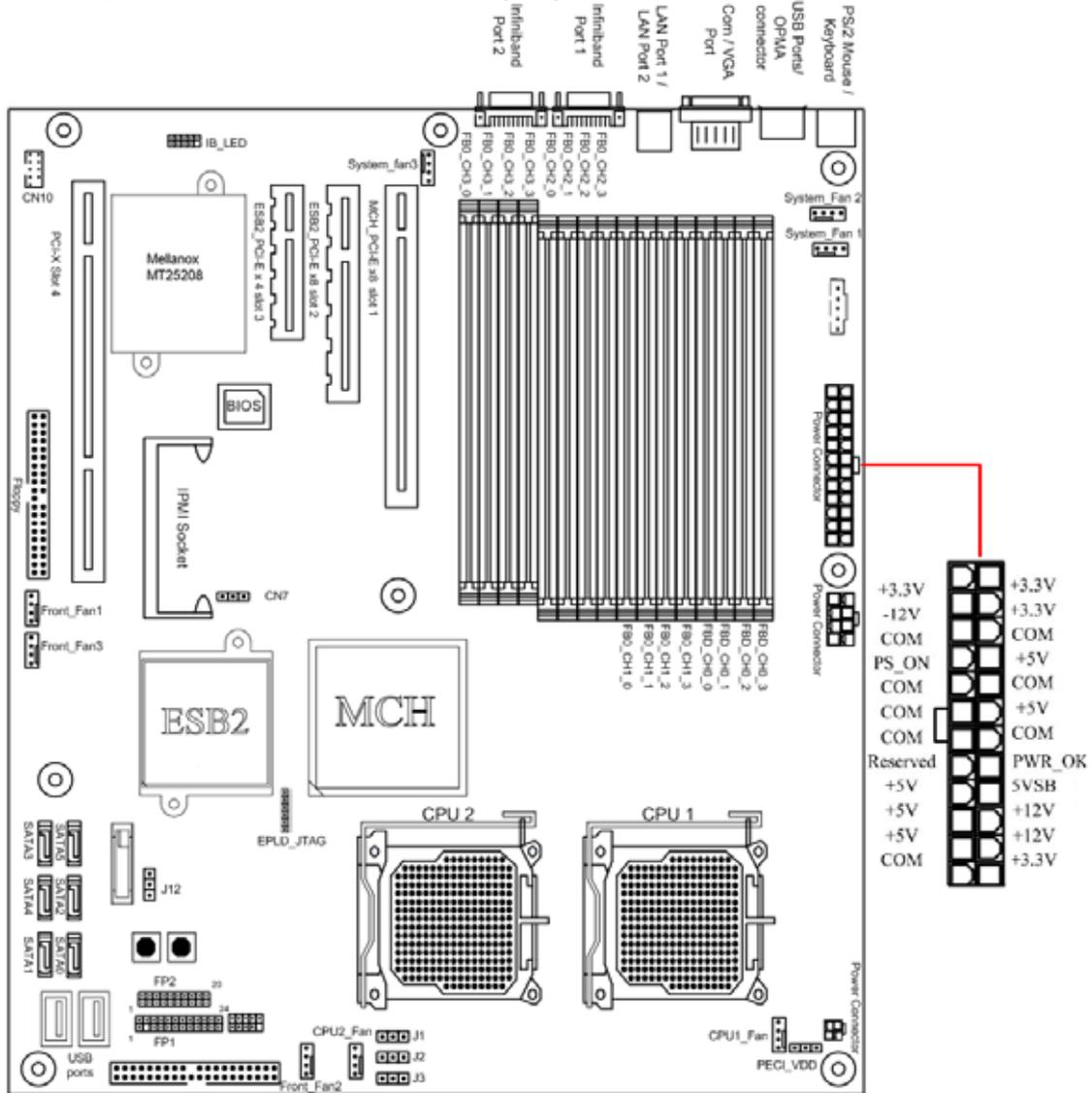
Header CN7 controls On-Board VGA setting. When CN7 is 1-2 short, On-Board VGA is enabled. When CN7 is 2-3 short, on-Board VGA is disabled. Refer to the following diagram for the location of CN7.



2.5 Power Supply

2.5.1 ATX 24-PIN POWER CONNECTOR

The 24-pin connector provides power to the motherboard and the 8-pin connector provides power to the CPU. So both must be connected for the system to run properly. Be sure to plug the power supply connector in the right direction. Failure to do so could cause damage to the motherboard. 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 for the connector locations and orientations.

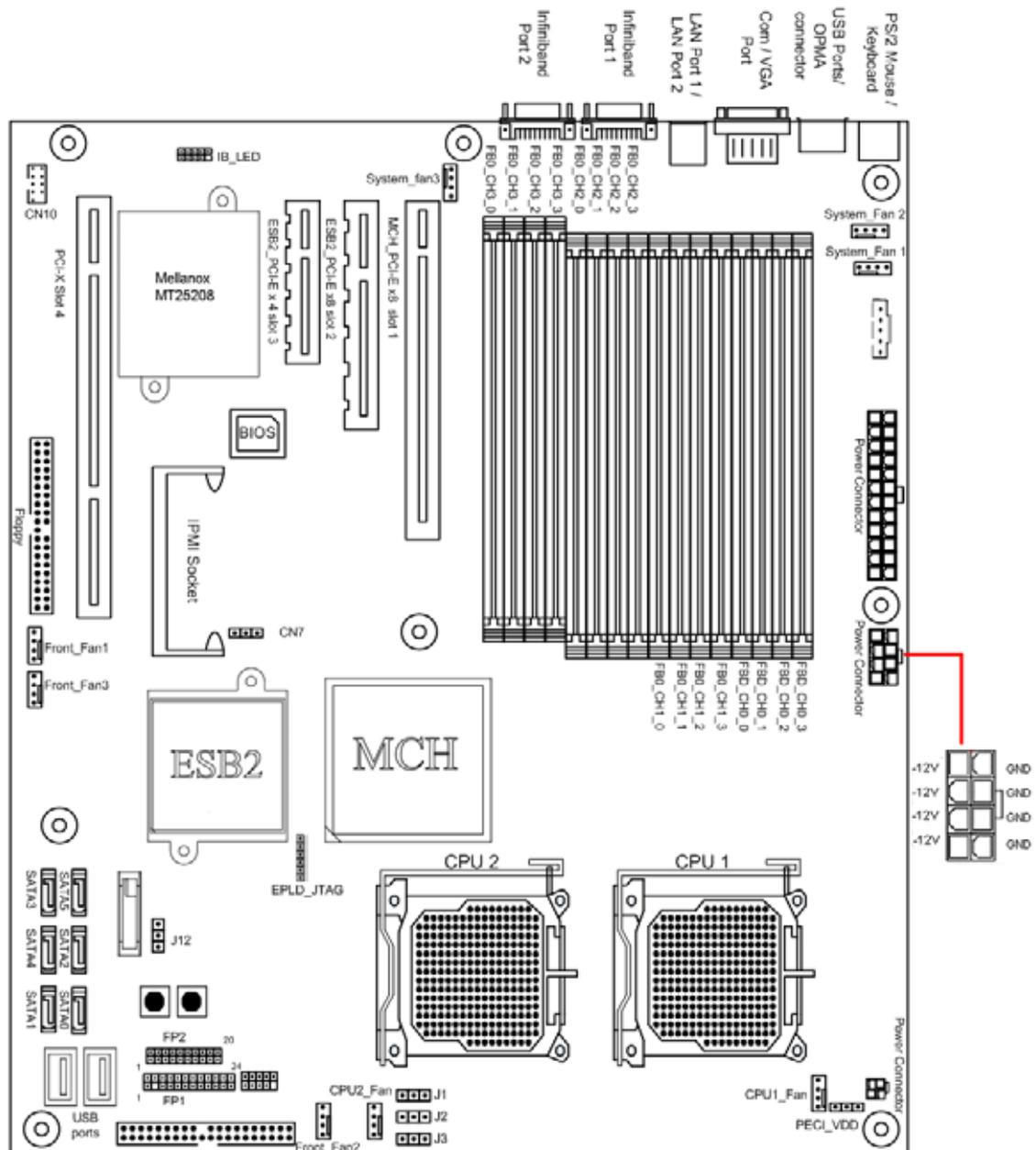




Make sure the AC adapter is not plugged into the wall outlet during installation. The electric current could damage the motherboard.

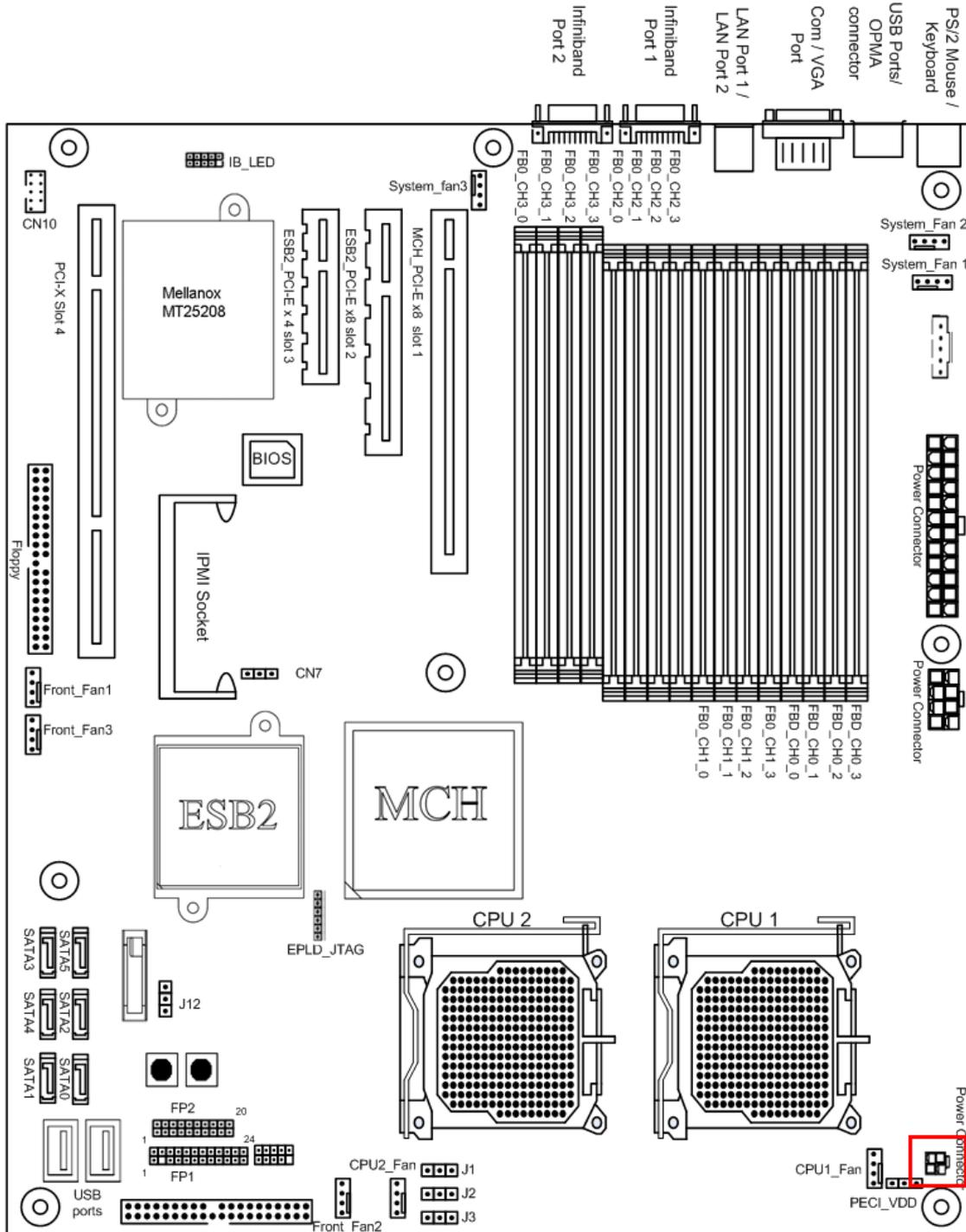
2.5.2 ATX 8-PIN POWER CONNECTOR

The 8-pin connector provides dedicated power to the CPU. Refer to the following diagram for its location and configuration.



2.5.3 ATX 4-PIN POWER CONNECTOR

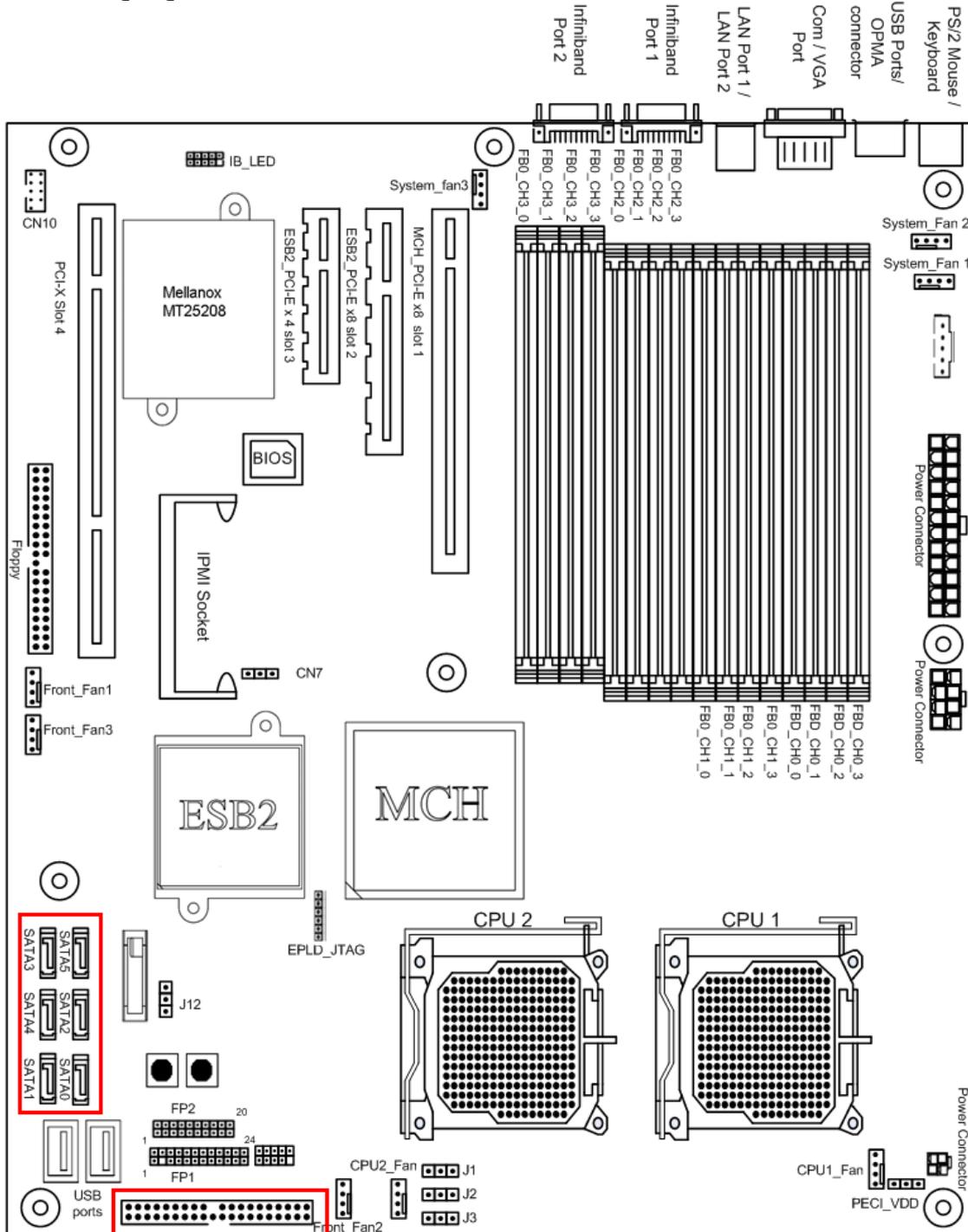
The following diagram indicates the location of the 4-pin power connectors:



2.6 CABLES AND CONNECTORS

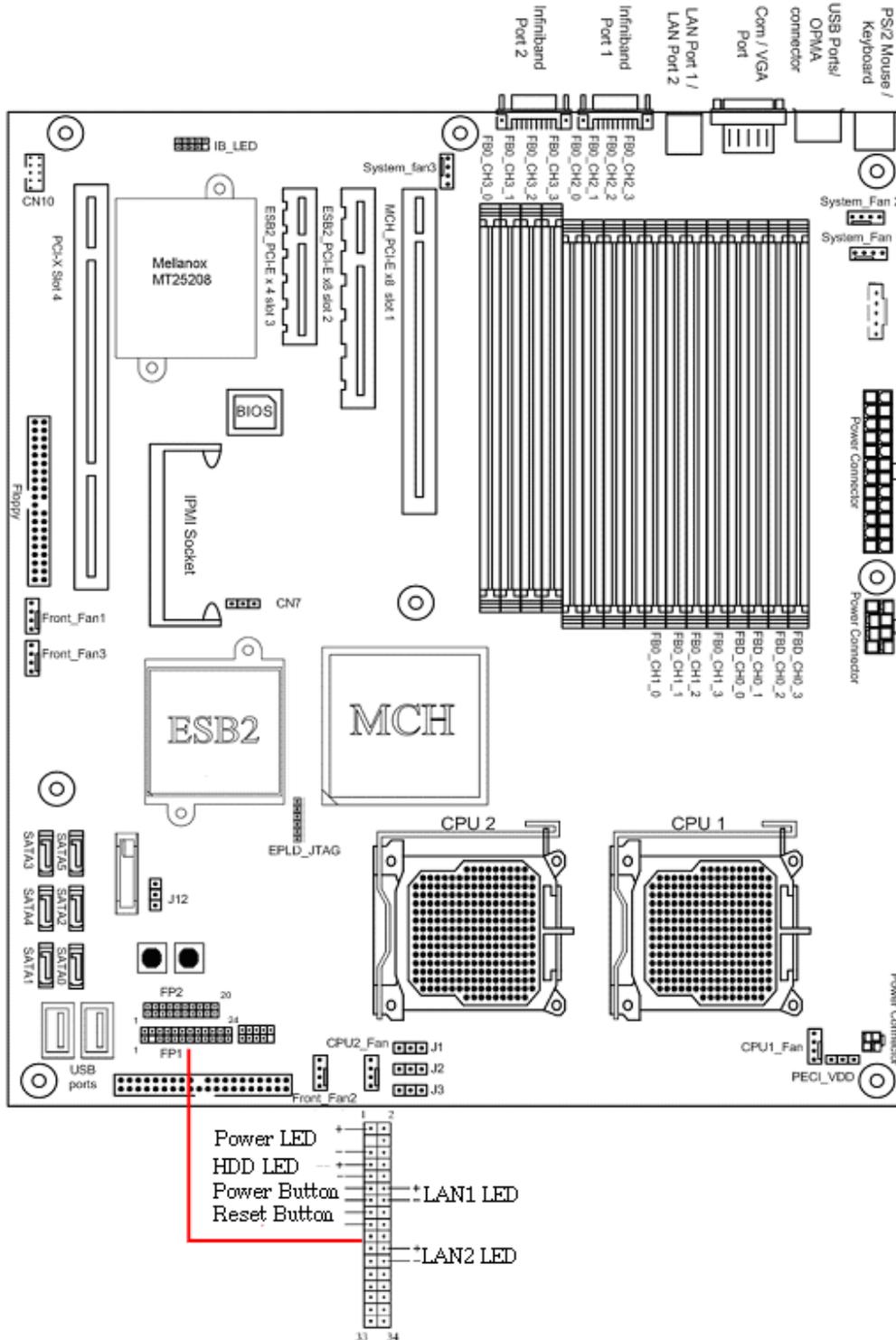
2.6.1 IDE AND SATA CONNECTORS

The following diagram indicates the location of the IDE and SATA connectors:



2.6.2 FRONT PANEL CONNECTORS

You can find the pin number on the corner of the pin block. Pin 1 is located closer to the outer edge of the motherboard. The + indicates the anode, or the +5V. The opposite pin, then, indicates the cathode or the ground.



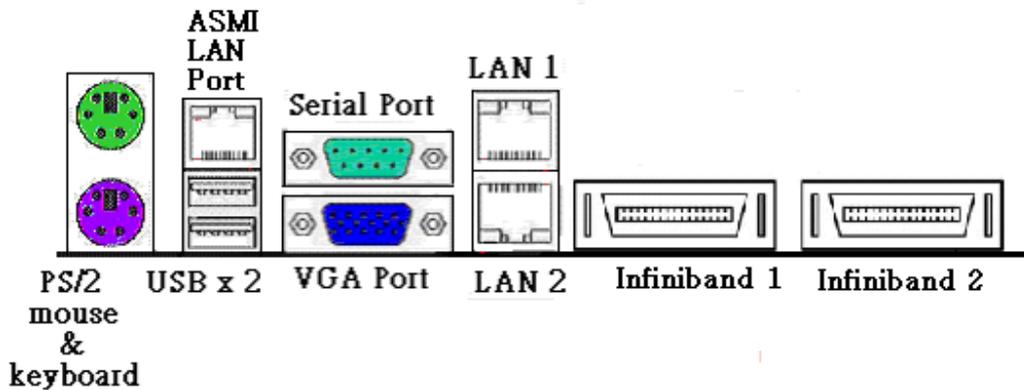


Remember to set BIOS to match the configuration that you implement here. Go to Advanced Menu section of BIOS for detail.

2.6.3 REAR PANEL I/O PORTS

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

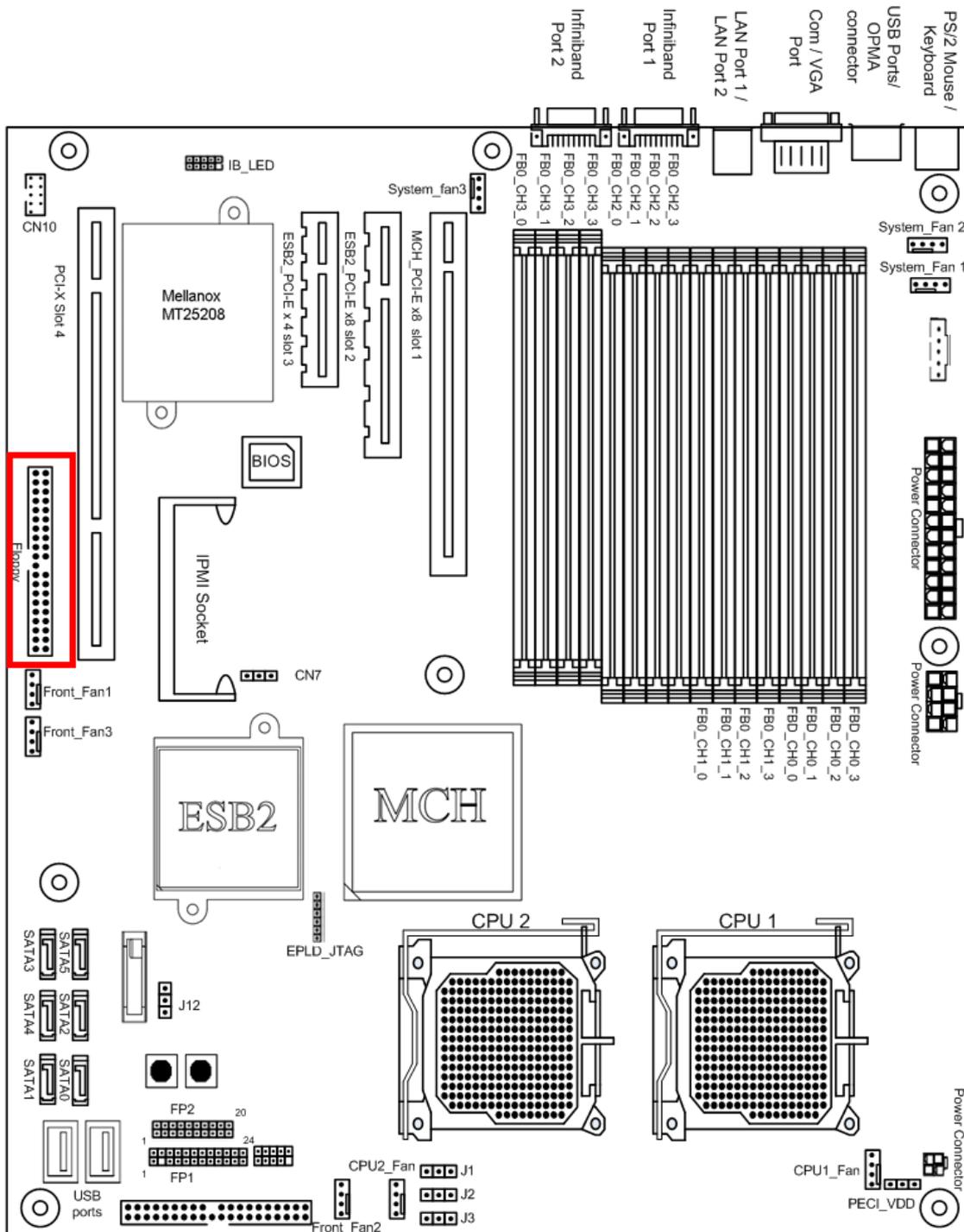
State of Link	Link LED (Orange)	Activity LED (Green)
No link	OFF	OFF
Link @ 10Mbps	ON	OFF
Link @ 100Mbps	ON	OFF
Link @ 1000Mbps	ON	OFF
Activity	ON	BLINK



Type of Port	Function
PS/2 Mouse connector	This connection is for a standard mouse using a PS/2 plug (mini DIN).
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 Port 1 & 2	Two 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.
Gigabit Ethernet Port 1 & 2	These ports are RJ-45. The motherboard uses Intel 82563 Dual-port Gigabit Ethernet Controller.
VGA connector (15-pin female)	The VGA port connects display devices such as a monitor. See the BIOS setup.

2.6.4 Floppy disk drive connector

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



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 interface 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 battery-backed NVRAM so that it retains the configuration 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 possible values 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 out 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 submenu. Pressing <Enter> will take you to the sub-menu.
PgUp	Increase the numeric value or goes to the previous setting value.
PgDn	Decrease the numeric value or goes to the next setting value.
+	Increase the numeric value or goes to the previous setting value.
-	Decrease the numeric value or goes to the next setting value.
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. To avoid such problem, configure only the items that you thoroughly understand and refrain from modifying the default chipset settings.

3.4 Main Menu:

Phoenix BIOS Setup Utility							
Main	Advanced	Security	Power	Boot	Server	Exit	
							Item Specific Help
System Time [12:31:16] System Date [12/10/2006] BIOS Version V0.04 Legacy Diskette A: [1.44/1.25 MB] System Memory: 640 KB Extended Memory: 8387584KB							<Tab>, <Shift-Tab>, or <Enter> selects field.
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	HH:MM:SS	Sets the system time.
System Date	MM/DD/YYYY	Sets the system date.
BIOS Version	N/A	Displays the BIOS version.
Legacy Diskette A	360 KB 2.2 MB 720 KB 1.44/1.25 MB 2.88 MB Disabled	Selects the type of floppy-disk drive installed in your system.
System Memory	N/A	Displays the amount of conventional memory detected during boot up.
Extended Memory	N/A	Displays the amount of extended memory detected during boot up.

3.5 Advanced Menu:

Phoenix BIOS Setup Utility						
Main	Advanced	Security	Power	Boot	Server	Exit
						Item Specific Help
Reset Configuration Data:		[No]				Select 'Yes' if you want to clear the extended system configuration data (ESCD) area.
QuickBoot Mode:		[Disabled]				
Boot-Time Diagnostic Screen:		[Disabled]				
<ul style="list-style-type: none"> ▶ Advance Chipset Control ▶ Disk Configurations ▶ IO Device Configuration 						
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 menu page:

Item	Options	Description
Reset Configuration Data	No Yes	“Yes” erases all configuration data in a section of memory reserved for ESCD (Extended System Configuration Data) which stores the configuration settings for non-PnP plug-in devices. Select Yes when required to restore the manufacturer’s defaults.
QuickBoot Mode	Disabled Enabled	Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.
Boot-Time Diagnostic Screen	Disabled Enabled	Display the diagnostic screen during boot.

The Advance Chipset Feature Sub Menu looks like the following:

Advanced	Phoenix BIOS Setup Utility	
Advance Chipset Control		Item Specific Help
Machine Checking [Disabled] 4GB PCI Hole Granularity [256MB] Crystal Beach Configure Enable [Hardware] Enable Multimedia Timer [No] PECI Interface [Disabled]		[for debug only]
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 Chipset Feature sub-menu page:

Item	Options	Description
Machine Checking	Disabled Enabled	For debug purpose.
4GB PCI Hole Granularity	256MB 512MB 1.0GB 2.0GB	Select the granularity of PCI hole for PCI resource, if MTRRs are not enough, we may use this option to reduce the MTRR occupation.
Crystal Beach Configure Enable	Disabled Enabled	Enable configuration/memory mapped accesses to the Crystal beach configuration space located in Device 8, Fn 0 and Fn 1.
Enable Multimedia Timer	Yes No	Enable/disable multimedia timer support.
PECI Interface	Disabled Enabled	Platform environment control interface control.

3.5.1 Disk Configurations Sub Menu

The Disk Configuration Sub Menu looks like the following:

Phoenix BIOS Setup Utility		
Advanced		
Disk Configuration		Item Specific Help
Parallel ATA [Enabled] Serial ATA [Enabled] SATA Controller Mode Option [Compatible]		SATA and IDE drive are auto detected and place in legacy mode
▶ Hard Disk 0 [None] ▶ Hard Disk 1 [None] ▶ Hard Disk 2 [None] ▶ Hard Disk 3 [None] ▶ Hard Disk 4 [None] ▶ Hard Disk 5 [None]		
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 Chipset Feature sub-menu page:

Item	Options	Description
Parallel ATA	Enable Disable	Enable/Disable Parallel ATA.
Serial ATA	Enable Disable	Enable/Disable Serial ATA.
SATA Controller Mode Option	Compatible Enhanced	SATA and IDE drive are auto detected and place in legacy mode.

3.5.2 IO Device Configuration Sub Menu

The Integrated Peripherals Sub Menu looks like the following:

Phoenix BIOS Setup Utility		
Advanced		
Integrated Peripherals		Item Specific Help
Keyboard Configuration:	[Enabled]	Select Keyboard option
Legacy USB Support:	[Enabled]	
Floppy disk controller:	[Enabled]	
Serial port A:	[Auto]	
Serial port B:	[Enabled]	
Onboard LAN OPROM Scan:	[Enabled]	
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 Integrated Peripherals sub-menu page:

Item	Options	Description
Keyboard Configuration	N/A	Select Keyboard option.
Legacy USB Support	Enabled Disabled	Switches support for USB devices on or off for operating systems which do not recognize USB.
Floppy disk controller	Enabled Disabled Auto	Enables an onboard legacy floppy disk controller. If this is set to Disabled, set the Legacy Diskette item in the Main menu to Disabled.
Serial port A:	Enabled Disabled Auto	Sets user configuration on or off. 'OS Controlled' appears when this port is controlled by the operating system.
Onboard LAN OPROM Scan	Enabled Disabled	Enabled/Disabled Onboard LAN OPROM scan

3.5.3.Keyboard Configuration Sub Menu

The Keyboard Configuration Sub Menu looks like the following:

Phoenix BIOS Setup Utility		
Advanced		
Keyboard Configuration		Item Specific Help
Display without KB err Msg	[No]	Controls the Post Error Message display or not when without KB.
NumLock:	[On]	
Keyboard auto-repeat rate:	[30/sec]	
Keyboard auto-repeat delay:	[1/4 sec]	
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
Display without KB err Msg	Yes No	Controls the Post Error Message display or not when without KB.
Numlock	On Off Auto	Selects Power-on state for Numlock.
Keyboard auto-repeat rate	30/sec 26.7/sec 21.8/sec 18.5/sec 13.3/sec 10/sec 6/sec 2/sec	Selects key repeat rate.
Keyboard auto-repeat delay	1/4 sec 1/2 sec 3/4 sec 1 sec	Selects delay before key repeat.

3.6 Security Menu

Phoenix BIOS 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]							Supervisor Password controls access to the setup utility.
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.

3.7 Power Menu:

Use this menu to specify your settings for Power Management. Remember that the options available depend upon the hardware installed in your system. Those shown here are from a typical system. The Power menu selection in the menu bar on top of the screen displays the following:

Phoenix BIOS Setup Utility							
Main	Advanced	Security	Power	Boot	Server	Exit	Item Specific Help
Resume On Time: [Off] Resume Time: [00:00:00] After Power Failure [stay off]							Enabled wakes the system up at a specific time.
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
After Power Failure	Last state Stay off Power on	Select the state after power failure.
Resume On Time	Off On	Enabled wakes the system up at a specific time.
Resume Time	No Options	Specify the time when the system is to wake up. <Tab>, <Shift-Tab>, or <Enter> selects field.

3.8 Boot Menu:

After you turn on your computer, it will attempt to load an operating system from the first device set in the Boot Menu. If it cannot find an operating system on that device, it will attempt to load it from one or more other devices in the order specified in the Boot Menu. Boot devices can include: hard drives, floppy drives, CD-ROMs, removable devices (e.g., Iomega Zip drives), and network cards.

NOTE

Specifying any device as a boot on the Boot Menu requires the availability of an operating system on that device. Most systems come with an operating system already installed on drive C.

The Boot menu sets boot up options:

Phoenix BIOS Setup Utility							
Main	Advanced	Security	Power	Boot	Server	Exit	
							Item Specific Help
Boot Summary Screen: [Enabled] ▶ Boot Priority							Display system configuration on boot.
F1 Help ESC Exit	↑↓ Select Item ←→ Select Menu	-/+ Change Values Enter Select ▶ Sub-Menu		F9 Setup Defaults	F10 Save and Exit		

Item	Options	Description
Boot Summary Screen	Enabled Disabled	Sets whether the boot summary screen is displayed at boot up.

Boot Priority Sub Menu

Use this menu to arrange to specify the priority of the devices from which the BIOS will attempt to boot the Operating System.

Removable Devices, Hard Drive, and Network Boot are the generic types of devices on your system from which you can boot an operating system. You may have more than one device of each type. If so, the generic type is marked with a plus sign. Use the <Enter> key to expand or collapse the devices marked with a <+> or <->. Press <Ctrl+Enter> to expand all such device. To change a device's priority on the list, first select it with the up-or-down arrows, and move it up or down using the <+> and <-> keys. Pressing <n> moves a device between the Removable Devices and Hard Drive. Pressing <Shift+1> enables or disables a device

Item	Description
Legacy Floppy Drive	Boot from the floppy disk drive.
Hard Drive	Boot from Hard Drive
Bootable Add-in Cards	Boot from Bootable cards
CD-ROM Drive	Boot from the CD-ROM drive.
Legacy Network Card	Boot from the network PCI card.
PCI BEV: IBA GE slot 0500 v1240 PCI BEV: IBA GE slot 0501 v1240	Boot from the network through the On-Board LAN connection.

3.9 Server Menu

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

3.9.1 Hardware Monitor Sub Menu

The Hardware Monitor Sub Menu looks like the following:

Phoenix BIOS Setup Utility							
Main	Advanced	Security	Power	Boot	Server	Exit	
Hardware Monitor							Item Specific Help
CPU1 Fan Speed: 82RPM CPU2 Fan Speed: 82RPM System Fan1 Speed: 5750RPM System Fan2 Speed: 8837RPM System Fan3 Speed: 5538RPM Front Fan1 Speed: 4595RPM Front Fan2 Speed: No Function Front Fan3 Speed: 4931RPM CPU1 Temperature 0°C CPU2 Temperature 0°C Internal Temperature: 0°C							All items on this menu cannot be modified in user mode. If any items require changes, please consult your system Supervisor.
F1 Help	↑↓ Select Item	-/+ Change Values		F9 Setup Defaults			
ESC Exit	←→ Select Menu	Enter Select▶ Sub-Menu		F10 Save and Exit			

3.9.2 IPMI Sub Menu

The IPMI Sub Menu looks like the following:

Phoenix BIOS Setup Utility							
Main	Advanced	Security	Power	Boot	Server	Exit	
IPMI							Item Specific Help
BMC/Scorpio Configuration [Enabled] IP Address [192.168.1.100] Subnet Mask [255.255.255.000] Default Gateway [000.000.000.000] IPMI Specification Version 2.0 BMC Firmware Version 1.11 01500100 System Event Logging [Enabled] Existing Event Log number 0 Event Log Control SYS Firmware Progress [Disabled] BIOS POST Errors [Enabled]							Enable this selection will force bios to configure IP address/subnet mask/default gateway on the next cold boot.
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 IPMI sub-menu page:

Item	Options	Description
BMC/Scorpio Configuration	Disabled Enabled	Enabling this selection will force the BIOS to Configuration IP Address
IP Address, Subnet Mask, Default Gateway	No options.	Display/Set IP Address, Subnet Mask, and Gateway.
System Event Logging	Disabled Enabled	Enable/Disable IPMI event logging. Disabling will still log events received via the system interface.
SYS Firmware Progress	Disabled Enabled	Enabling this selection will log POST Progress.
BIOS POST Errors	Disabled Enabled	Enabling this selection will log POST errors.



To learn more about the IPMI selections, please refer to Arima IPMI manual for more detailed.

3.10 Exit Menu

The Exit menu allows you to save or discard changes and exit BIOS.

Phoenix BIOS 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		

The Exit menu has the following options. Note that <Esc> does not exit this menu. You must select one of the items from the menu or menu bar to exit.

Item	Description
Exit Saving Changes	Saves changes to CMOS and exits BIOS.
Exit Discarding Changes	Discard any changes made and exits BIOS.
Load Setup Defaults	Restores all settings to the default values.
Discard changes	Discards and changes made since the last time settings were saved.
Save changes	Saves changes to CMOS.

3.11 BIOS FLASH UPGRADE UTILITY

Phoenix Phlash gives you the ability to update your BIOS from a floppy disk without having to install a new ROM BIOS chip.

Phoenix Phlash is a utility for “flashing” (copying) a BIOS to the Flash ROM installed on your computer from a floppy disk. A Flash ROM is a Read-Only Memory chip that you can write to using a special method called “flashing.”

Phoenix Phlash automatically updates or replaces the current BIOS with the one which your OEM or dealer supplies you (it's a .ROM file).

Command Example:

```
A:\> phlash16 bf55xv001.ROM /MODE=3 /BBL /C
```

Syntax:

```
plash16 Phlash command name  
bf55xv001.ROM Filename of new BIOS ROM supplied by dealer  
/BBL Flash the Boot Block  
/C Clear CMOS  
/MODE=3 Update both BIOS and DMI information
```

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): 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.

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: allows 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.

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 SATA/SATA-II chip through special PCI-X slot with Intel RAIDIOS logic, thus lowering cost of RAID-5 solution.