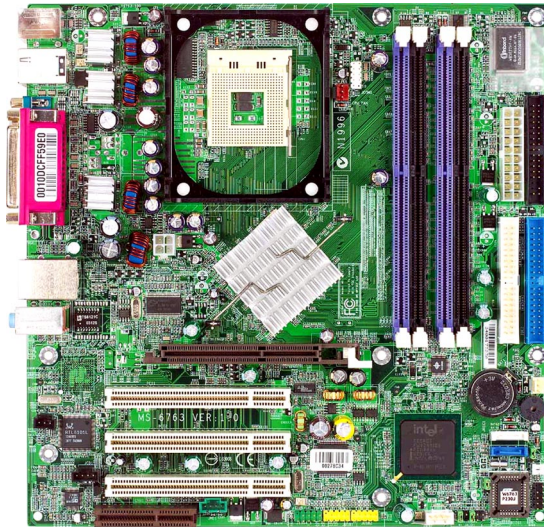




865GM3/865PEM2 Series
MS-6763 (v1.X) M-ATX Mainboard



Version 1.0
G52-M6763X1-G22

Manual Rev: 1.0
Release Date: July 2003



FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

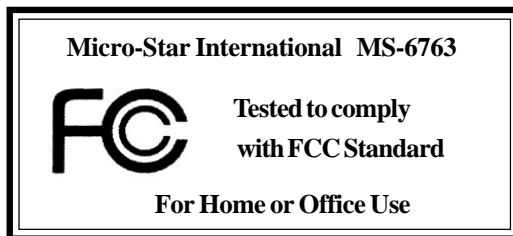
Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.



Copyright Notice

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Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.X	July 2003

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

- 🔍 Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: <http://www.msi.com.tw>
- 🔍 Contact our technical staff at: support@msi.com.tw

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **DO NOT COVER THE OPENINGS.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment has not work well or you can not get it work according to User's Manual.
 - The equipment has dropped and damaged.
 - The equipment has obvious sign of breakage.
12. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.**



CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

CONTENTS

FCC-B Radio Frequency Interference Statement	iii
Copyright Notice	iii
Revision History	iii
Technical Support	iii
Safety Instructions	iv
Chapter 1. Getting Started	1-1
Mainboard Specifications	1-2
Mainboard Layout	1-4
Chapter 2. Hardware Setup	2-1
Quick Components Guide	2-2
Central Processing Unit: CPU	2-3
CPU Core Speed Derivation Procedure	2-3
CPU Installation Procedures for Socket 478	2-4
Installing the CPU Fan	2-5
Memory	2-7
Memory Speed/CPU FSB Support Matrix	2-7
DDR Population Rules	2-7
Installing DDR Modules	2-8
Power Supply	2-9
ATX 20-Pin Power Connector: ATX1	2-9
ATX 12V Power Connector: JPW1	2-9
Back Panel	2-10
Mouse/Keyboard Connector	2-11
Serial Port Connectors: COMA & JCOM1	2-11
VGA Connector (for 865GM3 Series only)	2-11
Parallel Port Connector: LPT1	2-13
LAN Jack: 10/100Mbps LAN (for 865PEM2 Series) or Gigabit LAN (for 865GM3 Series)	2-13
IEEE1394 Port (Optional for 865PEM2 Series only)	2-14

USB Connectors	2-14
Audio Port Connectors	2-15
Connectors	2-16
Floppy Disk Drive Connector: FDD1	2-16
Chassis Intrusion Switch Connector: JCI1 (Optional)	2-16
Ultra ATA HDD Connectors: IDE1, IDE2	2-17
Serial ATA HDD Connectors: SATA1, SATA2	2-18
Fan Power Connectors: CPU_FAN/SYS_FAN	2-19
CD-In Connector: JCD1	2-20
Modem-In Connector: JMD1 (Optional)	2-20
Aux Line-In Connector: JAUX1 (Optional)	2-20
SPDIF-Out Connector: JSP1 (Optional)	2-20
Front Panel Connectors: JFP1	2-21
Front Panel Audio Connector: JAUD1	2-22
Front USB Connectors: JUSB1, JUSB2	2-23
IEEE 1394 Connector: J1394_1 (Optional for 865PEM2 Series)	2-24
Jumpers	2-25
Clear CMOS Jumper: JBAT1	2-25
Slots	2-26
AGP (Accelerated Graphics Port) Slot	2-26
PCI (Peripheral Component Interconnect) Slots	2-26
CNR (Communication Network Riser) Slot	2-26
PCI Interrupt Request Routing	2-27
Chapter 3. BIOS Setup	3-1
Entering Setup	3-2
Control Keys	3-2
Getting Help	3-3
The Main Menu	3-4
Standard CMOS Features	3-6
Advanced BIOS Features	3-8
Advanced Chipset Features	3-12

Integrated Peripherals	3-15
Power Management Setup	3-21
PNP/PCI Configurations	3-25
PC Health Status	3-27
Frequency/Voltage Control	3-29
Load Default Setting	3-30
Set Supervisor/User Password	3-31



Getting Started

Thank you for choosing the 865GM3/865PEM2 Series (MS-6763 v1.X) micro ATX mainboard. The 865GM3/865PEM2 Series are based on **Intel® Springdale-G/PE & ICH5** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium® 4** processors in 478 pin package, the 865GM3/865PEM2 Series deliver a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

- Supports Intel® P4 Northwood (Socket 478) processors.
- FSB 533~800MHz, depending on the CPU installed.
- Supports up to 3.2GHz.

Chipset

- Intel® Springdale-PE/G chipset
 - Supports FSB 800/533/400MHz.
 - Supports AGP 8X/4X interface.
 - Supports DDR 400/333/266 memory interface.
 - Integrated graphics (*for Springdale-G only*).
- Intel® ICH5 chipset
 - Hi-Speed USB (USB2.0) controller, 480Mb/sec.
 - 2 Serial ATA/150 ports.
 - 2 channel Ultra ATA 100 bus Master IDE controller.
 - PCI Master v2.3.
 - I/O APIC.
 - AC'97 2.3 interface.
 - Supports both ACPI and legacy APM power management.

MainMemory

- Supports four 184-pin unregistered non-ECC PC3200/PC2700/PC2100 DDR DIMMs.
- Supports up to 4GB memory size.

Slots

- One AGP slot supports 8x/4x at 0.8V (AGP 3.0) or 4x at 1.5V (3.3V not supported).
- Three 32-bit v2.3 Master PCI bus slots (support 3.3v/5v PCI bus interface).
- One CNR slot.

On-BoardIDE

- Dual Ultra DMA 33/66/100 IDE controllers integrated in ICH5.
 - Supports PIO, Bus Master operation modes.
 - Can connect up to four Ultra ATA drives.
- Serial ATA/150 controller integrated in ICH5.
 - Up to 150MB/sec transfer speeds.
 - Can connect up to two Serial ATA drives.

On-Board Peripherals

- ▶ On-Board Peripherals include:
 - 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
 - 2 serial ports (COM A & JCOM1)
 - 1 parallel port supports SPP/EPP/ECP mode
 - 1 VGA port (*for 865GM3 Series only*)
 - 8 USB 2.0 ports (Rear * 4/ Front * 4)
 - 1 Line-In/Line-Out/Mic-In port
 - 1 RJ45 LAN jack
 - 2 IEEE 1394 ports (*optional for 865PEM2 Series only*)

Audio

- ▶ AC97 link controller integrated in ICH5.
- ▶ Software audio codec AD1981B.
 - Compliant with AC97 v2.2 spec.
 - Meets PC2001 audio performance requirement.
 - Can support SPDIF Out via bracket only.

LAN

- ▶ Intel 82547EI (*for 865GM3 Series only*)
 - Integrated 10/100/1000Mbps Ethernet MAC and PHY in one chip.
 - Supports auto-negotiation operation.
 - Compliant with PCI v2.2, and LAN on Motherboard (LOM) standard.
- ▶ RealTek RTL8101L (*for 865PEM2 Series only*)
 - Integrated 10/100Mbps Ethernet MAC and PHY in one chip.
 - Supports 10Mb/s and 100Mb/s auto-negotiation operation.
 - Compliant with PCI v2.2, and LAN on Motherboard (LOM) standard.

BIOS

- ▶ The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- ▶ The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.

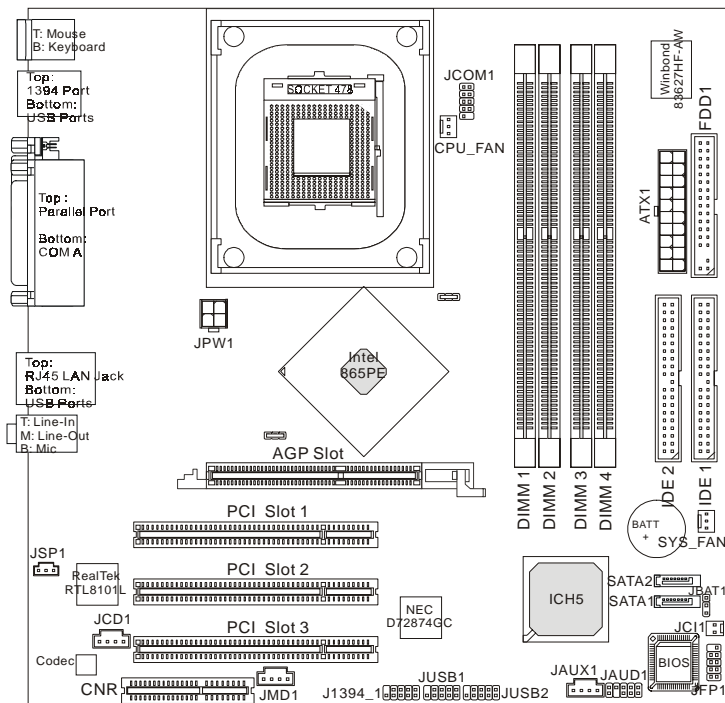
Dimension

- ▶ Micro ATX Form Factor: 24.38 cm (L) x 24.38 cm (W).

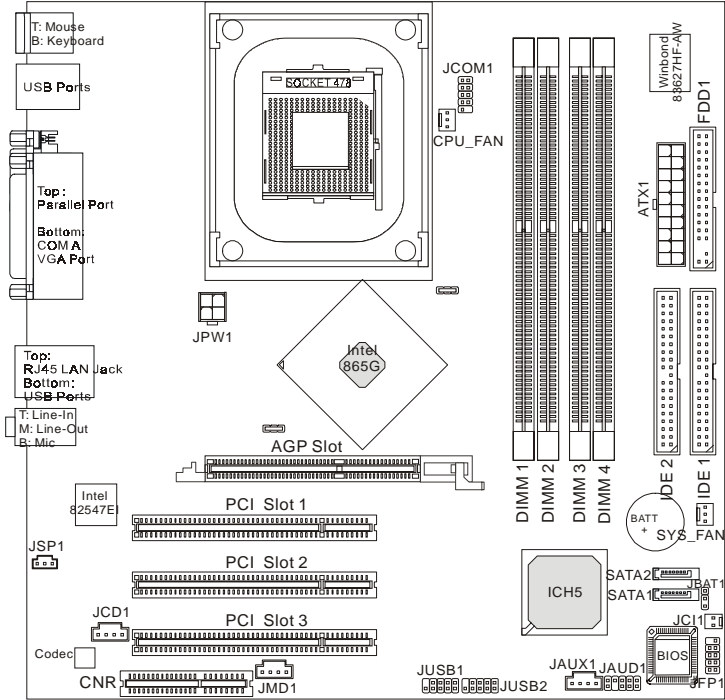
Mounting

- ▶ 8 mounting holes.

Mainboard Layout



865PEM2 Series (MS-6763 v1.X) Micro ATX Mainboard



865GM3 Series (MS-6763 v1.X) Micro ATX Mainboard

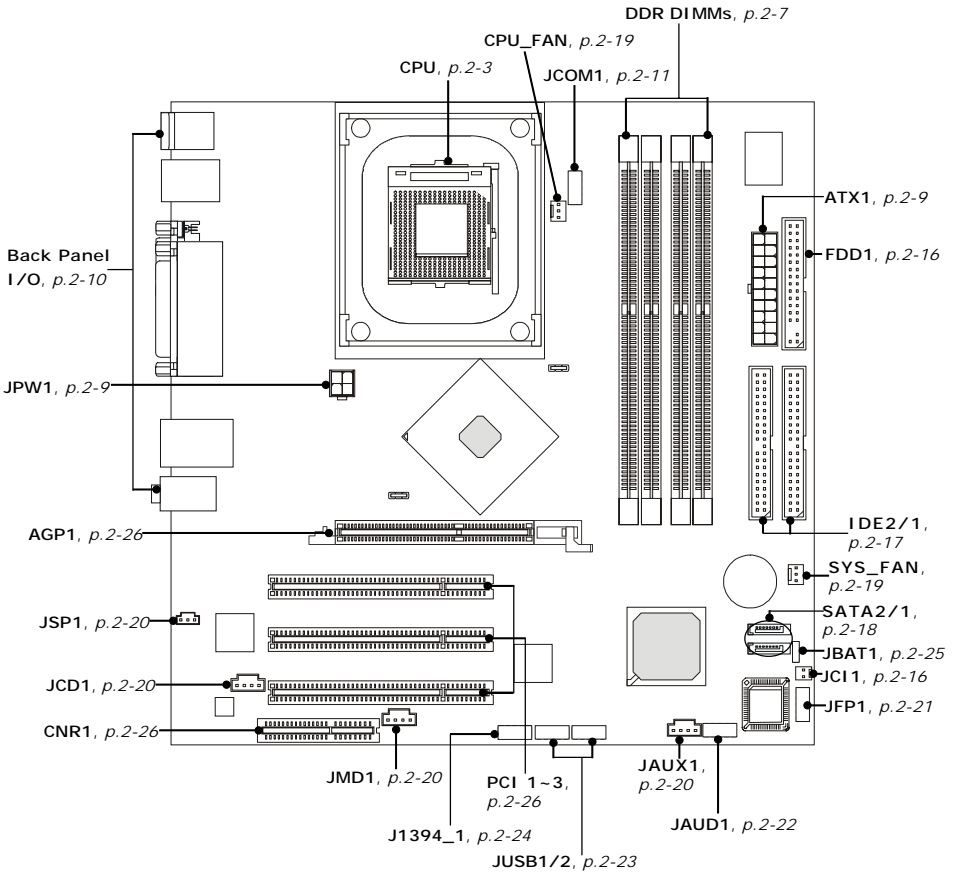
2

Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

Quick Components Guide



Central Processing Unit: CPU

The mainboard supports Intel® Pentium® 4 processors in the 478 pin package. The mainboard uses a CPU socket called PGA478 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not find the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

CPU Core Speed Derivation Procedure

If	CPU Clock	=	100MHz
	Core/Bus ratio	=	24
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	100MHz x 24
		=	2.4 GHz



MSI Reminds You...

Overheating

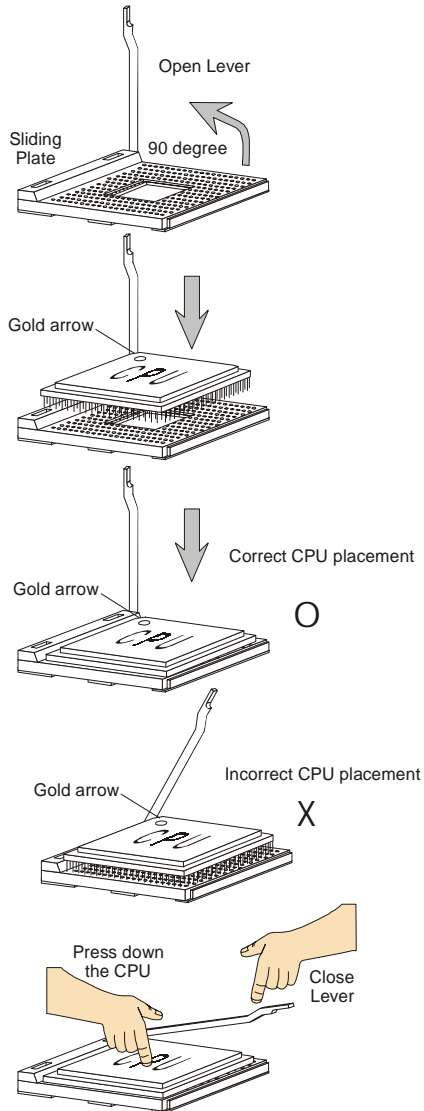
Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Replacing the CPU

While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

CPU Installation Procedures for Socket 478

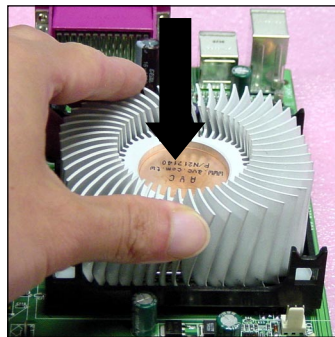
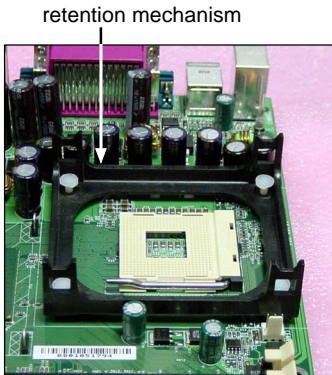
1. Please turn off the power and unplug the power cord before installing the CPU.
2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.
3. Look for the gold arrow. The gold arrow should point towards the lever pivot. The CPU can only fit in the correct orientation.
4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.
5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



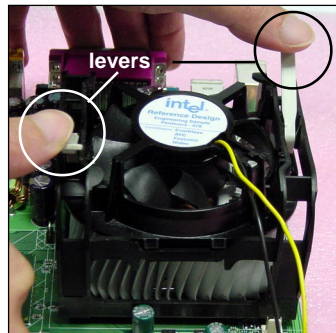
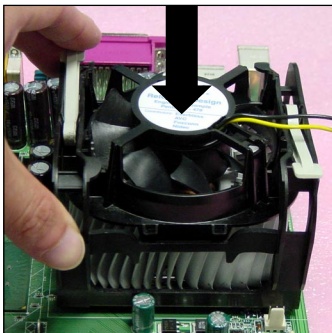
Installing the CPU Fan

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly important. To dissipate heat, you need to attach the CPU cooling fan and heatsink on top of the CPU. Follow the instructions below to install the Heatsink/Fan:

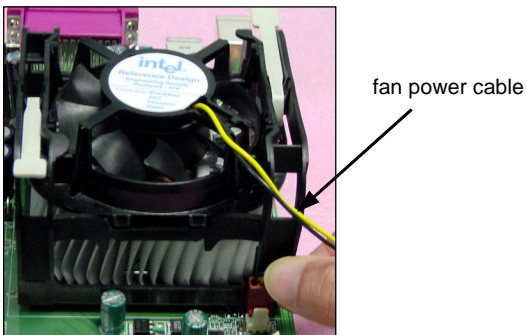
1. Locate the CPU and its retention mechanism on the motherboard.
2. Position the heatsink onto the retention mechanism.



3. Mount the fan on top of the heatsink. Press down the fan until its four clips get wedged in the holes of the retention mechanism.
4. Press the two levers down to fasten the fan. Each lever can be pressed down in only ONE direction.



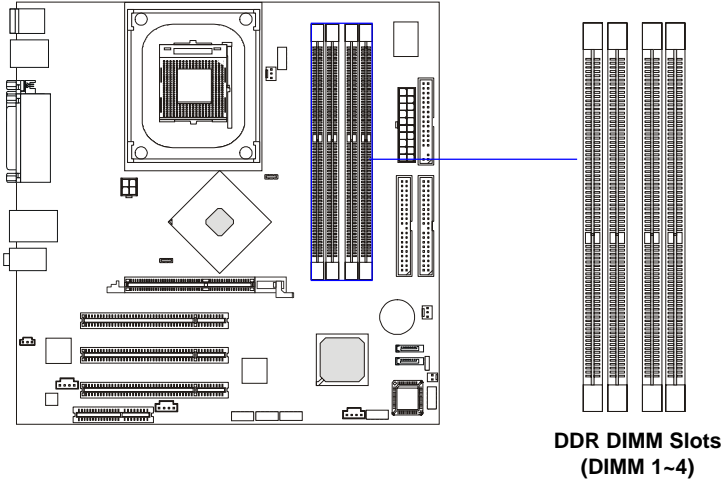
5. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the board.



NOTES

Memory

The mainboard provides four 184-pin unbuffered PC3200/PC2700/PC2100 DDR DIMMs and supports the memory size up to 4GB. To operate properly, at least two DIMM modules must be installed onboard.



Memory Speed/CPU FSB Support Matrix

	DDR200	DDR266	DDR333	DDR400
FSB400	V	V	X	X
FSB533	V	V	V	X
FSB800	V	V	V	V

DDR Population Rules

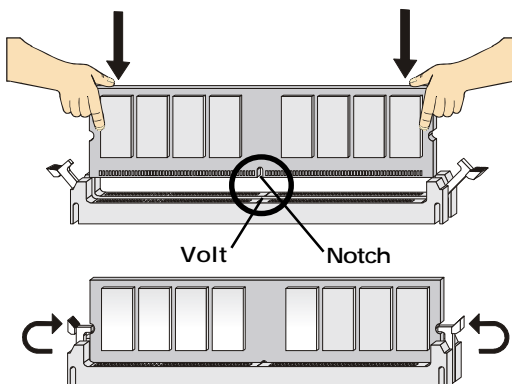
Install at least one DIMM module on the slots. Each DIMM slot supports up to a maximum size of 1GB. Users can install either single- or double-sided modules to meet their own needs. Please note that *each DIMM can work respectively for single-channel DDR, but there are some rules while using dual-channel DDR* (Please refer to the suggested DDR population table on p. 2-8). Users may install memory modules of different type and density on different-channel DDR DIMMs. However, the *same type and density memory modules* are necessary while using dual-channel DDR, or instability may occur.

Please refer to the following table for detailed dual-channel DDR population rules. Other combination not listed below will function as single-channel DDR.

DIMM1 (CH A)	DIMM2 (CH A)	DIMM3 (CH B)	DIMM4 (CH B)	System Density
128MB~1GB		128MB~1GB		256MB~2GB
128MB~1GB			128MB~1GB	256MB~2GB
	128MB~1GB	128MB~1GB		256MB~2GB
	128MB~1GB		128MB~1GB	256MB~2GB
128MB~1GB	128MB~1GB	128MB~1GB		384MB~3GB
128MB~1GB	128MB~1GB		128MB~1GB	384MB~3GB
128MB~1GB		128MB~1GB	128MB~1GB	384MB~3GB
	128MB~1GB	128MB~1GB	128MB~1GB	384MB~3GB
128MB~1GB	128MB~1GB	128MB~1GB	128MB~1GB	512MB~4GB

Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.
3. The plastic clip at each side of the DIMM slot will automatically close.



MSI Reminds You...

You can barely see the golden finger if the module is properly inserted in the socket.

Power Supply

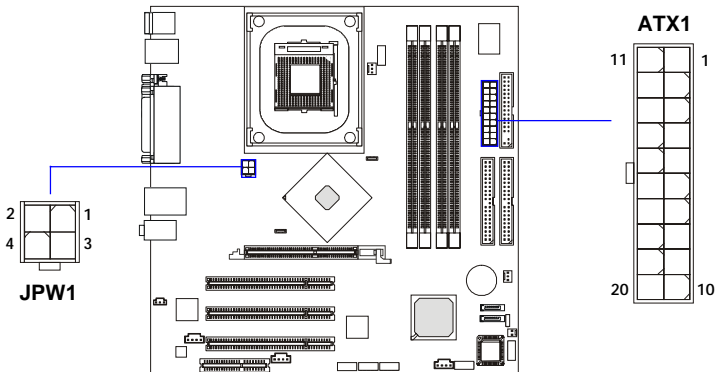
The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 20-Pin Power Connector: ATX1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.



JPW1 Pin Definition

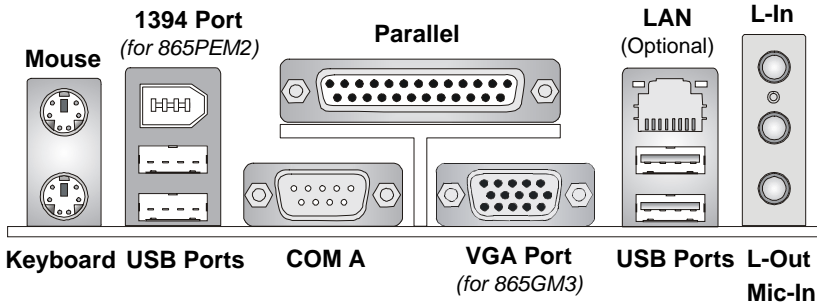
PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

ATX1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

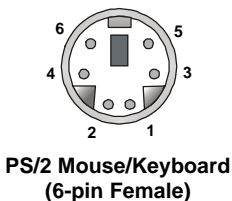
Back Panel

The back panel provides the following connectors:



Mouse/Keyboard Connector

The mainboard provides a standard PS/2[®] mouse/keyboard mini DIN connector for attaching a PS/2[®] mouse/keyboard. You can plug a PS/2[®] mouse/keyboard directly into this connector. The connector location and pin assignments are as follows:

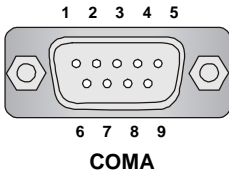


Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse/Keyboard Data	Mouse/Keyboard data
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse/Keyboard Clock	Mouse/Keyboard clock
6	NC	No connection

Serial Port Connectors: COMA & JCOM1

The mainboard offers two 9-pin serial ports COMA and JCOM1. All ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a serial mouse or other serial device directly to them.



COMA



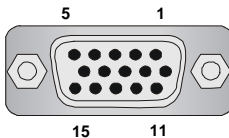
JCOM1

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

VGA Connector (for 865GM3 Series only)

The mainboard provides a DB 15-pin female connector to connect a VGA monitor.

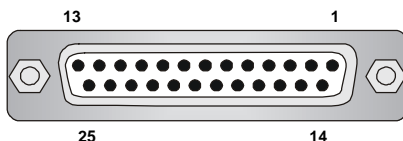


VGA Connector
(DB 15-pin)

Pin	Signal Description
1	RED
2	GREEN
3	BLUE
4	N/C
5	GND
6	GND
7	GND
8	GND
9	+5V
10	GND
11	N/C
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

Parallel Port Connector: LPT1

The mainboard provides a 25-pin female centronic connector as LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Pin Definition

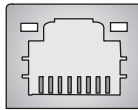
PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

LAN Jack: 10/100Mbps LAN (for 865PEM2 Series) or Gigabit LAN (for 865GM3 Series)

The mainboard provides one standard RJ-45 jack for connection to Local Area Network (LAN). Two LAN chipsets are available upon request:

1. 10/100Mbps LAN for 865PEM2-IL mainboard.
2. Gigabit LAN for 865GM3-F mainboard.

Gigabit LAN enables data to be transferred at 1000, 100 or 10Mbps. 10/100 LAN enables data to be transferred at 100 or 10Mbps. You can connect a network cable to this LAN jack.



RJ-45 LAN Jack

10/100 LAN Pin Definition

PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

Gigabit LAN Pin Definition

PIN	SIGNAL	DESCRIPTION
1	D0P	Differential Pair 0+
2	D0N	Differential Pair 0-
3	D1P	Differential Pair 1+
4	D2P	Differential Pair 2+
5	D2N	Differential Pair 2-
6	D1N	Differential Pair 1-
7	D3P	Differential Pair 3+
8	D3N	Differential Pair 3-

IEEE1394 Port (Optional for 865PEM2 Series only)

The back panel provides one standard IEEE 1394 port. The standard IEEE1394 port connects to IEEE1394 devices without external power. The IEEE1394 high-speed serial bus complements USB by providing enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.

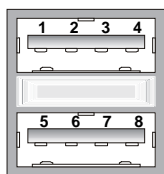


IEEE1394 Port

USB Connectors

The mainboard provides a UHCI (Universal Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.

USB Port Description



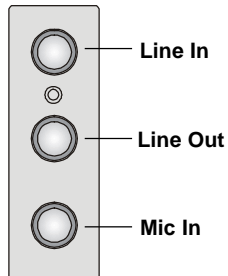
USB Ports

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

Audio Port Connectors

Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.

1/8" Stereo Audio Connectors

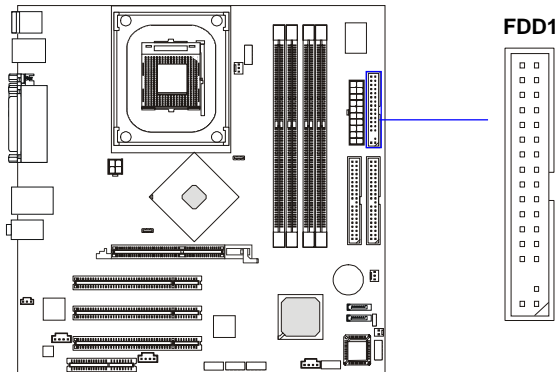


Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, audio, LAN, USB Ports, and CPU/System fans.

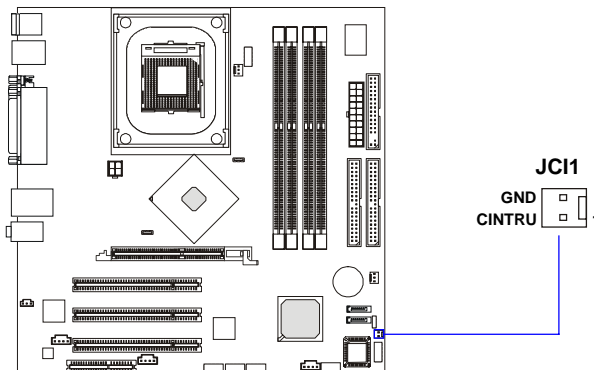
Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



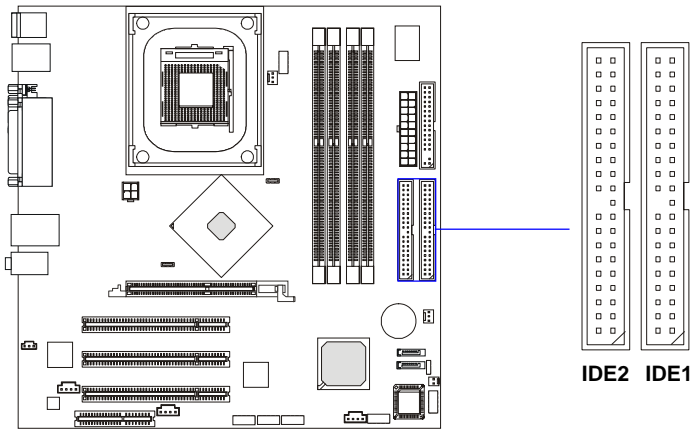
Chassis Intrusion Switch Connector: JCI1 (Optional)

This connector is connected to 2-pin connector chassis switch. If the chassis is open, the switch will be short. The system will record this status. To clear the warning, you must enter the BIOS setting and clear the status.



Ultra ATA HDD Connectors: IDE1, IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices. These connectors support the provided IDE hard disk cable.



IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

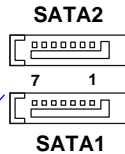
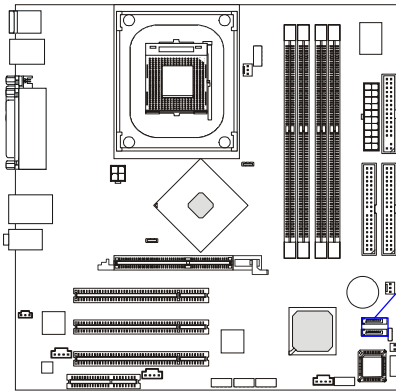


MSI Reminds You...

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Serial ATA HDD Connectors: SATA1, SATA2

The mainboard provides dual high-speed Serial ATA interface ports. The ports support 1st generation Serial ATA data rates of 150MB/s and are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk drive.

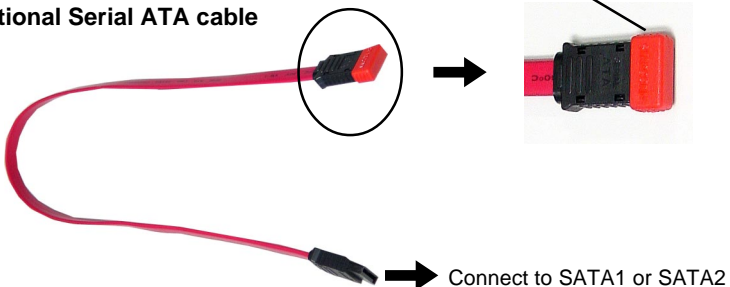


Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

Take out the dust cover and connect to the hard disk devices

Optional Serial ATA cable

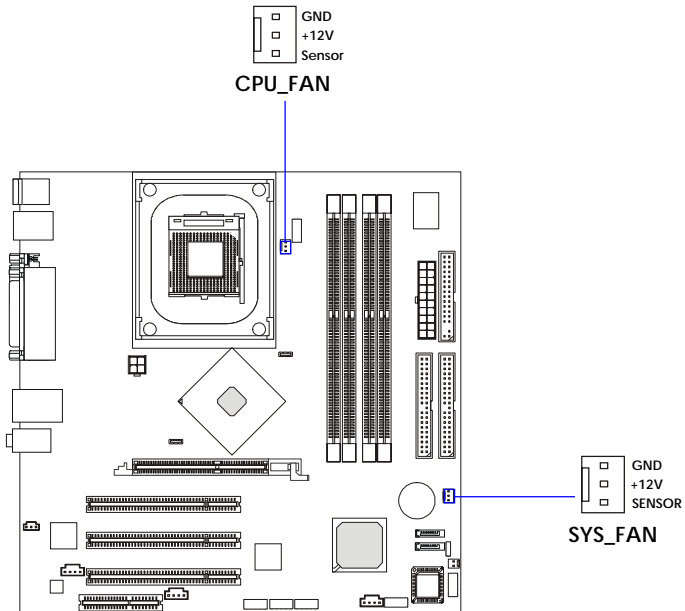


MSI Reminds You...

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, the loss of data may occur during transmission.

Fan Power Connectors: CPU_FAN/SYS_FAN

The CPU_FAN (processor fan) and SYS_FAN (system fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND.



MSI Reminds You...

Always consult the vendors for proper CPU cooling fan.

CD-In Connector: JCD1

The connector is for CD-ROM audio connector.

Modem-In Connector: JMD1 (Optional)

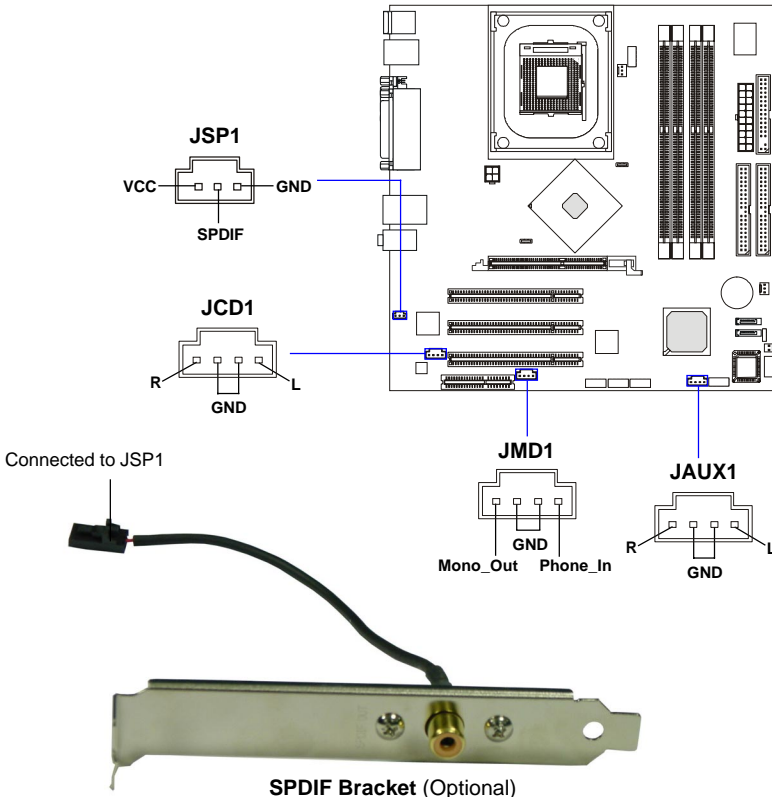
The connector is for modem with internal audio connector.

Aux Line-In Connector: JAUX1 (Optional)

The connector is for DVD add-on card with Line-in connector.

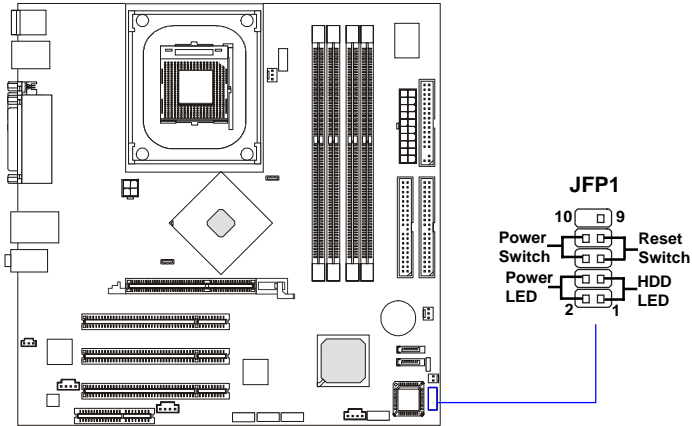
SPDIF-Out Connector: JSP1 (Optional)

This connector is used to connect SPDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission.



Front Panel Connectors: JFP1

The mainboard provides one front panel connector for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

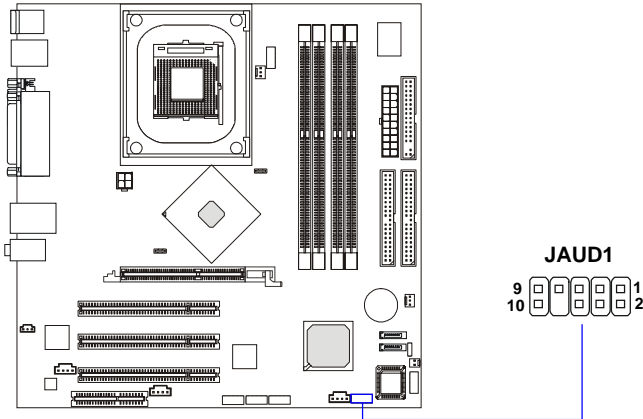


JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP_PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP_PWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

Front Panel Audio Connector: JAUD1

The JAUD1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	NC	No connection
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel



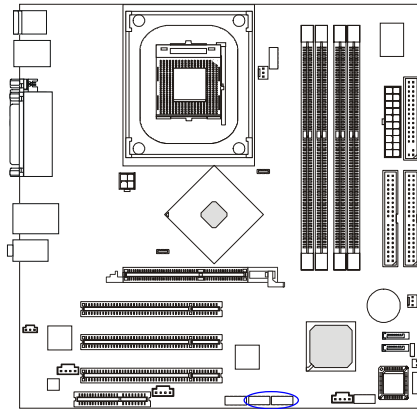
MSI Reminds You...

If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.



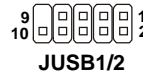
Front USB Connectors: JUSB1, JUSB2

The mainboard provides two USB 2.0 pin headers *JUSB1/2* that are compliant with Intel® I/O Connectivity Design Guide. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD, digital cameras, MP3 players, printers, modems and the like.**



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key	10	USBOC



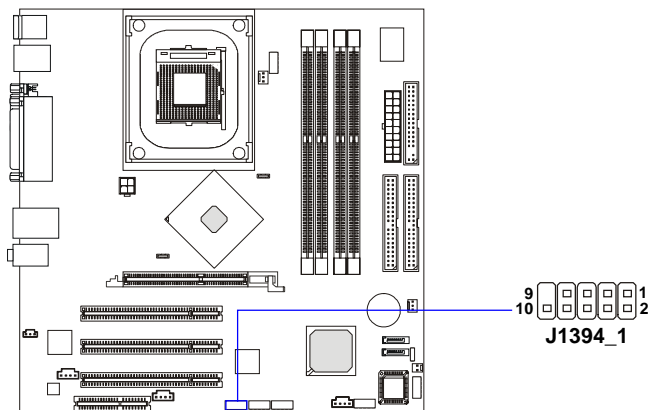
Connected to JUSB1
or JUSB2

USB 2.0 Bracket
(Optional)



IEEE 1394 Connector: J1394_1 (Optional for 865PEM2 Series)

The mainboard provides one 1394 pin header that allows you to connect IEEE 1394 ports via an external IEEE1394 bracket (optional).



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground

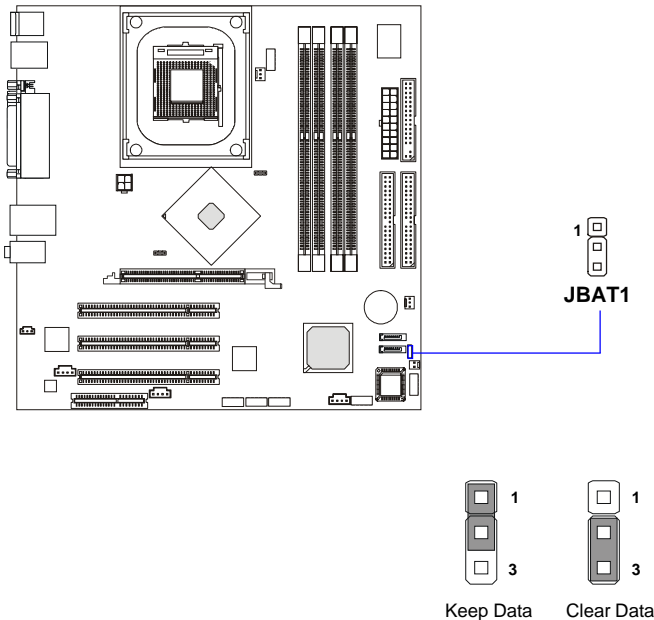


Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

Clear CMOS Jumper: JBAT1

There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper) to clear data.

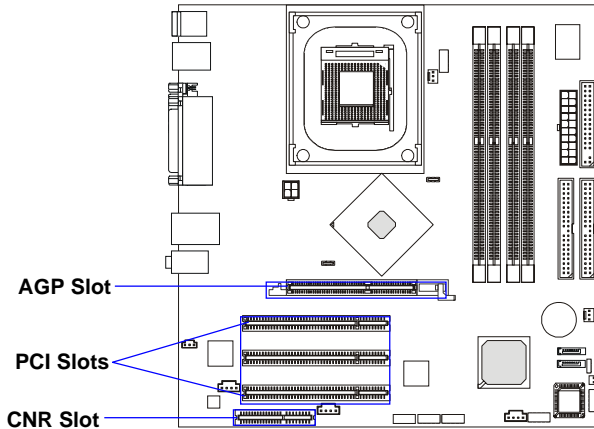


MSI Reminds You...

You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slots

The motherboard provides one AGP slot, three 32-bit PCI bus slots, and one CNR slot.



AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory. The slot supports 8x/4x cards at 0.8V (AGP 3.0) or 4x cards at 1.5V (3.3V not supported).

PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

CNR (Communication Network Riser) Slot

The CNR slot allows you to insert the CNR expansion cards. CNR is a specially designed network, audio, or modem riser card for ATX family motherboards. Its main processing is done through software and controlled by the motherboard's chipset.

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT C#	INT D#	INT A#	INT B#

3

BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use. You may need to run the Setup program when:

- ◆ An error message appears on the screen during the system booting up, and requests you to run SETUP.
- ◆ You want to change the default settings for customized features.

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F10>	Save all the CMOS changes and exit

Getting Help

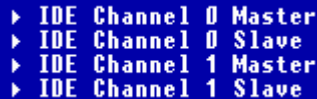
After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.



```

▶ IDE Channel 0 Master
▶ IDE Channel 0 Slave
▶ IDE Channel 1 Master
▶ IDE Channel 1 Slave

```

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

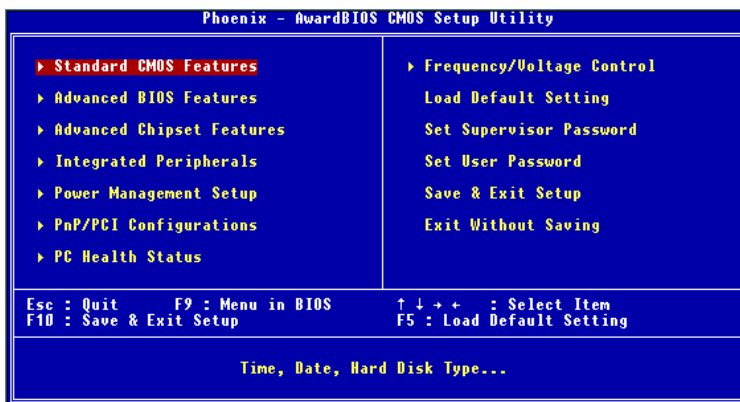


MSI Reminds You...

The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu displays twelve configurable functions and two exit choices. Use arrow keys to move among the items and press <Enter> to enter the sub-menu.



Standard CMOS Features

Use this menu for basic system configurations, such as time, date etc.

Advanced BIOS Features

Use this menu to configure the special enhanced features.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PNP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.

Load Default Setting

Use this menu to load the BIOS default values that are factory settings for optimal system operations.

Set Supervisor/User Password

Use this menu to set user and supervisor passwords.

Save & Exit Setup

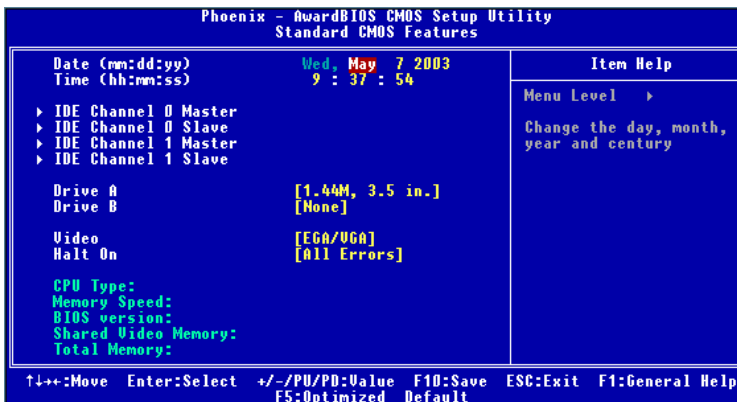
Save changes to CMOS and exit setup.

Exit Without Saving

Abandon all changes and exit setup.

Standard CMOS Features

The items inside Standard CMOS Features menu are divided into 10 categories. Each category includes none, one or more setup items. Use the arrow keys to highlight the item you want to modify and use the <PgUp> or <PgDn> keys to switch to the value you prefer.



Date (mm:dd:yy)

This allows you to set the system to the date that you want (usually the current date). The format is <day><month> <date> <year>.

- day** Day of the week, from Sun to Sat, determined by BIOS. Read-only.
- month** The month from Jan. through Dec.
- date** The date from 1 to 31 can be keyed by numeric function keys.
- year** The year can be adjusted by users.

Time (hh:mm:ss)

This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

IDE Channel 0/1 Master/Slave

Press PgUp/<+> or PgDn/<-> to select *Manual*, *None*, *Auto* type. Note that the specifications of your drive must match with the drive table. The hard disk

will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use *Manual* to define your own drive type manually.

If you select *Manual*, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is SCSI, the selection shall be “None”. If the controller of HDD interface is CD-ROM, the selection shall be “None”.

Access Mode	The settings are <i>CHS, LBA, Large, Auto</i> .
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

Drive A/B

This item allows you to set the type of floppy drives installed. Available options are *None, 360K, 5.25 in., 1.2M, 5.25 in., 720K, 3.5 in., 1.44M, 3.5 in., 2.88M, 3.5 in.*

Video

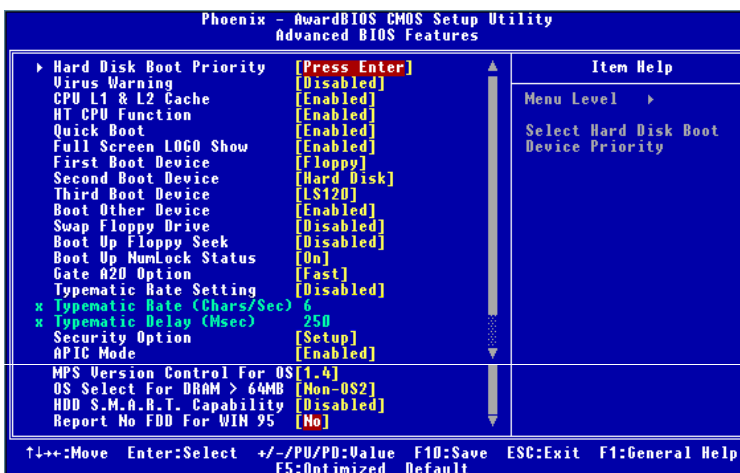
The setting controls the type of video adapter used for the primary monitor of the system. Available options are *EGA/VGA, CGA 40, CGA 80* and *Mono*.

Halt On

The setting determines whether the system will stop if an error is detected at boot. Available options are:

<i>All Errors</i>	The system stops when any error is detected.
<i>No Errors</i>	The system doesn't stop for any detected error.
<i>All, But Keyboard</i>	The system doesn't stop for a keyboard error.
<i>All, But Diskette</i>	The system doesn't stop for a disk error.
<i>All, But Disk/Key</i>	The system doesn't stop for either a disk or a keyboard error.

Advanced BIOS Features



Hard Disk Boot Priority

This setting determines the boot priority of the installed hard disk drives.

Virus Warning

The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep. Setting options: *Disabled, Enabled*.

CPU L1 & L2 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. The settings enable/disable the internal cache (also known as L1 or level 1 cache) and external cache (also known as L2 or level 2 cache). Setting options: *Disabled, Enabled*.

HT CPU Function

With Intel® Hyper-Threading Technology, a single Hyper-Threading-enabled processor can simultaneously process two threads of code, improving the performance of multi-threaded code running on a single processor platform. Setting this function to *Enabled* will improve overall system performance, in-

crease number of users a platform can support, improve reaction and response time, and increase number of transaction that can be executed. Setting options: *Enabled, Disabled.*



MSI Reminds You...

Enabling the functionality of Hyper-Threading Technology for your computer system requires ALL of the following platform Components:

- *CPU: An Intel® Pentium® 4 Processor with HT Technology;*
- *Chipset: An Intel® Chipset that supports HT Technology;*
- *BIOS: A BIOS that supports HT Technology and has it enabled;*
- and*
- *OS: An operating system that supports HT Technology.*

*For more information on Hyper-threading Technology, go to:
<http://www.intel.com/info/hyperthreading>*

Quick Boot

The setting allows the system to skip certain tests while booting. This will decrease the time needed to boot the system. Setting options: *Enabled, Disabled.*

Full Screen Logo Show

This item enables you to show the company logo on the bootup screen. Settings are:

- Disabled* Shows the POST messages at boot.
- Enabled* Shows a still image (logo) on the full screen at boot.

First/Second/Third Boot Device

These settings allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. Setting options:

- Floppy* The system will boot from floppy drive.
- LS120* The system will boot from LS-120 drive.
- Hard Disk* The system will boot from the HDD.
- CDROM* The system will boot from the CD-ROM.
- ZIP* The system will boot from ATAPI ZIP drive.
- USB-FDD* The system will boot from the floppy drive at USB ports.
- USB-ZIP* The system will boot from the ZIP drive at USB ports.
- USB-CDROM* The system will boot from the CD-ROM at USB ports.

<i>USB-HDD</i>	The system will boot from the HDD at USB ports.
<i>LAN</i>	The system will boot from the Network drive.
<i>Disabled</i>	Disable this sequence.

Boot Other Device

Setting the option to *Enabled* allows the system to try to boot from other devices if the system fails to boot from the 1st/2nd/3rd boot device.

Swap Floppy Drive

Setting to *Enabled* will swap floppy drives A: and B:.

Boot Up Floppy Seek

Setting to *Enabled* will make BIOS seek floppy drive A: before booting the system. Setting options: *Disabled, Enabled*.

Boot Up NumLock Status

This setting is to set the Num Lock status when the system is powered on. Setting to *On* will turn on the Num Lock key when the system is powered on. Setting to *Off* will allow users to use the arrow keys on the numeric keypad. Setting options: *On, Off*.

Gate A20 Option

This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When the default value *Fast* is selected, the Gate A20 is controlled by Port92 or chipset specific method resulting in faster system performance. When *Normal* is selected, A20 is controlled by a keyboard controller or chipset hardware.

Typematic Rate Setting

This item is used to enable or disable the typematic rate setting including Typematic Rate & Typematic Delay.

Typematic Rate (Chars/Sec)

After *Typematic Rate Setting* is enabled, this item allows you to set the rate (characters/second) at which the keys are accelerated. Settings: *6, 8, 10, 12, 15, 20, 24* and *30*.

Typematic Delay (Msec)

This item allows you to select the delay between when the key was first pressed and when the acceleration begins. Settings: *250, 500, 750* and *1000*.

Security Option

This specifies the type of BIOS password protection that is implemented. Settings are described below:

Option	Description
<i>Setup</i>	The password prompt appears only when end users try to run Setup.
<i>System</i>	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

APIC Mode

This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system. Settings: *Enabled* and *Disabled*.

MPS Version Control for OS

This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: *1.4*, *1.1*.

OS Select For DRAM > 64MB

This allows you to run the OS/2® operating system with DRAM greater than 64MB. Setting options: *OS2*, *Non-OS2*.

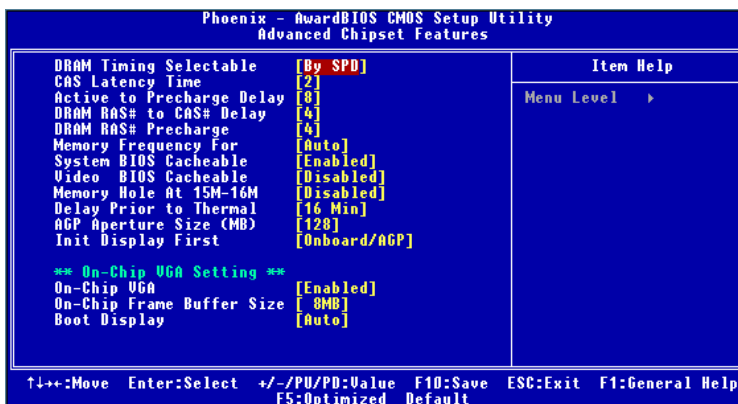
HDD S.M.A.R.T. Capability

This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline. Settings: *Enabled*, *Disabled*.

Report No FDD For WIN95

For compatibility with Windows 95 logo certification, select *Yes* to release IRQ6 when the system contains no floppy drive. When this setting is set to *Yes*, users have to select *Disabled* for the Onboard FDC Controller in the Integrated Peripherals menu. Setting options: *No*, *Yes*.

Advanced Chipset Features



MSI Reminds You...

Change these settings only if you are familiar with the chipset.

DRAM Timing Selectable

Selects whether DRAM timing is controlled by the SPD (Serial Presence Detect) EEPROM on the DRAM module. Setting to *By SPD* enables DRAM timings to be determined by BIOS based on the configurations on the SPD. Selecting *Manual* allows users to configure the DRAM timings manually.

CAS Latency Time

This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: 2, 2.5, 3 (clocks). 2 (clocks) increases the system performance the most while 3 (clocks) provides the most stable performance.

Active to Precharge Delay

The field specifies the idle cycles before precharging an idle bank. Settings: 8, 7, 6, 5 (clocks).

DRAM RAS# to CAS# Delay

This field allows you to set the number of cycles for a timing delay between

the CAS and RAS strobe signals, used when DRAM is written to, read from or refreshed. Fast speed offers faster performance while slow speed offers more stable performance. Settings: 4, 3, 2 (clocks).

DRAM RAS# Precharge

This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refresh may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Available settings: 4, 3, 2 (clocks).

Memory Frequency For

Use this item to configure the clock frequency of the installed DRAMs. Setting options: *Auto, DDR266, DDR333, DDR400.*

System BIOS Cacheable

Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Setting options: *Enabled, Disabled.*

Video BIOS Cacheable

Selecting *Enabled* allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result. Setting options: *Disabled, Enabled.*

Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA peripherals. This memory must be mapped into the memory space below 16MB. When this area is reserved, it cannot be cached. Settings: *Enabled, Disabled.*

Delay Prior to Thermal

When the CPU temperature reaches a factory preset level, a thermal monitoring mechanism will be enabled following the appropriate timing delay specified in this field. With the thermal monitoring enabled, clock modulation controlled by the processor's internal thermal sensor is also activated to keep the processor within allowable temperature limit. Setting options: *4 Min, 8 Min, 16 Min, 32 Min.*

AGP Aperture Size (MB)

This setting controls just how much system RAM can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The option allows the selection of an aperture size of *4, 8, 16, 32, 64, 128, and 256*.

Init Display First

This item specifies which VGA card is your primary graphics adapter. Settings: *PCI Slot, Onboard/AGP*.

****On-Chip VGA Setting****

On-Chip VGA

This setting determines whether the system RAM can be allocated to on-chip video controller for video purposes. When setting to Enabled, up to 128MB system RAM will be allocated to on-chip video controller. Settings: *Disabled, Enabled*.

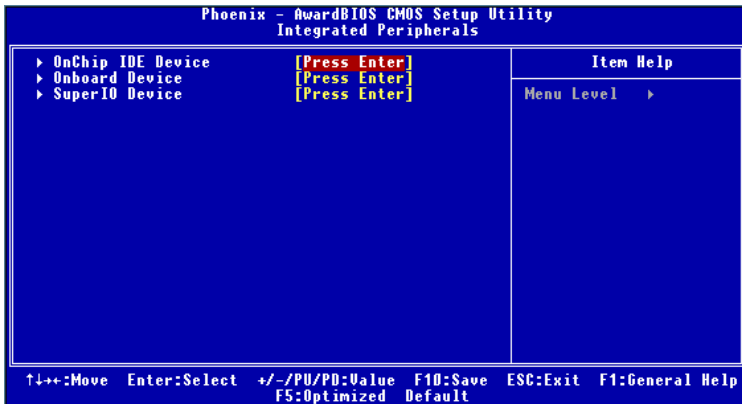
On-Chip Frame Buffer Size

Frame Buffer is the video memory that stores data for video display (frame). This field is used to determine the memory size for Frame Buffer. Larger frame buffer size increases video performance. Settings: *1MB, 8MB, 16MB*.

Boot Display

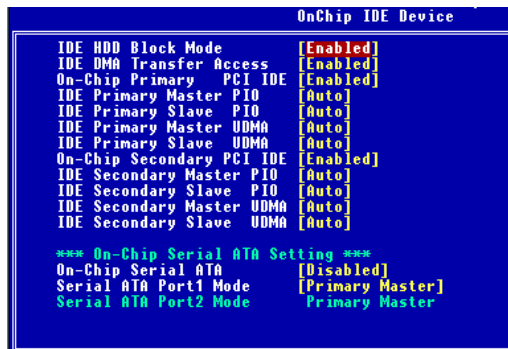
Use this field to select the type of device you want to use as the display(s) of the system. Settings: *Auto, CRT, TV, EFP*. The option EFP refers to the LCD display.

Integrated Peripherals



OnChip IDE Device

Press <Enter> to enter the sub-menu and the following screen appears:



IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select [Enabled] for automatic detection of the optimal number of block read/write per sector the drive can support. Setting options: *Disabled*, *Enabled*.

IDE DMA Transfer Access

This setting is used to enable or disable the DMA transfer function of IDE hard drives under certain operating systems that do not support IDE drivers, ex: DOS. Setting options: *Enabled, Disabled*.

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose *Enabled* to activate each channel separately.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In *Auto* mode, the system automatically determines the best mode for each device. The settings are: *Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4*.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, Ultra DMA/66 and Ultra DMA/100, select *Auto* to enable BIOS support. The settings are: *Auto, Disabled*.

****On-Chip Serial ATA Setting****

On-Chip Serial ATA

This setting controls the Serial ATA controller on the south bridge. Options: *Disabled, Auto, Legacy Mode, Native Mode*. When set to *Disabled*, the SATA controller will be disabled. When set to *Auto*, the SATA controller will be automatically controlled by the BIOS. When set to *Legacy Mode*, the PATA & SATA controllers are combined to support a maximum of 2 IDE drives in each channel. When set to *Native Mode*, both SATA and PATA controllers are enabled to support a maximum of 6 IDE drives (The support of 6 IDE drives depends on the operating system installed. Currently only Windows 2000 & Windows XP support this function.)

Serial ATA Port 1/2 Mode

When *On-Chip Serial ATA* is set to *Legacy Mode*, setting options will show as follows:

1. *Primary Master*

=> Serial ATA Port 1/2 will be set to *Primary Master*.

2. *Primary Slave*

=> Serial ATA Port 1/2 will be set to *Primary Slave*.

3. *Secondary Master*

=> Serial ATA Port 1/2 will be set to *Secondary Master*.

4. *Secondary Slave*

=> Serial ATA Port 1/2 will be set to *Secondary Slave*.

When *On-Chip Serial ATA* is set to *Native Mode*, setting options will show as follows:

1. *SATA1 Master*

=> Serial ATA Port 1 will be set to *Native Mode Master*.

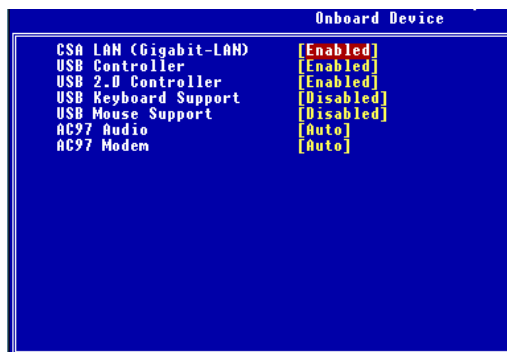
2. *SATA2 Master*

=> Serial ATA Port 2 will be set to *Native Mode Master*.

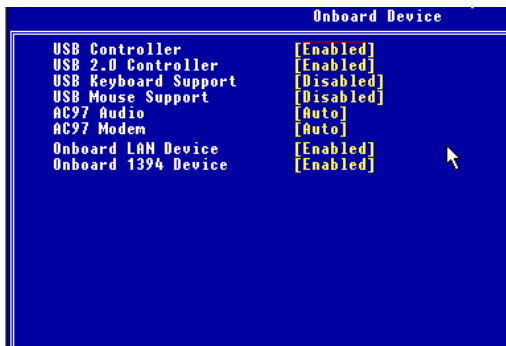
Onboard Device

Press <Enter> to enter the sub-menu and the following screen appears:

For 865G



For 865PE



CSA LAN (Gigabit-LAN) (for 865G)

This setting is used to enable/disable the onboard Gigabit LAN controller. Setting options: *Disabled, Enabled*.

USB Controller

This setting is used to enable/disable the onboard USB 1.1 controller. Setting options: *Disabled, Enabled*.

USB 2.0 Controller

This setting is used to enable/disable the onboard USB 2.0 controller. This setting works only when the operating system installed supports USB 2.0 driver, such as Windows 2000/XP/ME. Setting options: *Disabled, Enabled*.

USB Keyboard/Mouse Support

Set to *Enabled* if you need to use a USB mouse/keyboard in the operating system that does not support or have any USB keyboard/mouse driver installed, such as DOS and SCO Unix.

AC97 Audio

Auto allows the motherboard's BIOS to detect whether you're using any audio device. If so, the onboard audio controller will be enabled. If not, the onboard audio controller will be disabled. If you want to use different controller cards to connect audio connectors, set the field to *Disabled*. Setting options: *Disabled, Auto*.

AC97 Modem

Auto allows the mainboard to detect whether a modem is used. If a modem is detected, the onboard AC'97 modem controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect a modem. Settings: *Auto, Disabled*.

Onboard LAN Device (for 865PE)

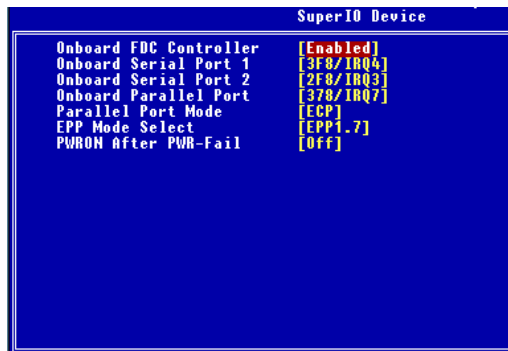
This setting is used to enable/disable the onboard 10/100Mbps LAN controller. Setting options: *Disabled, Enabled*.

Onboard 1394 Device (for 865PE)

This setting is used to enable/disable the onboard IEEE1394 controller. Setting options: *Disabled, Enabled*.

Super IO Device

Press <Enter> to enter the sub-menu and the following screen appears:

**Onboard FDC Controller**

Select Enabled if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field. The settings are: *Enabled* and *Disabled*.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports. The settings are: *3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto*.

Onboard Parallel Port

There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

Disabled

3BC/IRQ7 Line Printer port 0

278/IRQ5 Line Printer port 2

378/IRQ7 Line Printer port 1

Parallel Port Mode

SPP : Standard Parallel Port

EPP : Enhanced Parallel Port

ECP : Extended Capability Port

ECP + EPP: Extended Capability Port + Enhanced Parallel Port

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the EPP mode simultaneously, choose "EPP." By choosing "ECP", the onboard parallel port will operate in ECP mode only. Choosing "ECP + EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

EPP Mode Select

The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "EPP Mode Select." At this time either *EPP 1.7 spec* or *EPP 1.9 spec* can be chosen.

PWRON After PWR-Fail

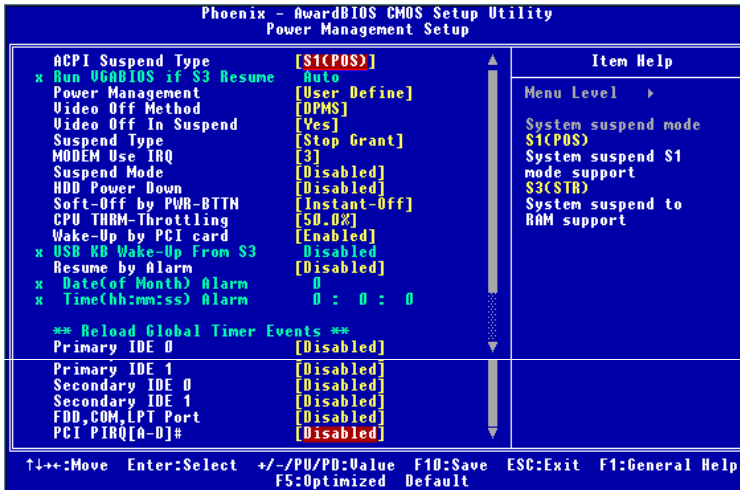
This item specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

Off Leaves the computer in the power off state.

On Leaves the computer in the power on state.

Former-sts Restores the system to the status before power failure or interrupt occurred.

Power Management Setup



MSI Reminds You...

S3-related functions described in this section are available only when your BIOS supports S3 sleep mode.

ACPI Suspend Type

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1(POS) or S3 (STR) fashion through the setting of this field. Options are:

- S1 (POS)* The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.
- S3 (STR)* The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a “wake up” event occurs.

Run VGABIOS if S3 Resume

Selecting [Enabled] allows BIOS to call VGABIOS to initialize the VGA card when system wakes up (resumes) from S3 sleep state. The system resume time is shortened when you disable the function, but system will need an AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3.

Power Management

This item is used to select the degree (or type) of power saving and is related to these modes: *Suspend Mode* and *HDD Power Down*. There are three options for power management:

- Min Saving* Minimum Power Management. Suspend Mode=1 Hour
- Max Saving* Maximum Power Management. Suspend Mode=1 Min
- User Define* Allows end users to configure each mode separately.

Video Off Method

This determines the manner in which the monitor is blanked.

- V/H SYNC+Blank* This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
- Blank Screen* This option only writes blanks to the video buffer.
- DPMS* Initial display power management signaling.

Video Off In Suspend

This option enables the monitor to be turned off during the suspend mode. Settings: *Yes, No*.

Suspend Type

This setting allows you to select the type of Suspend mode. Setting options: *Stop Grant* (saves the state of the entire system to disk and then powers off the system), *PwrOn Suspend* (the CPU and core system remain powered on in a very low-power mode).

MODEM Use IRQ

This determines the IRQ in which the MODEM can use. Activity of the selected IRQ always awakens the system. Settings: *3, 4, 5, 7, 9, 10, 11, NA..*

Suspend Mode

If system activity is not detected for the length of time specified in this field, all devices except CPU will be shut off. Settings are *Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min* and *1 Hour*.

HDD Power Down

If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active. Settings: *Disabled, 1 through 15 Min*.

Soft-Off by PWR-BTTN

This feature allows users to configure the power button function. Settings are:

Instant-Off The power button functions as a normal power-on/-off button.

Delay 4 Sec. When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

CPU THRM-Throttling

The item allows you to specify the CPU speed (at percentage) to which it will slow down when the CPU reaches the predetermined overheat temperature. Settings range from *12.5% to 87.5%* at *12.5%* increment.

Wake-Up By PCI Card, USB KB Wake-Up From S3

These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

Resume By Alarm

The field is used to enable or disable the feature of booting up the system on a scheduled time/date.

Date (of Month) Alarm

The field specifies the date for *Resume By Alarm*. Settings: *0~31*.

Time (hh:mm:ss) Alarm

The field specifies the time for *Resume by Alarm*. Format is *<hour><minute><second>*.



MSI Reminds You...

If you have changed this setting, you must let the system boot up until it enters the operating system, before this function will work.

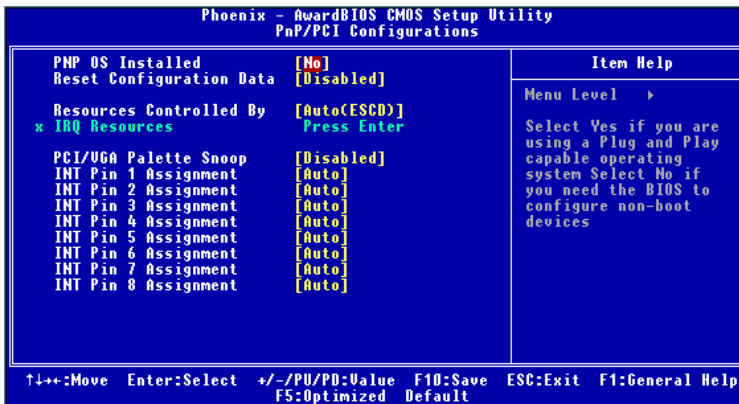
****Reload Global Timer Events****

Primary/Secondary IDE 0/1, FDC/COM/LPT Port, PCI PIRQ [A-D]#

Global Timer Events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device that is configured as *Enabled*, even when the system is in a power down mode.

PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or **P**eripheral **C**omponent **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



PNP OS Installed

When set to *Yes*, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows 98. When set to *No*, BIOS will initialize all the PnP cards. So, select *Yes* if your operating system is Plug & Play aware.

Reset Configuration Data

Normally, you leave this field *Disabled*. Select *Enabled* to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system cannot boot. Setting options: *Enabled*, *Disabled*.

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure

all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95/98. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “>”). Setting options: *Auto (ESCD)*, *Manual*.

IRQ Resources

The items are adjustable only when *Resources Controlled By* is set to *Manual*. Press <Enter> and you will enter the sub-menu of the items. IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Settings are:

- PCI Device* For Plug & Play compatible devices designed for PCI bus architecture.
- Reserved* The IRQ will be reserved for further request.

PCI/VGA Palette Snoop

When set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and one ISA):

VGA Palette Snoop Bit Setting	Action
<i>Disabled</i>	Data read or written by the CPU is only directed to the PCI VGA device’s palette registers.
<i>Enabled</i>	Data read or written by the CPU is directed to both the PCI VGA device’s palette registers and the ISA VGA device’s palette registers, permitting the palette registers of both VGA devices to be identical.

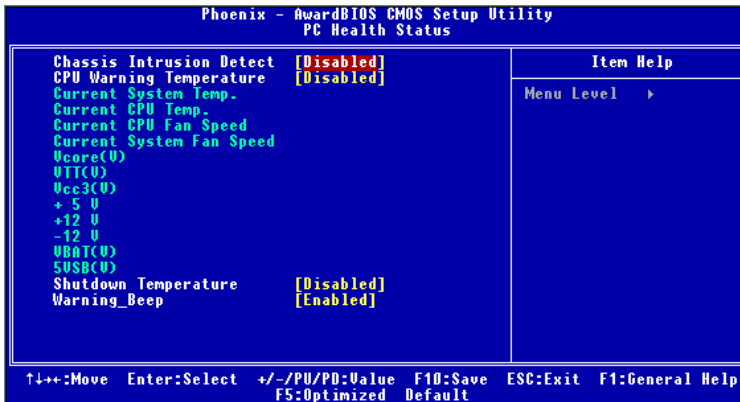
The setting must be set to *Enabled* if any ISA bus adapter in the system requires VGA palette snooping.

INT Pin 1~8 Assignment

These items specify the IRQ line for each PCI slot. Settings: *3, 4, 5, 7, 9, 10, 11, 12, 14, 15, Auto*. Selecting *Auto* allows BIOS to automatically determine the IRQ line for each PCI slot.

PC Health Status

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.



Chassis Intrusion Detect

The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to *Reset*. The setting of the field will automatically return to *Enabled* later. Setting options: *Enabled*, *Reset*, *Disabled*.

CPU Warning Temperature

If the CPU temperature reaches the upper limit preset in this setting, the warning mechanism will be activated. This helps you to prevent the CPU overheat problem.

Current System/CPU Temp, Current CPU/System Fan Speed, Vcore(V), VTT(V), Vcc3(V), +5V, +12V, -12V, -5V, VBAT(V), 5VSB(V)

These items display the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and all fans' speeds.

Shutdown Temperature

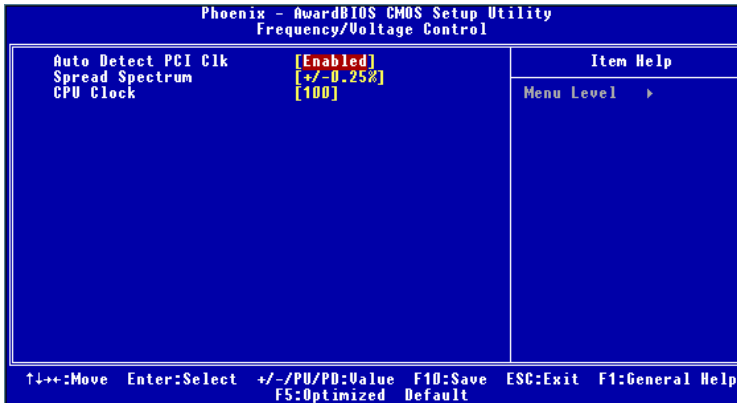
This option is for setting the shutdown temperature level for the processor. When the processor reaches the temperature you set, the system will be shut down.

Warning Beep

This setting allows you to monitor the operation of the CPU fan. Setting to *Enabled* will activate the warning beep once the system detects the malfunction/halt of the CPU fan.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.



Auto Detect PCI Clk

This item is used to auto detect the PCI slots. When set to *Enabled*, the system will remove (turn off) clocks from empty PCI slots to minimize the electromagnetic interference (EMI). Setting options: *Enabled*, *Disabled*.

Spread Spectrum

When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at *Disabled* for optimal system stability and performance. But if you are plagued by EMI, setting to *Enabled* for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clockspeed which may just cause your overclocked processor to lock up.

CPU Clock

This setting specifies the clock frequency of the CPU host bus (FSB). It provides a method for end users to overclock the processor accordingly.

Load Default Setting

The Default Setting is the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

When you select *Load Default Setting*, a message as below appears:



Load Default Setting (Y/N)? N

Pressing *Y* loads the default factory settings for optimal system performance.

Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:

Enter Password:

Type the password, up to six characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also have Award BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required is the *Security Option* of the *ADVANCED BIOS FEATURES* menu. If the *Security Option* is set to *System*, the password is required both at boot and at entry to Setup. If set to *Setup*, password prompt only occurs when you try to enter Setup.



MSI Reminds You...

About Supervisor Password & User Password:

Supervisor password: Can enter and change the settings of the setup menu.

User password: Can only enter but do not have the right to change the settings of the setup menu.

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