



MX945GM-D

User's Manual

Revision 1.0

<http://www.bcmcom.com>

Declaration

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WARNING:

Replace the system’s CMOS RAM battery only with the identical CR-2032 3V Lithium-Ion coin cell (or equivalent) battery type to avoid risk of personal injury or physical damage to the equipment. Always dispose of used batteries according to the manufacturer’s instructions, or as required by the local ordinance (where applicable).

References:

This manual is created and written by BCM Technical Dept., but not limited, to the information from the MX945GM-D External Production Specifications, and MX945GM-D Specifications. If any comments, suggestions, or errors on this manual, please write an e-mail to support@bcmcom.com.

Compliance & Certificate

Compliance & Certificate

ISO 9001 Certificate:

This device was produced in our plant with advanced quality system certified by DNV QA Ltd. in according to ISO 9001. This Certificate is valid for:

DESIGN & MANUFACTURE OF MOTHERBOARD AND PERSONAL COMPUTERS.

CE Declaration:

CE marking is a visible declaration by the manufacturer or his authorized representatives that the electrical equipment to which it relates satisfies all the provisions of the 1994 Regulations.

FCC Compliance:

FCC stands for **Federal Communications Commission**.

This product complies with FCC Rules Part 15 and has been tested, and complied with the EMI rules by a certified body. In normal operation, there shall be no harmful interference caused by this device nor shall this device accept any interference received, including interference that may cause undesired operation of this product.

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Manual Revision Information

Reversion	Revision History	Date
1.0	First Release	Feb. 2007

Item Checklist

- ☒ **MX945GM-D board**
- ☒ **MX945GM-D Quick Installation Guide**
- ☒ **MX945GM-D User's Manual on CD (Digital Format)**
- ☒ **MX945GM-D Device Drivers on CD**
- ☒ **80 wire ATA66/100 IDE cable x1**
- ☒ **SATA cable x2**
- ☒ **SATA Power cable x2**
- ☒ **CPU Heatsink x1**
- ☒ **I/O Shield for MX945GM-D**

Chapter 1

Introduction

1-1 Features of MX945GM-D

The MX945GM-D combines the high performance and exceptional value of Intel® 945GM chipset with a full-featured, new generation, industrial board. The Intel® 945GM chipset supports Intel Yonah (Intel®Core™ Duo/ T2000 series, 2M L2 Cache) and Intel Merom(Intel®Core™ 2 Duo mobile/ T5000 & T7000 series, 4M L2 Cache) mobile processor up to 2.33GHz (Napa Platform) in PGA Package with the FSB (Front Side Bus) 533 MHz or 667MHz.

The MX945GM-D supports 533/667MHz single-/dual channel DDR2 SDRAM (240pin /1.8V) up to 4GB max. It also provides onboard Intel® 82541PI Ethernet controllers (supports 10/100/1000 Base-TX Ethernet), DMI, CRT video output, Audio Line-Out and 2 COM ports. Furthermore, the MX945GM-D also comes with four USB2.0 ports on back panel and two internal USB2.0 ports headers. This board met today's market demand of low power consumption, for POS, Kiosk and embedded applications.

The 82801GHM I/O Controller Hub (ICH7-MDH) on MX945GM-D contains IDE controllers that supports Ultra ATA mode 66/100. This I/O Controller Hub also supports two SATA ports, one PCI slot, and eight USB ports which support USB 1.1/ 2.0 standard performance, stability and reliability requirements.

The MX945GM-D Mini ITX Board is a valuable and it is suitable for all the industry applications, which also well support with the Windows® 2000/ XP and Linux operating systems.

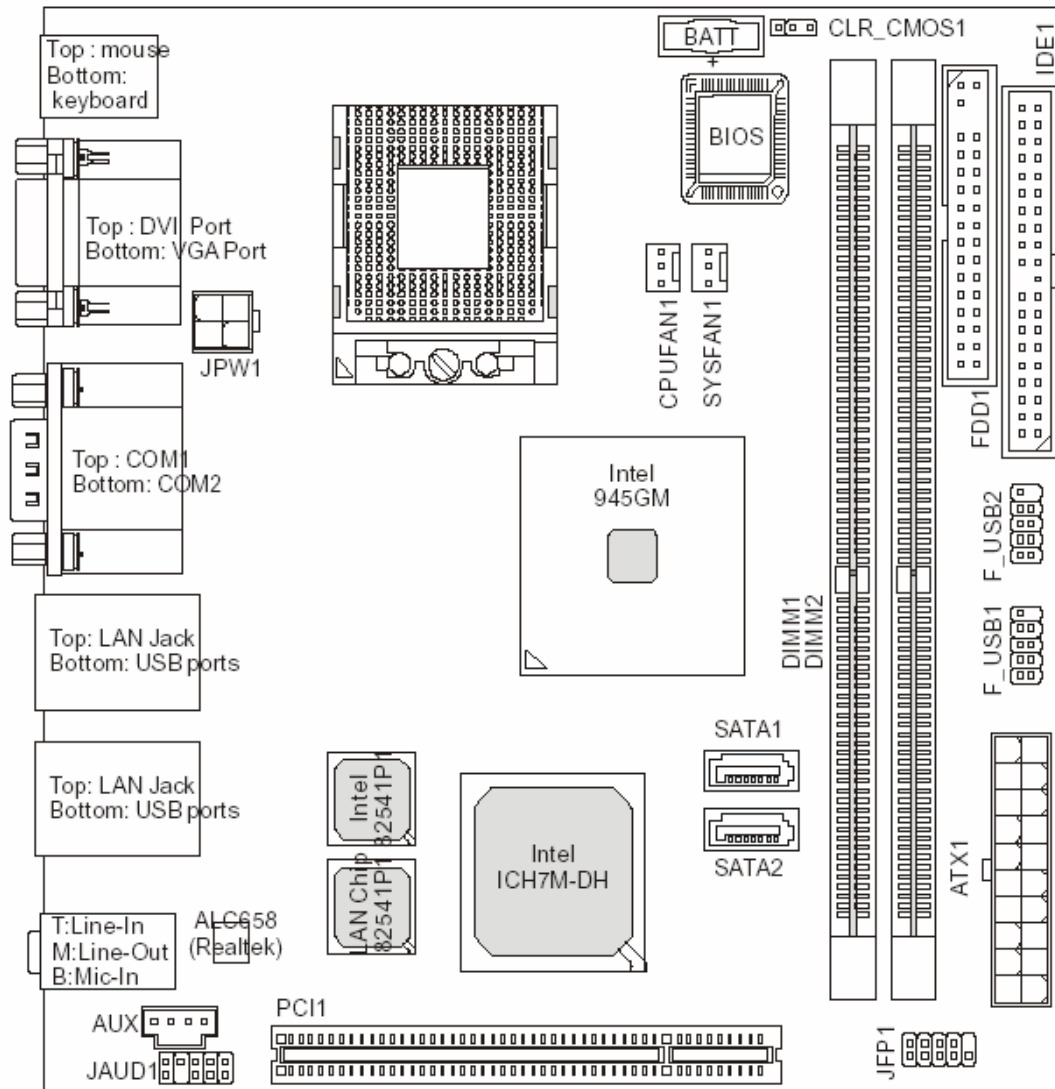
MX945GM-D does provide scalability with high reliability & Longevity for Embedded Application. It is a wise choice for today's computing solution.

1-2 Specification

Spec	Description
Dimension	- Mini ITX form factor PCB size: 6.69”(W) x 6.69”(D) (170 x 170 mm)
Chipset	- Intel 945GM GMCH Chipset - Intel ICH7-MDH (82801GHM) Chipset
CPU	- Intel Yonah (Intel® Core™ Duo/ T2000 series) and Intel Merom (Intel® Core™ 2 Duo mobile/ T5000 & T7000 series) mobile processor up to 2.33GHz (Napa Platform) in PGA Package. - Supports 2MB L2 Cache (Yonah)/ 4MB (Merom) - Supports 533/667MHz FSB (Front Side Bus)
Video Display	- Intel 945GM chipset - Supports video outputs from DVI or VGA output
Memory Socket	- Two 240-pin /1.8V DDRII slots - Supports DDRII 533/667 SDRAM (4GB max)
Expansion Slot	- One 32-bit PCI slot
Integrate IDE	- One IDE port by Intel®ICH7-MDH - IDE port supports PIO, Ultra ATA 66/100 modes - Two SATAII ports by Intel®ICH7-MDH - SATAII ports supports data transfer up to 300MB/s
LAN On Board	- Two Intel 82541PI Gigabit Ethernet LAN
Audio	- Realtek ALC655 AC' 97 audio chip. - Flexible 6-channel audio
BIOS ROM	- 4MB Flash ROM
I/O	- PS/2 keyboard and PS/2 mouse connectors - Floppy drive connector x1 - Parallel port x1, Serial port x4 (Three on header) - USB 2.0 connector x6, (2 on header) - Audio connector CD-In - Audio connector Line-Out
BIOS	- Award (Phoenix PNP BIOS) - APM /ACPI compliant
Power	- ATX standard 20-pin power connector

1-3 System Diagram

MX945GM-D Mainboard Diagram



Chapter 2

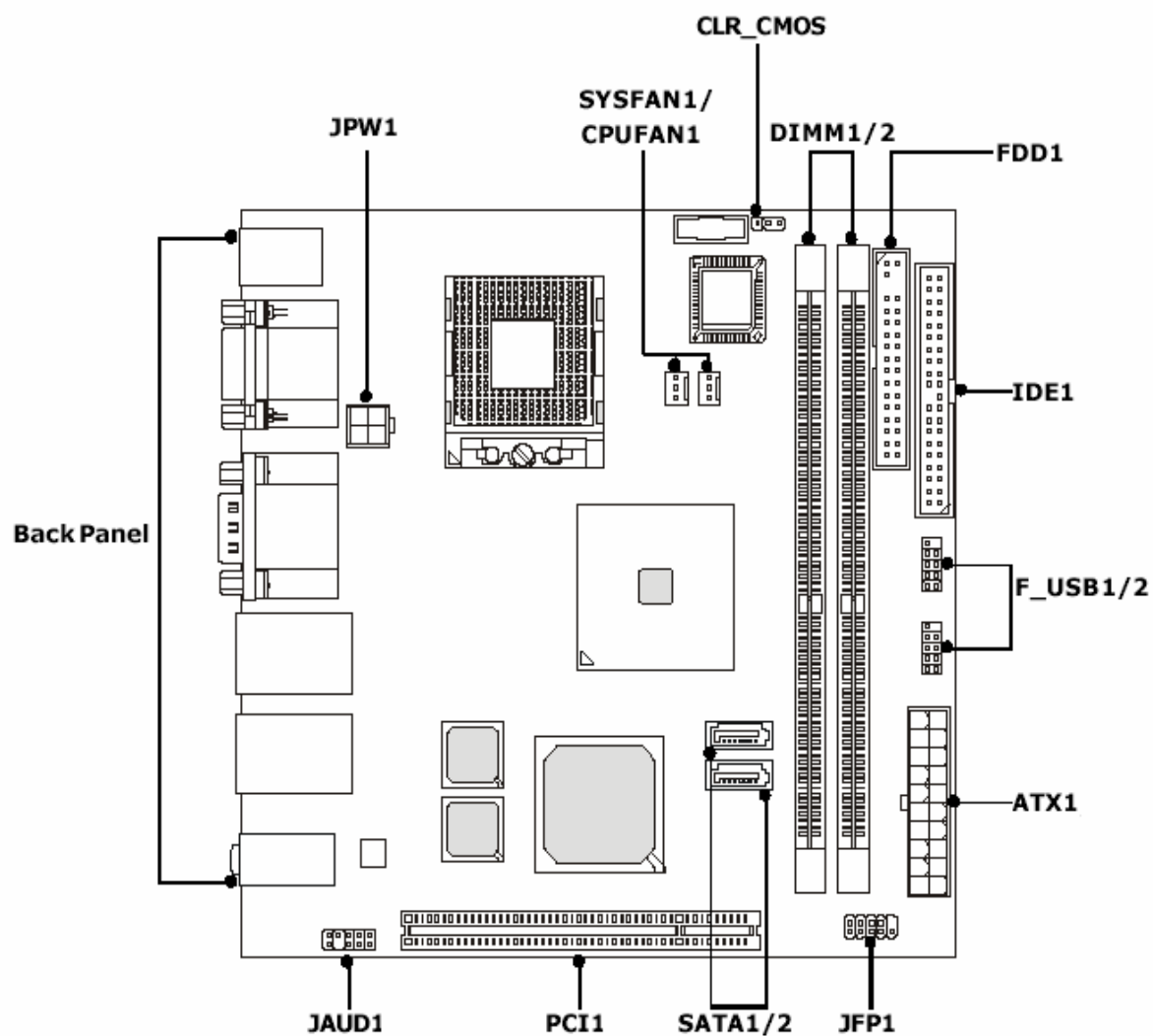
Hardware installation

2-1 Hardware installation Steps

Before starting the system, it is recommended to complete the following steps:

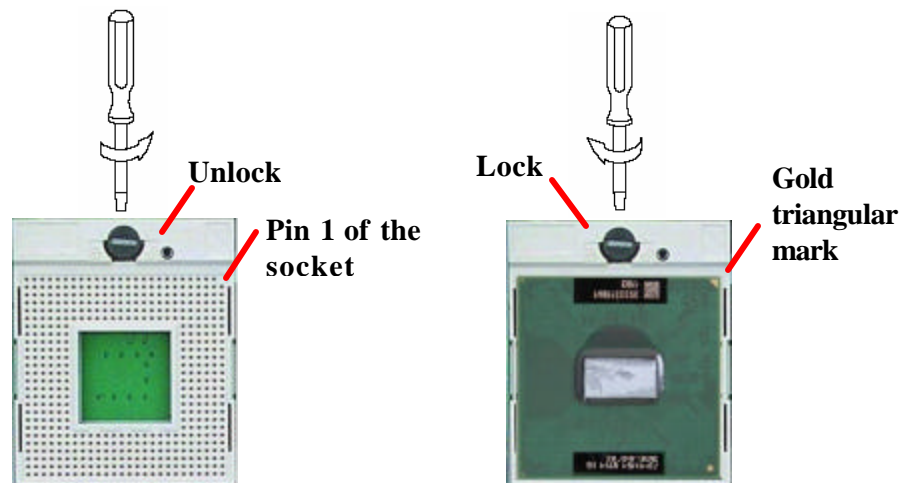
1. Make sure mainboard jumpers are set in proper position
2. Install CPU
3. Install CPU Heatsink (It is recommended to add proper amount of thermal compound between the CPU Heatsink and CPU)
4. Install System Memory
5. Install Expansion cards (If there is any)
6. Connect IDE and Floppy cables, Front Panel /Back Panel cables
7. Connect ATX Power cables
8. Power-On and Load Optimal settings under BIOS
9. Save the BIOS setting and reboot
10. Install Operating System
11. Install device drivers and Utility

2-2 The Jumper/ Connector Location



2-3 Install CPU

1. The CPU socket comes with a screw to secure to the processor. Turn the screw to “Unlock” position first.
2. Position the CPU above the CPU socket and make sure the gold triangular mark on The corner of CPU is aligned with pin 1 of CPU socket, then insert the CPU to the CPU socket gently.
3. Turn the screw to “Lock” position.

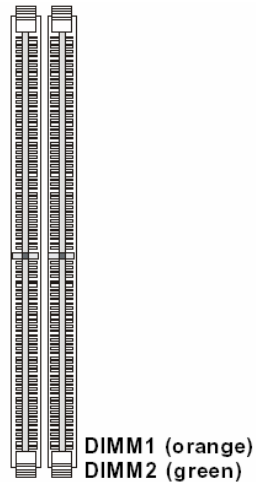


NOTE: Do not force CPU into the socket. It may bend the pins and damage the CPU.

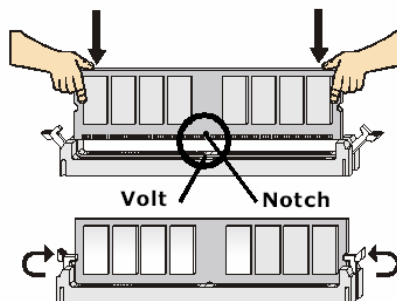
WARNING! Be sure there is sufficient air circulation across the processor's heatsink and Chassis FAN is working correctly. Otherwise, it may cause the processor and mainboard overheat and damage. Install additional auxiliary cooling fan in the system chassis, if necessary.

2-4 Install DDRII Memory Module

The MX945GM-D provides two DIMM slots for 240-pins Dual Channel DDRII 533/667 DIMM, which supports the memory size up to 4GB. Since DDRII modules are not interchangeable with DDRI and DDRII standard is not backward compatible, only DDRII memory module is allowed to be installed in DIMM slots ("DIMM1" and "DIMM2"). Otherwise, the system won't be able to boot up and mainboard might be damaged.



1. There is one notch on the center of DDRII memory module. The module will only fit in the right orientation.
2. Insert the DDRII memory module vertically into the DIMM slot. Then push it in until the gold fingers on memory module is deeply inserted in the DIMM slot.
3. Make sure the plastic clips on both ends of DIMM slot are locked on the DDRII memory module securely.

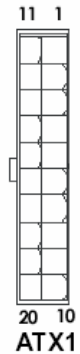


2-5 POWER SUPPLY

The MX945GM-D supports ATX power supply for the power system. Before connecting the power supply connector, always make sure that all components are installed properly in order to avoid damage to the mainboard or components.

2-5-1 ATX 20-Pin Power Connector: ATX1

ATX Power Supply connector is a 20-pins connector comply with Intel ATX standard. The ATX Power Supply allows to use soft power on with a momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel power switch is momentarily pressed. Press this power switch again will turn off the power to the system board.

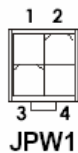


Pin Definition

PIN	SIGNAL	PIN	PINSIGNAL
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

2-5-2 ATX 12V Power Connector: JPW1

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



Pin Definition

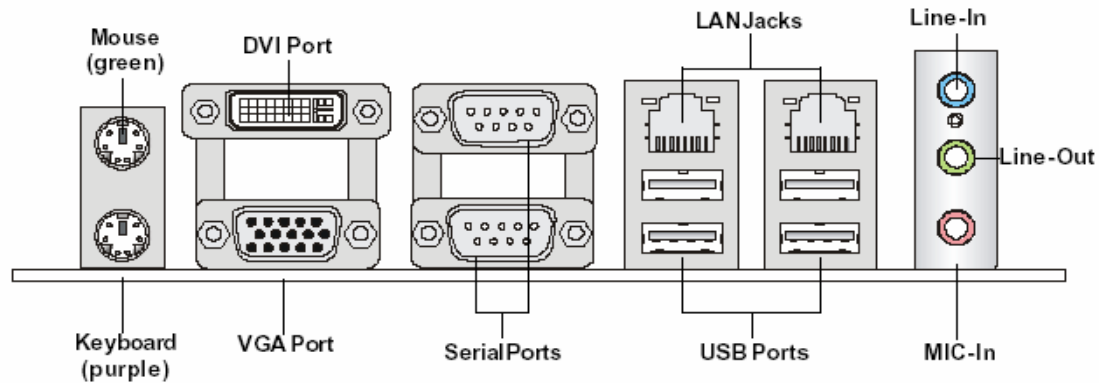
PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

NOTE:

1. Make sure that all the power connectors (ATX1, JPW1) are connected to proper ATX power supply to ensure stable operation of the mainboard.
2. 130 Watts power supply (and above) is highly recommended for system stability.
3. ATX 12V power connection should be greater than 6A.

2-6 BACK PANEL

The Back Panel Provides the following connectors:



2-6-1 Mouse/ Keyboard Connector:

The connector for PS/2[®] mouse, PS/2[®] keyboard.

2-6-2 VGA Port:

VGA port is the 15-pin D-Subminiature female connector for display monitor.

2-6-3 DVI Port:

The DVI (Digital Visual Interface) connector allows connection with an LCD monitor (when there is matched DVI connector on the LCD monitor). It provides a high-speed digital interconnection between the computer and its display device. To connect a LCD monitor, simply plug the DVI connector from LCD monitor into the DVI port (Refer to the LCD monitor user's manual for detail information).

2-6-4 Serial Ports:

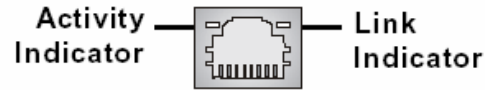
This board offers two 9pins male DIN connectors as serial ports. The ports are 16550A high speed communication ports that send/ receive 16 bytes FIFOs. A serial mouse or other serial devices can be connected to the serial port directly.

2-6-5 USB Ports:

The OHCI (Open Host Controller Interface) Universal Serial Bus port is designed for connecting USB devices to the board.

2-6-6 LAN (RJ-45) Jacks:

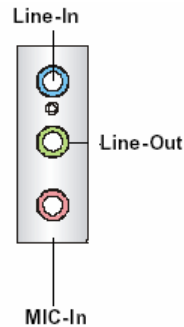
The standard RJ-45 jacks are provided for Local Area Network (LAN) connection.



LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

2-6-7 Audio Port Connectors:

The audio connectors are used for audio devices.



Line-In (blue audio jack): Or "Side-surround Out" in 5.1 channel mode. Line-In is used for external CD player, or other audio devices.

Line-Out (green audio jack): Connector for speakers or headphones.

MIC-In (pink audio jack): Or "Center-LEF" in 5.1 channel mode, MIC-In is used for microphones.

2-7 JUMPER & CONNECTOR

CONNECTORS

2-7-1 IDE Connector: IDE1

The MX945GM-D has a 32-bit Enhanced PCI IDE and Ultra DMA 66/100 controller that provides PIO modes 0~4, Bus Master, and Ultra DMA 66/100 function. The “IDE1” connector can be connected to IDE devices like IDE HDD & CD-ROM.



IDE1

Signal	PIN	Signal	PIN
GND	1	DACT#	2
DCS3#	3	DCS1#	4
DA2	5	DA0	6
NC	7	DA1	8
NC	9	IRQ14	10
GND	11	DACK#	12
GND	13	IORDY	14
GND	15	IOR#	16
GND	17	IOW#	18
GND	19	DREQ	20
NC	21	GND	22
D15	23	D0	24
D14	25	D1	26
D13	27	D2	28
D12	29	D3	30
D11	31	D4	32
D10	33	D5	34
D9	35	D6	36
D8	37	D7	38
GND	39	RESET#	40

2-7-2 Serial ATAII Connectors: SATA1/ SATA2

SATA1/SATA2 are dual high-speed Serial ATAII interface ports. Each supports data transfer rate up to 300MB/s. These two connectors are fully compliant with Serial ATA specification. Each Serial ATA connector can connect to 1 SATA hard drive.



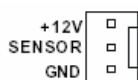
SATA1/SATA2

Pin Definition

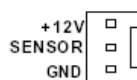
PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

2-7-3 Fan Power Connectors: SYSFAN1/ CPUFAN1

The Fan Power Connectors supports system cooling fan with +12V. It supports 3pins head connector. When connecting the wire to the connectors. Always take note that the red wire is the positive and should be connected to “+12V” pin; the black wire is designated for Ground and should be connected to “GND” pin.



SYSFAN1

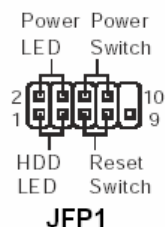


CPUFAN1

WARNING! Be sure there is sufficient air circulation across the processor's heatsink and Chassis FAN is working correctly. Otherwise, it may cause the processor and mainboard overheat and damage. Install additional auxiliary cooling fan in the system chassis, if necessary.

2-7-4 Front Panel Connector: JFP1

The MX945GM-D provides one front panel connector for the connection to the front panel switches and LEDs.



JFP1

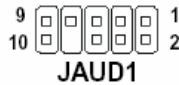
Pin Definition

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.

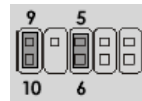
2-7-5 Front Panel Audio Connector: JAUD1

The JAUD1 front panel audio connector provides connection to the front panel audio.

Pin Definition		
PIN	SIGNAL	DESCRIPTION
1	N/C	N/C
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC	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	N/C	N/C
8	KEY	Nopin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

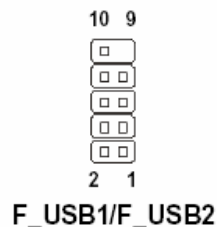


NOTE: If the front audio connector (JAUD1) is not used, pin 5, 6, 9, and 10 have to be jumpered in order to provide signal output to the rear audio ports directly. Otherwise, the Line-Out connector on the back panel will not function.



2-7-6 Front USB Connectors: F_USB1/ F_USB2

The MX945GM-D provides two standard USB 2.0 headers. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than the USB1.1, and is ideal for connecting high-speed USB peripherals such as USB HDD, digital cameras, MP3 players, printers, modems.



Pin Definition			
PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key(no pin)	10	USBOC

NOTE: Be sure “VCC” and “GND” signals are connected to the right pins in order to avoid possible damage.

2-7-7 Floppy Drive Connector: FDD1

The MX945GM-D provides a standard floppy drive connector that supports 1.44M floppy disk types.



FDD1

JUMPER

2-7-8 Clear CMOS Jumper: CLR_CMOS1

There is a CMOS RAM onboard which as a power supply from external battery to maintain the system configuration data. When it is necessary to clear the system configuration, use Clear CMOS jumper (CLR_CMOS1) to clear data. Follow the instructions below to clear the data:



NOTE: The CMOS can be cleared by shorting pin 2-3 at least 30 seconds while the system is OFF. Then return the pin connector back to pin 1-2. Avoid clearing the CMOS while the system is on, this may damage the mainboard.

2-8 Install PCI card

The PCI slot supports LAN cards, SCSI cards, USB cards, and other add-on cards that comply with PCI specifications. At 32bits and 33MHz, it yields a throughput rate of 133MBps.

WARNING! Turn off system power when adding or removing PCI card or other component from the system. Failure to do so may cause severe damage to the mainboard and PCI card.

2-8-1 Procedure For PCI Card Installation

1. Read the documentation for the PCI card and make any necessary hardware setting for PCI card such as jumpers.
2. Align the card's connectors and press it into the PCI slot firmly.
3. Set up the BIOS if necessary.
4. Install the software driver for installed PCI card that is provided by the PCI card manufacturer.

2-8-2 Standard Interrupt Assignments

IRQ	Priority	Standard function
0	N/A	System Timer
1	N/A	Keyboard Controller
2	N/A	Programmable Interrupt
3 *	8	Communications Port (COM2)
4 *	9	Communications Port (COM1)
5 *	6	Onboard Display Controller
6 *	11	Floppy Disk Controller
7 *	7	Printer Port (LPT1)
8	N/A	System CMOS/Real Time Clock
9 *	10	ACPI Mode when enabled
10 *	3	IRQ Holder for PCI Steering
11 *	2	IRQ Holder for PCI Steering
12 *	4	PS/2 Compatible Mouse Port
13	N/A	Numeric Data Processor
14 *	5	Primary IDE Channel
15 *	1	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

2-8-3 PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCISlot 1	INTE#	INTF#	INTG#	INTH#
PCISlot 2	INTF#	INTG#	INTH#	INTE#

IMPORTANT! If install PCI card on shared PCI slot, make sure that the PCI card driver supports “Shared IRQ” or the card doesn’t need IRQ assignment. Otherwise, conflicts will arise between two PCI groups that will make the system unstable or the PCI card inoperable.

2-9 Starting Up the system

1. After all connection is made, close the computer case cover.
2. Be sure all the switch are off, and check that the power supply input voltage is set to the local voltage, usually the input voltage is 220V~240V or 110V~120V which depending on where the country' s voltage used.
3. Connect the power supply cord into the power supply located on the back of system case according to the system user' s manual.
4. Turn on the peripheral as following order:
 - a. The monitor.
 - b. Other external peripheral (Printer, Scanner, External Modem etc...)
 - c. The system power. For ATX power supplies, user needs to turn on the power supply and press the ATX power switch on the front side of the case.
5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it is has a power standby feature. The system will then run power-on test. While the test is running, the BIOS will alarm beeps or additional message will appear on the screen.

If user does not see any thing within 30 seconds from the time power on the system. The system may have failed on power-on test. Recheck the jumper settings and connections or call the retailer for assistance.

Beep	Meaning
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM install or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

6. During power-on, press key to enter BIOS setup. Follow the instructions in BIOS SETUP.
7. Power off the system: User must first exit or shut down the operating system before switch off the power switch. For ATX power supply, user can press ATX power switching after exiting or shutting down the operating system. If user uses Windows 9X, click "Start" button, click "Shut down" and then click "Shut down the computer?" The power supply should turn off after windows shut down.

Chapter 3

Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and the operating system. When user starts the computer, the BIOS program gain control. The BIOS first operates a self-diagnostic test called POST (Power On Self Test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that the system performance as its best.

There are several options available in the BIOS Setup main menu (Figure 3-1), which will be explained in the following pages of this chapter. Here are some function keys that may be useful:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option user wants to confirm or to modify.
- Press <F10> when user has completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/- keys when user wants to modify the BIOS parameters for the active option.

3-1 Entering Setup

Power on the system and by pressing immediately allows user to enter BIOS Setup menu.

If the message disappears before user respond and user still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. User may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If user does not press the keys at the correct time and the system does not boot, an error message will be displayed and user will be asked to

Press <F1> to continue, <Ctrl-Alt-Esc> or to enter Setup

3-2 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

PnP/PCI configurations

This entry appears if the system supports PnP/PCI.

PC Health Status

This entry shows the PC health status.

Frequency/Voltage Control

Use this menu to specify the settings for frequency clock control.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values that are factory settings for the stable performance system operation.

Load Optimized Defaults

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

Set Supervisor Password

Use this menu to set the Supervisor password.

Set User Password

Use this menu to set the User password.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

3-4 Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into several categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value that user wants in each item.

Phoenix - AwardBIOS CMOS Setup Utility		
Standard CMOS Features		
Date (mm:dd:yy)	Tue, Dec, 16 2004	Item Help
Time (hh:mm:ss)	11 : 26 : 48	
? IDE Primary Master	None	Menu Level > Change the day, month, year and century
? IDE Primary Slave	None	
? IDE Secondary Master	None	
? IDE Secondary Slave	None	
Drive A	1.44M, 3.25 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All,But Keyboard	
Base Memory	640K	
Extended Memory	56320K	
Total Memory	57344K	
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Date

The date 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 depends on the year of the BIOS.
- Time** The time format is <hour><minute><second>.

Primary Master/Primary Slave

Secondary Master/Secondary Slave

Press PgUp/<+> or PgDn/<-> to select Manual, None, Auto type. Note that the specifications of the drive must match with the drive table. The hard disk will not work properly if improper information is entered for this category. If hard disk drive type is not matched or listed, user can use manual option to define the drive type manually.

If user selects Manual option, 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 the 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 Auto Normal, Large, and LBA.

Cylinder Number of cylinders

Head Number of heads

Precomp Write precomp

Landing Zone Landing zone

Sector Number of sectors

3-5 Advanced BIOS Features

Phoenix - AwardBIOS CMOS Setup Utility		
Advanced BIOS Features		
? Hard Disk Boot Priority	[Press Enter]	Item Help
Virus Warning	[Disabled]	
CPU L3 Cache	[Enabled]	Menu Level >
First Boot Device	[removable]	
Second Boot Device	[CDROM]	
Third Boot Device	[Hard Disk]	
Boot other Device	[Enabled]	
Swap Floppy Drive	[Disabled]	
Boot Up NumLock Status	[On]	
Security Option	[Setup]	
APIC Mode	[Enabled]	
MPS Version Control for OS	[1.4]	
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help		
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Removable Device Priority

Press [ENTER] to enter a sub menu which displays every current removable device installed. Use [PageUp] or [PageDown] key to select the first boot removable device.

Hard Disk Boot Priority

Press [ENTER] to enter a sub menu which displays every current hard drive installed. Use [PageUp] or [PageDown] key to select the first boot hard disk.

Virus Warning

Allows user to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Disabled (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Enabled Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

CPU L3 Cache

Level 3 cache is the extra cache built into mainboard between the microprocessor and the main memory. Located away from the CPU, the L3 cache is slower than the L1 & L2 caches. This setting allows user to turn on or off the L3 cache.

First/Second/Third/Other Boot Device

This option allows user to set the sequence of boot devices where BIOS attempts to load the disk operating system.

NOTE: Available settings for “First/Second/Third Boot Device” vary depending on the bootable devices user have installed.

Boot Other Device

Try to automatically detect any available bootable devices not Enabled in the Boot Device Menu.

Boot Up NumLock Status

The default value is On.

- | | |
|---------------------|-------------------------|
| On (default) | Keypad is numeric keys. |
| Off | Keypad is arrow keys. |

Security Option

This category allows user to limit access to the system and Setup, or just to Setup.

- | | |
|------------------------|---|
| System | The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. |
| Setup (default) | The system will boot, but access to Setup will be denied if the correct password is not entered prompt. |

APIC Mode

This field is designed to enable or disable the APIC (Advanced Programmable Interrupt Controller). Complied with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system.

MPS Version Control For OS

This field allows user to select which MPS (Multi-Processor Specification) version to be used for the operating system. User needs to select MPS version.

3-6 Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Phoenix - AwardBIOS CMOS Setup Utility	
Advanced Chipset Features	
<pre>** VGA Setting ** On-Chip Frame Buffer Size [8MB] DVMT Mode [DVMT] DVMT/FIXED Memory Size [128MB]</pre>	<pre>Item Help</pre>
	<pre>Menu Level ></pre>
<pre>? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults</pre>	

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.

DVMT Mode

Use this field to select the mode of the digital monitor used. Available options: [Fixed Mode][DVMT Mode][Both].

DVMT/FIXED Memory Size

Specify the size of DVMT memory to allocate for video memory.

NOTE: It is not recommended to change these settings unless the user is familiar with the chipset.

3-7 Integrated Peripherals

Phoenix - AwardBIOS CMOS Setup Utility	
Integrated Peripherals	
? OnChip IDE Device [Press Enter]	Item Help
? Onboard Device [Press Enter]	
? SuperIO Device [Press Enter]	
Menu Level >	
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults	

OnChip IDE Device

Please refer to section 3-7-1

Onboard Device

Please refer to section 3-7-2

Super IO Device

Please refer to section 3-7-3

Onboard LAN Boot ROM

This item allows user to invoke the boot ROM of the onboard LAN chip. The settings are: Enable, Disable.

Onboard Serial Port 1/2/3/4

Select an address for the serial ports. The settings are: Disabled, 3F8, 2F8, 3E8, 2E8.

Serial Port 1/2/3/4 Use IRQ

Select an interrupt for the serial ports. The settings are: IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11.

3-7-1 OnChip IDE Device Settings

Phoenix - AwardBIOS CMOS Setup Utility		
OnChip IDE Device		
SATA Mode	[IDE]	Item Help
On-Chip Serial ATA	[Enhanced Mode]	
SATA PORT Speed Settings	[Disabled]	
		Menu Level >>
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help		
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

SATA Mode

Available options:

IDE (Default)

RAID Selected if user wants to have RAID feature if there are two SATA HDDs.

On-Chip Serial ATA

This setting is used to specify the SATA Controller. The settings are:

Disabled Disable the SATA Controller.

Auto PATA and SATA will be arranged by BIOS, and user will be able to see the IDE device status listed under **Standard CMOS Features**.

Combine Mode PATA and SATA will be combined. Max of 2 IDE drives in each channel are available.

Enhanced Mode PATA and SATA will both be enabled. Max. of 6 IDE drives are supported.

SATA PORT Speed Settings

This setting controls the speed of the SATA port.

3-7-2 Onboard Device

Phoenix - AwardBIOS CMOS Setup Utility		
OnChip IDE Device		
USB Controller	[Enable]	Item Help
USB 2.0 Controller	[Enable]	
USB Keyboard Support	[Disabled]	
AC97 Audio	[Auto]	
Onboard LAN Device 1	[Onboard/AGP]	Menu Level >>
Onboard LAN Device 2	[Enabled]	
Onboard Lan 1 Boot ROM	[Enabled]	
Onboard Lan 2 Boot ROM	[Enabled]	
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help		
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

USB Controller

This item allows user to enable/ disable the onboard USB controller.

USB 2.0 Controller

This item allows user to enable/ disable USB 2.0 function.

USB Keyboard support

This item allows user to enable/ disable legacy USB Keyboard function.
Available options are Enabled and Disabled

AC97 Audio

This item allows user to Enable/ disable the chipset family to support AC97 audio. Available options are Auto and Disabled.

Onboard LAN Device 1/2

This setting controls the onboard LAN1 and LAN2 devices.

Onboard LAN 1/2 Boot ROM

These items enable or disable the initialization of the onboard LAN Boot ROMs during bootup. Select [Disabled] will increase the boot process.

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3-7-3 Super IO Device

Phoenix - AwardBIOS CMOS Setup Utility		
Super IO Device		
Onboard FDC Controller	[Enabled]	Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	
		Menu Level >>
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Onboard FDC Controller

This item allows user to enable/ disable onboard floppy disk controller function.
Available options are Enabled and Disabled

Onboard Serial Port 1/2

These items specify the base I/O port addresses of the onboard Serial Port 1 and Serial Port 2. It has the following option:

Disabled

3F8/IRQ4

2F8/IRQ3

3E8/IRQ4

2E8/IRQ3

3-8 Power Management Setup

The Power Management Setup allows user to configure the system to most effectively save energy saving while operating in a manner consistent with user' s own style of computer use.

CMOS Setup Utility - Copyright(C) 1984-2002 Award Software		
Power Management Setup		
ACPI Function	[Enable]	Item Help
Soft-Off by PWR-BTTN	[Instant-Off]	
USB KB WakeUP From S3(S4)	[Enabled]	Menu Level >
Resume by Alarm	[Disable]	
PWRON After PWR-FAIL	[OFF]	
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

ACPI Function

This feature specifies the power saving modes for ACPI function. If the operating system supports ACPI, such as Windows 98SE, Windows 2000, and Windows XP, the user can choose to enter the Standby mode in S1 (POS) or S3 (STR) through the setting of this field. The available options are:

- S1/POS** This item allows user to Enabled/Disabled the Advanced Configuration and Power Management (ACPI). Available settings are Enabled and Disabled.
- 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 of 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.

Soft-Off by PWR-BTTN

When enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or

USB KB WakeUp From S3(S4)

When setting to enabled, this setting allows the system to be awadkened from S3 state through USB KB.

Resume by Alarm

When enabled, user can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

PWRON After PWR-fail

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

Off Leaves the system in the power off state.

On Leaves the system in the power on state.

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

3-9 PnP/PCI Configuration Setup

Phoenix - AwardBIOS CMOS Setup Utility	
PnP/PCI Configurations	
Init Display First [PCI Slot]	Item Help
	Menu Level >
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help	
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults	

Init Display First

This setting specifies which VGA device is set as the primary source of graphic. Available options are:

PCI Slot The system initializes the PCI graphic card first.

Onboard The system initializes the onboard graphic first.

3-10 PC Health Status

This section displays the Status of CPU, Fan speed, Warning for overall system status. This is only available if there is a Hardware Monitor onboard.

Phoenix - AwardBIOS CMOS Setup Utility		
PC Health Status		
Current SYS Temperature	35°C/ 95°F	Item Help
Current CPU Temperature	35°C/ 95°F	
Shutdown Temperature	[Disable]	
System Fan Speed	0 RPM	Menu Level >
CPU Fan Speed	0 RPM	
VCore	1.25 V	
12 (V)	3.331 V	
1.5 (V)	5.24 V	
5 (V)	11.542V	
-12V	- 11.12 V	
-5V	- 5.09 V	
VBAT(V)	3.23 V	
5VSB(V)	5.221 V	
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help		
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Shutdown Temperature

This item allows user to set up the CPU shutdown Temperature. The settings are: Disabled, 60°C / 140°F, 65°C / 149°F, 70°C / 158°F and 75°C / 167°F.

3-11 Frequency/Voltage Control

This section is for setting CPU Frequency/Voltage Control.

Phoenix - AwardBIOS CMOS Setup Utility	
Frequency/ Voltage Control	
Auto Detect PCI CLK [Enabled]	Item Help
Spread Spectrum [Disabled]	
Menu Level >	
? ? ? ? Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help	
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults	

Auto Detect PCI Clk

This item allows user to enable/disable auto detect PCI Clock.

The settings are: Enabled, Disabled.

Spread Spectrum

This item allows user to set the CPU Host/PCI clock and Spread Spectrum.

The settings are: Enabled, Disabled.

3-12 Load Fail-Safe/Optimized Defaults

Load Fail-Safe Defaults

When press <Enter> on this option, the following confirmation dialog box with a message will be displayed:

Load Standard Defaults (Y/N)? N

Pressing <Y> loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When press <Enter> on this option, a confirmation dialog box with a message will be displayed as follow:

Load Optimized Defaults (Y/N)? N

Pressing <Y> loads the default values that are factory settings for optimal performance system operations.

3-13 Set Supervisor Password

User can set either supervisor or user password, or both of them. The differences are:

Supervisor password:	Can enter and have full privilege to change the options of the setup menus.
User password:	Can only enter but do not have the right to change the options of the setup menus.

When password function is selected, the following message will appear at the center of the screen to assist user to create a password.

ENTER PASSWORD:

Type in the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. User will be asked to confirm the password. Type the password again and press <Enter>. User may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when prompted to enter the password. A message will confirm that the password will be disabled. Once the password is disabled, the system will boot and user can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, user will be prompted to enter it every time who try to enter the BIOS Setup. This prevents an unauthorized person from changing any part of the system configuration.

Additionally, when a password is enabled, user can also require the BIOS to request a password every time the system is rebooted. This would prevent unauthorized use of the computer.

User determines when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.