



P4SGL-MX

User Guide

Motherboard

E1117

First Edition

November 2002

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Contents

Contents	iii
FCC/CDC statements	v
Federal Communications Commission Statement	v
Canadian Department of Communications Statement	v
Safety information	vi
About this guide	vii
Conventions used in this guide	vii
Where to find more information	vii
ASUS contact information	viii
Specifications summary	ix
Chapter 1 - Motherboard Info	1-1
1.1 Welcome	1-2
1.2 Package contents	1-2
1.3 Motherboard components	1-3
1.4 Motherboard layout.....	1-6
1.5 Before you proceed.....	1-7
1.6 Central Processing Unit (CPU).....	1-7
1.7 System memory.....	1-8
1.8 Expansion Slots.....	1-9
1.8.1 Configuring an expansion card	1-9
1.8.2 Standard Interrupt Assignments	1-9
1.9 Jumpers	1-10
1.10 Connectors	1-11
Chapter 2 - BIOS Information	2-1
2.1 Managing and updating your BIOS	2-2
2.1.1 Using ASUS EZFLASH to update the BIOS.....	2-2
2.1.2 Using ASUS AFLASH to update the BIOS.....	2-4
Updating BIOS procedures.....	2-5
2.2 BIOS Setup Program	2-7
2.2.1 BIOS menu bar	2-7
2.2.2 Legend bar	2-8

Contents

2.3 Main Menu	2-9
2.3.1 Primary and Secondary Master/Slave.....	2-11
2.3.2 Keyboard Features	2-13
2.4 Advanced Menu	2-14
2.4.1 Chip Configuration	2-15
2.4.2 I/O Device Configuration	2-17
2.4.3 PCI Configuration	2-18
2.4.3.1 PCI IRQ Resource Exclusion	2-19
2.5 Power Menu	2-20
2.5.1 Power-up Control	2-22
2.5.2 Hardware Monitor	2-23
2.6 Boot Menu	2-24
2.7 Exit Menu	2-25
Chapter 3 - Starting Up	3-1
3.1 Install an operating system.....	3-2
3.2 Support CD information.....	3-2
3.2.1 Running the support CD	3-2
3.2.2 Software drivers and installation menus	3-3
3.3 Software Information.....	3-5
3.3.1 ASUS Update	3-5
3.3.2 ASUS PC Probe	3-6
Starting ASUS PC Probe	3-6
Using ASUS PC Probe	3-7
ASUS PC Probe Task Bar Icon	3-9

FCC/CDC statements

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



WARNING/DANGER: Information to prevent injury to yourself when trying to complete a task.



CAUTION: Information to prevent damage to the components when trying to complete a task.



IMPORTANT: Information that you **MUST** follow to complete a task.



NOTE: Tips and additional information to aid in completing a task.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. ASUS Websites

The ASUS websites worldwide provide updated information on ASUS hardware and software products. The ASUS websites are listed in the ASUS Contact Information on page viii.

2. Optional Documentation

Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

ASUS contact information

ASUSTeK COMPUTER INC. (Asia-Pacific)

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Building 2, Newark, CA 94560, USA
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General Support: +1-502-933-8713
Web Site: www.asus.com
Support Email: tsd@asus.com

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Technical Support

Support Hotline: MB/Others: +49-2102-9599-0
Notebook (Tel): +49-2102-9599-10
Support Fax: +49-2102-9599-11
Support (Email): www.asuscom.de/de/support (for online support)
Web Site: www.asuscom.de

P4SGL-MX specifications summary

CPU	Socket 478 for Intel Pentium 4 Northwood/Willamette processors with frequency up to 2.2+ Ghz
Chipset	Northbridge: SIS SIS650GL HOST/Memory controller Southbridge: SIS SIS962L MuTIOL Media I/O
Front Side Bus (FSB)	100 MHz (400 MHz data)
Memory	2 x DDR DIMM Sockets Max. 2 GB unbuffered PC2100/1600 non-ECC DDR SDRAM
Expansion slots	3 x PCI-32 1 x AGP 4X
IDE	2 x UltraDMA 133/100/66
Audio	CMedia CMI9738 4-channel AC'97 CODEC
LAN	RealTek 8201BL Single LAN PHY integrated 10/100Mbps Fast Ethernet <i>(on LAN model only)</i>
Special Features	Onboard Buzzer Standby power LED Wake on LAN by PME Wake on Ring by PME External Modem WOR
Back Panel I/O Ports	1 x Parallel 1 x Serial 1 x VGA 1 x PS/2 Keyboard 1 x PS/2 Mouse 2 x USB 2.0 1 x RJ-45 Port (on LAN models only) 1 x Line in connector 1 x Line Out 1 x Game port 1 x Mic In
Internal I/O Connectors	CPU/Chassis FAN connector 20 pin ATX power connector 4-pin ATX12V power connector USB 2.0 connector COM2 port CD/AUX audio in Front panel audio connector

(continued on the next page)

P4SGL-MX specifications summary

BIOS features	2Mb Flash ROM, EEPROM, ASUS JumperFree, Award BIOS with ACPI, DMI2.0, PnP, WfM2.0, Green, TCAV (Trend Chip Away Virus)
Industry standard	PCI 2.2, USB 2.0.
Manageability	WfM2.0, DMI2.0, WOR, WOL
Form Factor	Micro-ATX form factor: 9.6 in x 8.2 in
Support CD contents	Device drivers ASUS PC Probe Trend Micro™ PC-cillin 2002 anti-virus software ASUS LiveUpdate Utility
Accessories	User's manual Support CD 1 x UltraDMA 133/100/66 cable I/O Shield FDD cable

* Specifications are subject to change without notice.

Chapter 1

This chapter gives information about the ASUS P4SGL-MX motherboard that came with the system. This chapter includes the motherboard layout, jumper settings, and connector locations.

Motherboard Info

1.1 Welcome!

Thank you for buying the ASUS® P4SGL-MX motherboard!

The ASUS P4SGL-MX motherboard is loaded with the most advanced technologies to deliver the maximum performance for Pentium 4 processors. This motherboard is loaded with value-added features for guaranteed consumer satisfaction. Unique ASUS features such as OnBoard Buzzer, Standby Power LED and more are included to ensure the best user experience and value in a motherboard. For future upgrades or system reconfiguration, this chapter provides technical information about the motherboard.

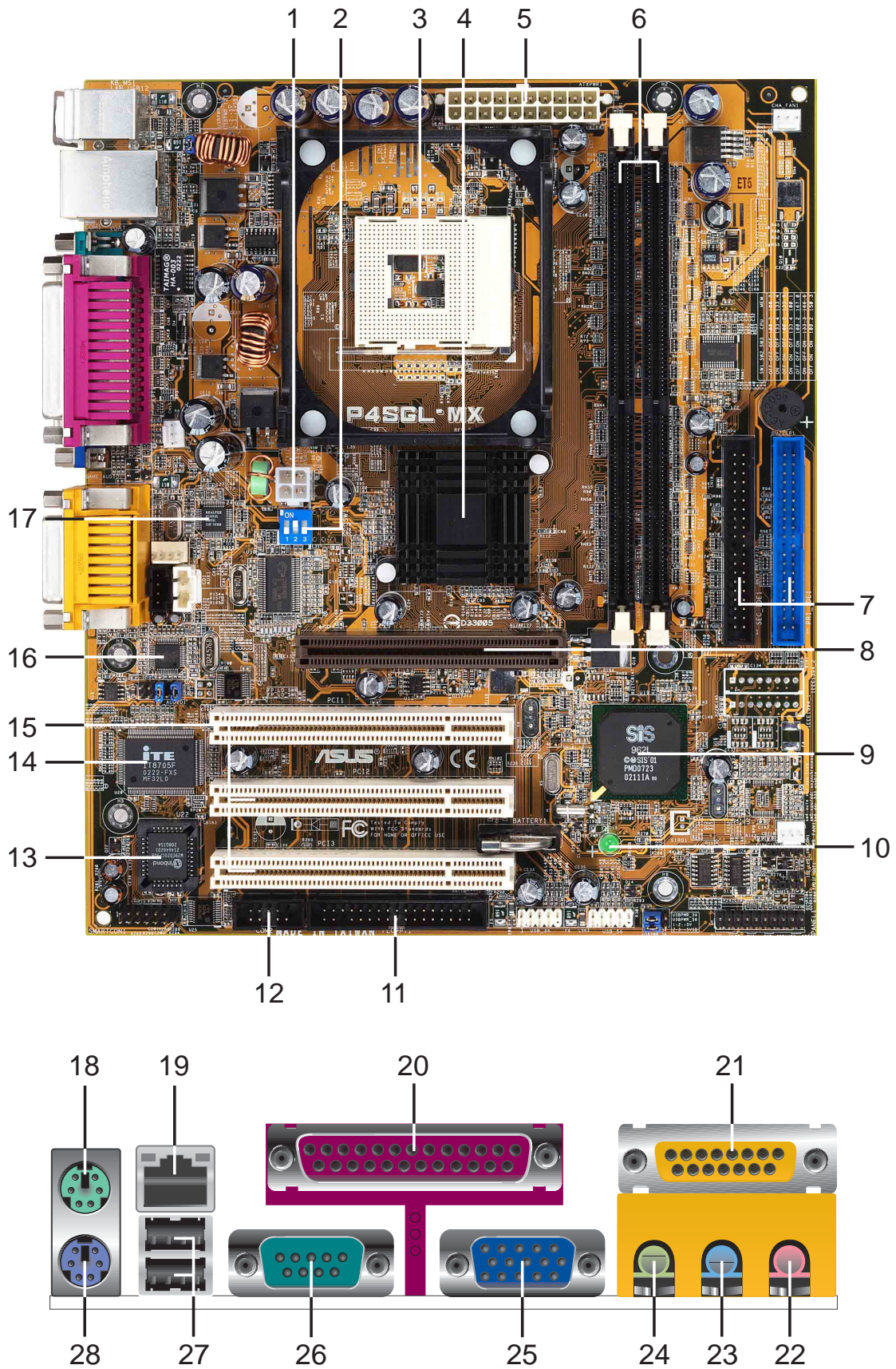
Before you start installing the motherboard, and hardware devices on it, check the items in your package with the list below.

1.2 Package contents

Check your ASUS P4SGL-MX package for the following items.

- ✓ ASUS P4SGL-MX motherboard
Micro ATX form factor: 9.6 in x 8.2 in
- ✓ ASUS P4SGL-MX series support CD
- ✓ 80-conductor ribbon cable for UltraDMA/66/100/133 IDE drives
- ✓ Ribbon cable for a 3.5-inch floppy drive
- ✓ Bag of extra jumper caps
- ✓ User Guide
- ✓ I/O shield

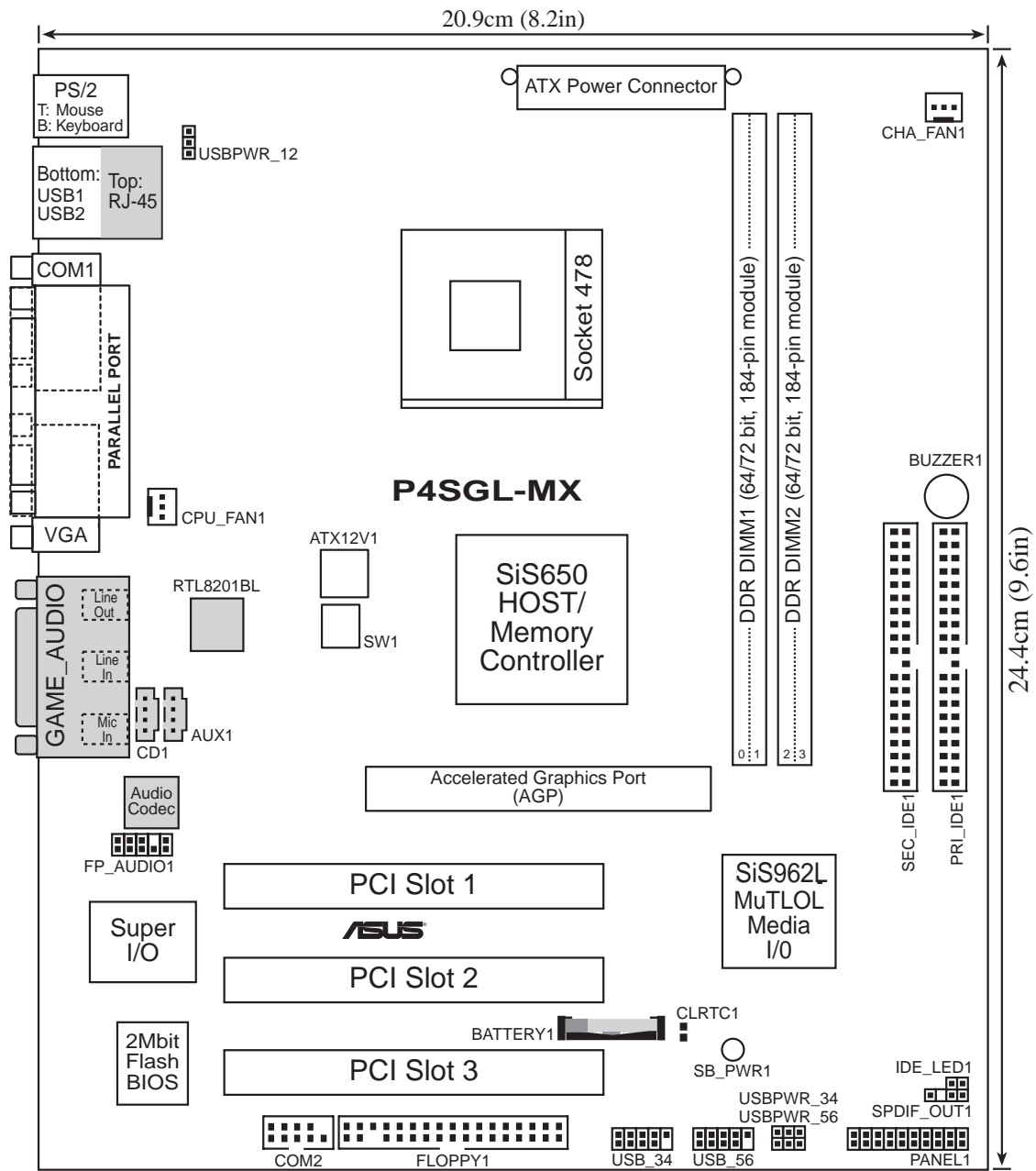
1.3 Motherboard components



- 1 ATX 12V connector.** This power connector connects the 4-pin 12V plug from the ATX 12V power supply.
- 2 DIP Switches.** This 3-switch Dual Inline Package (DIP) allows you to set the CPU external frequency.
- 3 CPU Sockets.** A 478-pin surface mount, Zero Insertion Force (ZIF) socket for the Intel® Pentium® 4 P478 Willamette & Northwood Processor with 100 MHz system bus that allows 1.4 GHz ~ 2.6 GHz plus of core frequency.
- 4 NorthBridge Controller.** This SIS SIS650GL controller integrates a high performance host interface for the Intel® Pentium® 4 processor, a memory controller and an integrated graphics interface.
- 5 ATX power connector.** This standard 20-pin connector connects to an ATX 12V power supply. The power supply must have at least 1A on the +5V standby lead (+5VSB).
- 6 DDR DIMM Sockets.** These two 184-pin DIMM sockets support up to 2GB using non-ECC PC2100/1600 DDR SDRAM DIMMs with 2.1GBytes/sec of transfer rate.
- 7 IDE Connectors.** These dual-channel bus master IDE connectors support up to four Ultra DMA133/100/66, PIO Modes 3 & 4 IDE devices. Both the primary(blue) and secondary(black) connectors are slotted to prevent incorrect insertion of the IDE ribbon cable.
- 8 AGP Slot.** This Accelerated Graphics Port (AGP) slot only supports 1.5V AGP4X mode graphics cards for 3D graphical applications.
- 9 South bridge controller.** This SIS SIS962L0 MuTIOL Media I/O controller integrates the AC'97 Interface, four Universal Serial Bus Host controllers, two IDE Master/Slave controllers, Flash BIOS, and PCI bus for three PCI Slots.
- 10 Onboard LED.** This onboard LED lights up if there is a standby power on the motherboard. This LED acts as a reminder to turn off the system power before plugging or unplugging devices.
- 11 Floppy Disk connector.** This connector connects the provided ribbon cable for the floppy disk drive. One side of the connector is slotted to prevent incorrect insertion of the floppy disk cable.
- 12 COM2 connector.** This 9-pin connector connects to a COM2 port.
- 13 Flash ROM.** This 2MB firmware contains the programmable BIOS program.

- 14 Super I/O chipset.** This interface provides the commonly used Super I/O functionality. The chipset supports a high-performance floppy disk controller for a 360K/720K/1.44M/2.88M floppy disk drive, a PS/2 keyboard and mouse port, a multi-mode parallel port, a game port and serial ports.
- 15 PCI slots.** These 32-bit PCI 2.2 expansion slots support bus master PCI cards like SCSI and LAN cards with 133MB/s maximum output.
- 16 Audio/Modem CODEC.** This audio CODEC is AC '97 compliant.
- 17 Single-Chip Fast Ethernet controller.** The RealTek 8201BL Single LAN PHY Fast Ethernet controller allows connection to a Local Area Network (LAN) through a network hub. (Onboard LAN model only)
- 18 PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.
- 19 RJ-45 port.** This port allows connection to a Local Area Network (LAN) through a network hub. (Onboard LAN model only)
- 20 Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
- 21 GAME/MIDI port.** This port supports a joystick or a game pad for playing games, and MIDI devices for playing or editing audio files.
- 22 Microphone jack.** This Mic (pink) jack connects a microphone.
- 23 Line In jack.** This Line In (light blue) jack connects a tape player or other audio sources.
- 24 Line Out jack.** This Line Out (lime) jack connects a headphone or a speaker.
- 25 Video port.** This port connects a VGA monitor.
- 26 Serial port.** This port connects to your serial mouse and other serial devices.
- 27 USB 2.0 ports.** These two 4-pin Universal Serial Bus 2.0 (USB 2.0) ports are available for connecting USB devices such as a mouse and PDA.
- 28 PS/2 keyboard port.** This purple 6-pin connector is for a PS/2 keyboard.

1.4 Motherboard layout

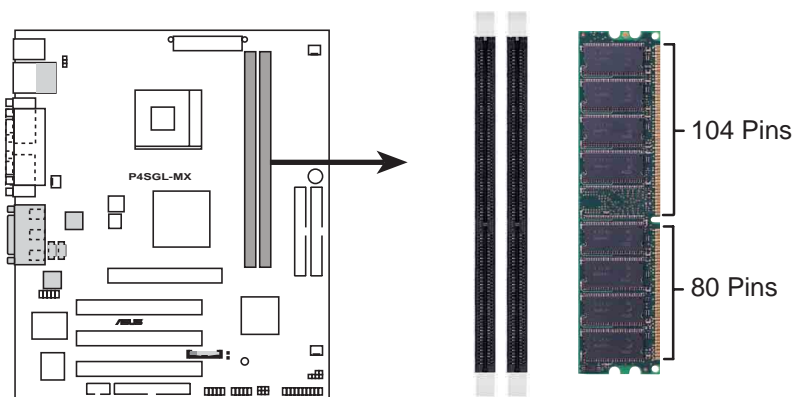


The LAN and audio features are optional. These components are grayed out in the above motherboard layout.

1.7 System memory

The motherboard has two Double Data Rate (DDR) DIMM sockets that supports up to 2GB non-ECC PC2100/1600 DDR.

A DDR DIMM has the same physical dimensions as an SDR DIMM, but it has a 184-pin footprint compared to the 168-pin of the SDR DIMM. Also, a DDR DIMM is single notched while an SDR DIMM is double notched.



P4SGL-MX 184-Pin DDR DIMM Sockets

1.8 Expansion slots

The P4SGL-MX motherboard has three (3) expansion slots. The following subsections describe the slots and the expansion cards that they support.

1.8.1 Configuring an expansion card

After physically installing the expansion card, configure the card by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any.
2. Assign an IRQ to the card. Refer to the tables below.
3. Install the software drivers for the expansion card.

1.8.2 Standard Interrupt Assignments

IRQ	Standard Function
0	System Timer
1	Keyboard Controller
2	Programmable Interrupt Controller
3*	USB Universal Host Controller
4*	Communications Port (COM1)
5*	Onboard Audio
6	Standard Floppy Disk Controller
7*	Printer Port (LPT1)
8	System CMOS/Real Time Clock
9*	Onboard LAN
10*	USB Universal Host Controller
11*	Onboard VGA
12*	PS/2 Compatible Mouse Port
13	Numeric Data Processor
14*	Ultra ATA Controller
15*	Secondary Ultra ATA Controller

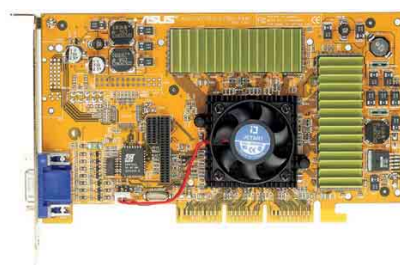
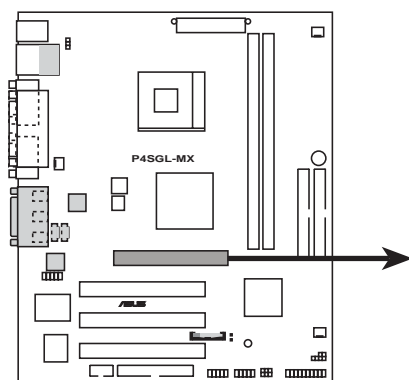
*These IRQs are usually available for ISA or PCI devices.

IRQ assignments for this motherboard

	A	B	C	D
PCI slot 1	—	shared	—	—
PCI slot 2	—	—	shared	—
PCI slot 3	—	—	—	shared
AGP slot	shared	—	—	—
Onboard USB controller HC0	—	—	—	shared
Onboard USB controller HC1	—	—	—	shared
Onboard LAN	—	—	shared	—
Onboard Audio	—	—	shared	—
Onboard VGA	shared	—	—	—

1.8.3 AGP slot

This motherboard has an Accelerated Graphics Port (AGP) slot that support +1.5V and +3.3V AGP 4X cards. Note the notches on the card golden fingers to ensure that they fit the AGP slot on your motherboard.

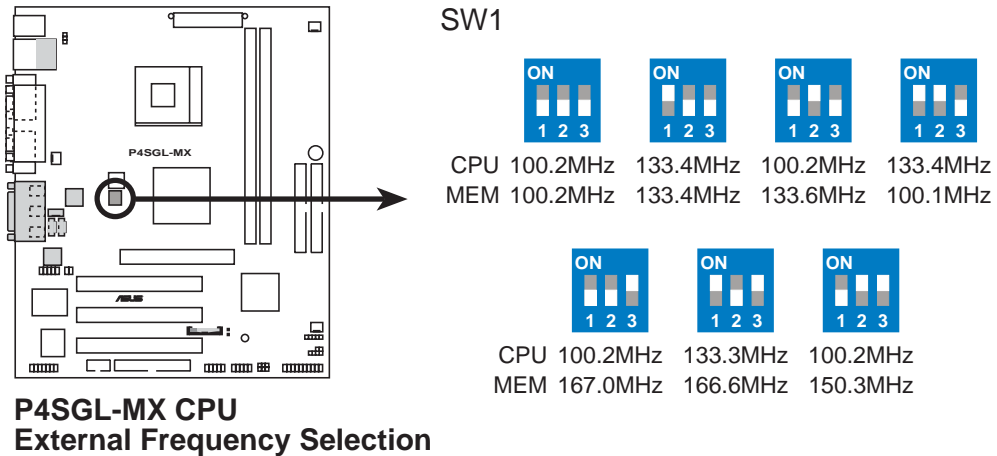


P4SGL-MX Accelerated Graphics Port (AGP)

1.9 Switches and Jumpers

1. CPU Frequency Selection (SW Switches 1-3)

This option tells the clock generator what frequency to send the CPU. This allows the selection of the CPU's external frequency (or Bus Clock). The Bus Clock multiplied by the Frequency Multiple equals the CPU's internal frequency (the advertised CPU speed).



Set the CPU frequency only to the recommended settings. Frequencies other than the recommended CPU bus frequencies are not guaranteed to be stable.

2. USB device wake-up (3-pin USBPWR12,USBPWR34,USBPWR56)

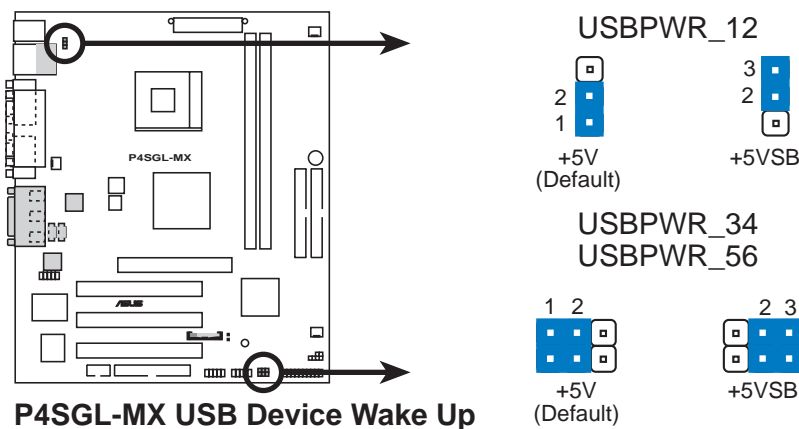
Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S3 sleep mode (no power to CPU, DRAM in slow refresh, power supply in reduced power mode). Both jumpers are set to pins 1-2 (+5V) by default because not all computers have the appropriate power supply to support this feature.

The USBPWR12 jumper is for the rear USB port. USBPWR34 and USBPWR56 is for the internal USB header that you can connect to the front USB ports.



This feature requires a power supply that can provide at least 1A on the +5VSB lead when these jumpers are set to +5VSB. Otherwise, the system does not power up.

The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

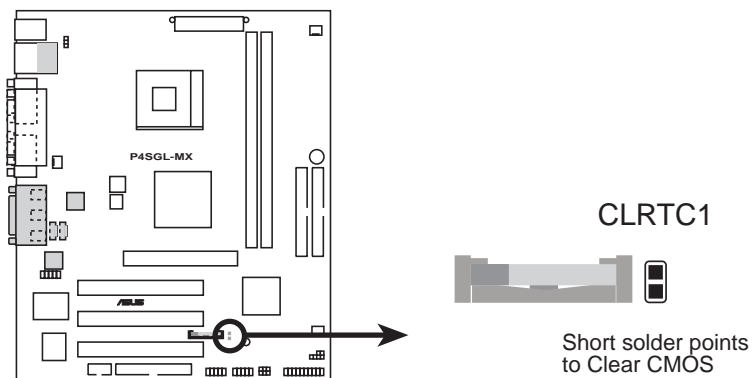


3. Clear RTC RAM (2-pin CLRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time and system setup parameters by erasing the CMOS RTC RAM data. The RAM data in CMOS that includes the system setup information such as system passwords, is powered by the onboard button cell battery.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the battery.
3. Short the solder points to clear CMOS.
4. Reinstall the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the key during the boot process and enter BIOS setup to re-enter data.



P4SGL-MX Clear RTC RAM Setting

1.10 Connectors

This section describes and illustrates the connectors on the motherboard.

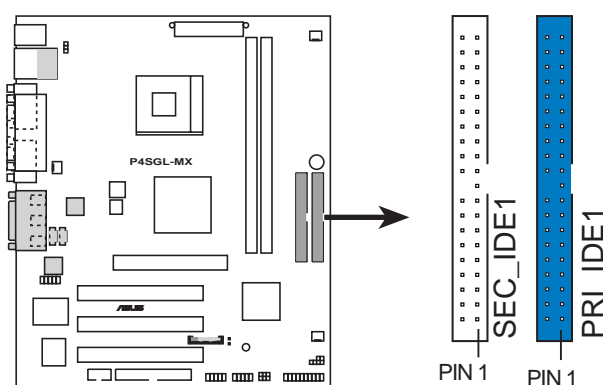
1. IDE connectors (40-pin PRI_IDE1, SEC_IDE1)

This connector supports the provided UltraDMA/133/100/66 IDE hard disk ribbon cable. Connect the cable's blue connector to the primary (recommended) or secondary IDE connector, then connect the gray connector to the UltraDMA/133/100/66 slave device (hard disk drive) and the black connector to the UltraDMA/133/100/66 master device. It is recommended that you connect non-UltraDMA/133/100/66 devices to the secondary IDE connector. If you install two hard disks, you must configure the second drive as a slave device by setting its jumper accordingly. Refer to the hard disk documentation for the jumper settings. BIOS supports specific device bootup. If you have more than two UltraDMA/133/100/66 devices, purchase another UltraDMA/133/100/66 cable. You may configure two hard disks to be both master devices with two ribbon cables – one for the primary IDE connector and another for the secondary IDE connector.



Pin 20 on each IDE connector is removed to match the covered hole on the UltraDMA cable connector. This prevents incorrect orientation when you connect the cables.

For UltraDMA/133/100/66 IDE devices, use an 80-conductor IDE cable.

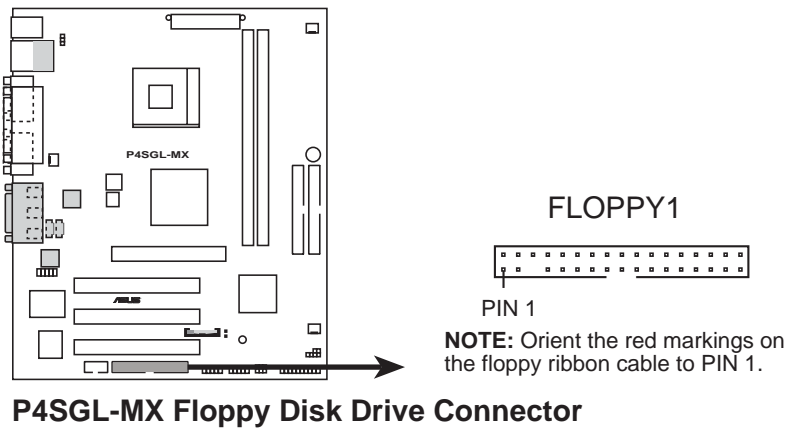


P4SGL-MX IDE Connectors

NOTE: Orient the red markings on the IDE ribbon cable to PIN 1

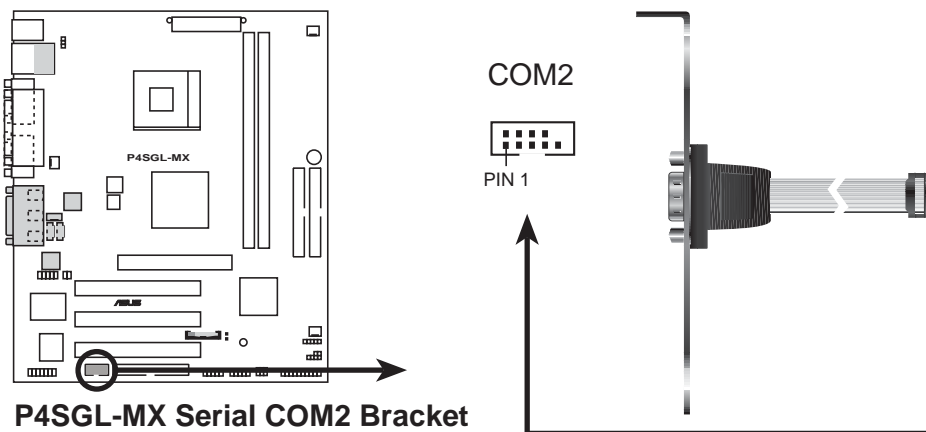
2. Floppy disk drive connector (34-1 pin FLOPPY1)

This connector supports the provided floppy drive ribbon cable. After connecting one end to the motherboard, connect the other end to the floppy drive. (Pin 5 is removed to prevent incorrect insertion when using ribbon cables with pin 5 plug).



3. Serial connector (9-pin COM2)

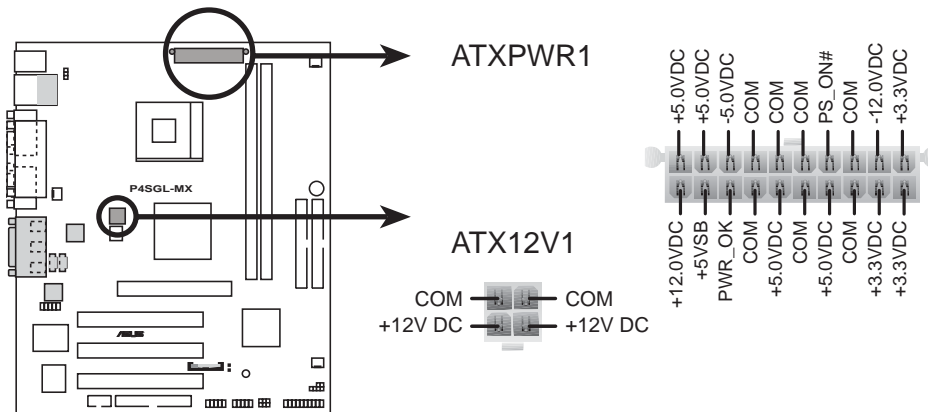
This 9-pin connector connects to the Serial COM2 bracket. Connect the COM2 cable to this connector and install the bracket on an available slot in the rear panel of the chassis.



The serial COM2 bracket is not included in the package.

4. ATX power connectors (20-pin ATXPWR1, 4-pin ATX12V1)

These connectors connect to an ATX 12V power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



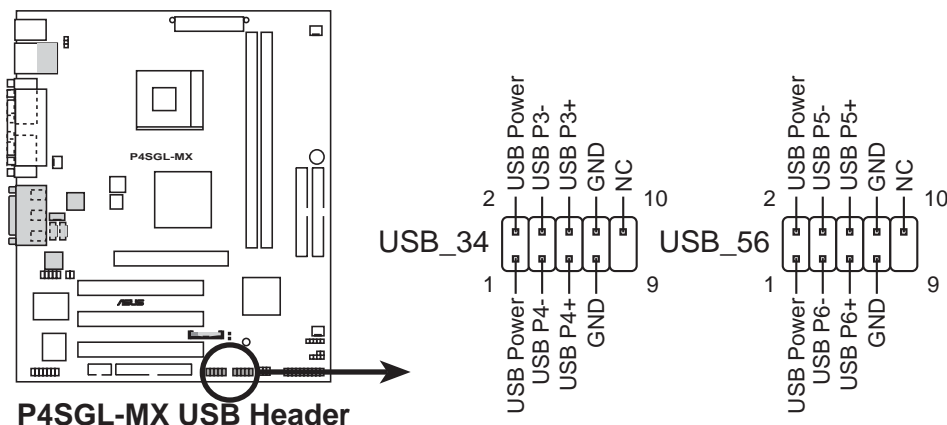
P4SGL-MX ATX Power Connectors



If you will need to replace the power supply in the future, make sure that your new ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 230W, or 300W for a fully configured system. The system may become unstable and may experience difficulty powering up if the power supply is inadequate.

5. USB headers (10-1 pin USB34, USB56)

USBPWR34 and USBPWR56 is for the internal USB header that you can connect to the front USB ports.



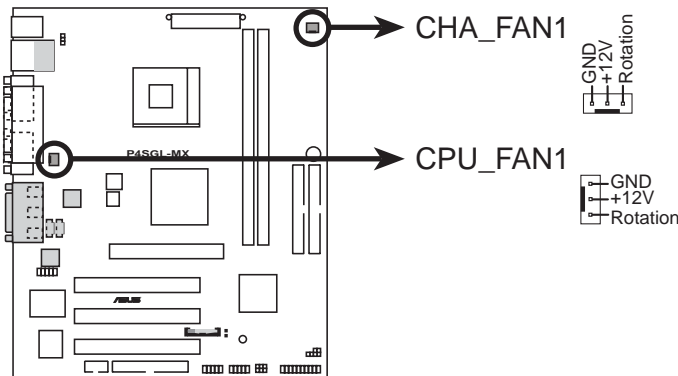
P4SGL-MX USB Header



The USB module is not included in the package.

6. CPU and Chassis Fan Connectors (3-pin CHA_FAN1, CPU_FAN1)

The two fan connectors support cooling fans of 350mA (4.2 Watts) or a total of 1A (12W) at +12V. Orient the fans so that the heat sink fins allow air flow to go across the onboard heat sinks instead of the expansion slots. The fan wiring and plug may vary depending on the fan manufacturer. Connect the fan cable to the connector matching the black wire to the ground pin.



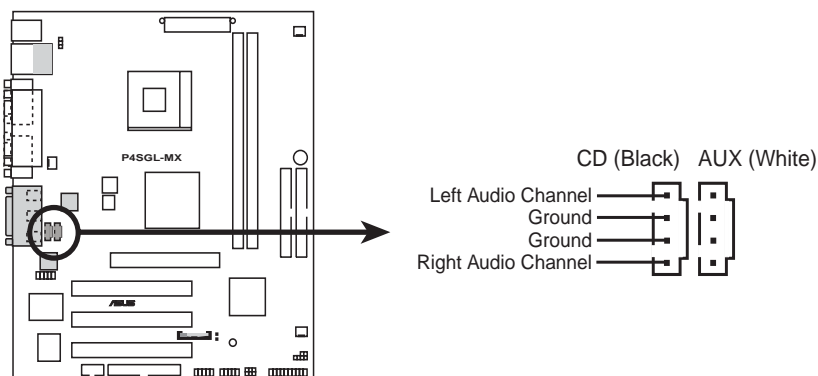
P4SGL-MX 12-Volt Cooling Fan Power



Do not forget to connect the fan cables to the fan connectors. Lack of sufficient air flow within the system may damage the motherboard components. These are not jumpers! **DO NOT** place jumper caps on the fan connectors!

7. Internal audio connectors (4-pin AUX, CD)

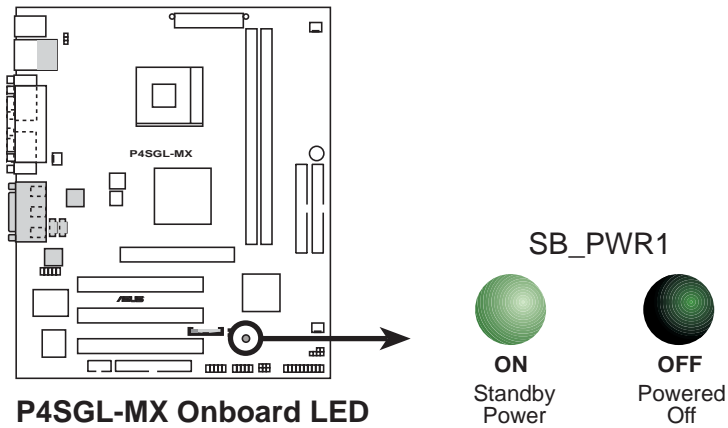
These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.



P4SGL-MX Internal Audio Connectors

8. OnBoard LED

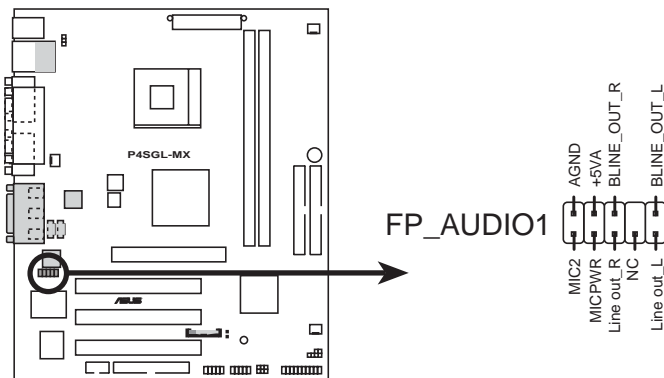
This Light Emitting Diode (LED) lights-ON if there is standby power and lights-OFF when the power is turned off.



P4SGL-MX Onboard LED

9. Front panel audio connectors (10-1 pin FP_AUDIO1)

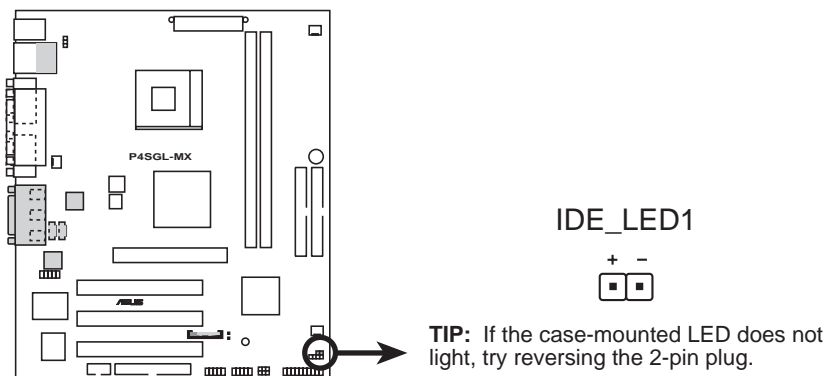
This is an interface for the Intel front panel audio cable that allow convenient connection and control of audio devices.



P4SGL-MX Front Panel Audio Connector

10. Hard disk connector (2-pin IDE_LED1)

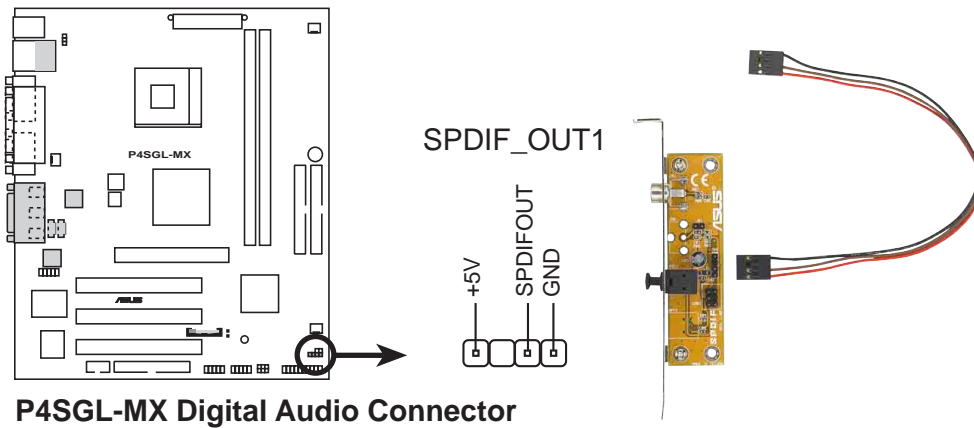
This 2-pin connector connects to the front panel HD LED and lights up on every read/write activity of any of the disc drives connected to the primary or secondary IDE slots.



P4SGL-MX IDE Activity LED

11. S/PDIF connector (4-1 pin SPDIF_OUT1)

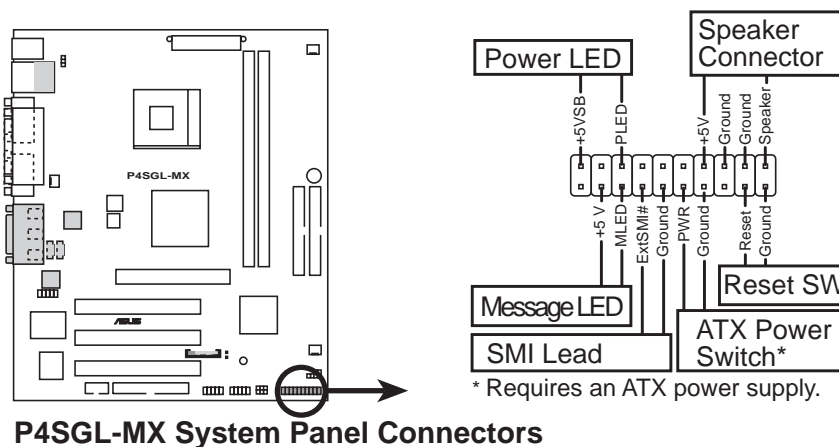
This 4-pin connector accommodates a 4-pin S/PDIF out connector for S/PDIF using a S/PDIF port bracket. Connect the bracket cable to this connector then install the bracket into a slot opening at the back of the system chassis.



The S/PDIF module is not included in the package.

12. System panel connector (20-pin PANEL1)

This connector accommodates several system front panel functions.



- **System Power LED Lead (2-pin PLED)**

This 2-pin connector connects to the system power LED. The LED lights up when you turn on the system power.

- **System Warning Speaker Lead (4-pin SPEAKER)**

This 4-pin connector connects to the case-mounted speaker and allows you to hear system beeps and warnings.
- **System Message LED Lead (2-pin MLED)**

This 2-pin connector is for the system message LED that indicates receipt of messages from a fax/modem. The normal status for this LED is ON, when there is no incoming data signal. The LED blinks when data is received. The system message LED feature requires an ACPI OS and driver support.
- **System Management Interrupt Lead (2-pin SMI#)**

This 2-pin connector permits switching to suspend mode, or “Green” mode, in which system activity is instantly decreased to save power and to expand the life of certain system components.
- **Reset Switch (2-pin RESET)**

This 2-pin connector connects to the case-mounted reset switch for rebooting the system without turning off the power switch.
- **ATX Power Switch / Soft-Off Switch Lead (2-pin PWRBTN)**

This connector connects a switch that controls the system power. Pressing the power switch turns the system between ON and SLEEP, or ON and SOFT OFF, depending on the BIOS or OS settings. Pressing the power switch while in the ON mode for more than 4 seconds turns the system OFF.

Chapter 2

This chapter gives information about the ASUS P4SGL-MX Basic Input/Output System (BIOS). This chapter includes updating the BIOS using the ASUS AFLASH BIOS utility that is bundled with the support CD.

BIOS Information

2.1 Managing and Updating your BIOS



It is recommended that you save a copy of the motherboard's **original BIOS** to a bootable floppy disk in case you need to reinstall the original BIOS later.

2.1.1 Using ASUS EZ Flash to update the BIOS

The ASUS EZ Flash feature allows you to easily update the BIOS without having to go through the long process of booting from a diskette and using a DOS-based utility. The EZ Flash is built-in the BIOS firmware so it is accessible by simply pressing <Alt> + <F2> during the Power-On Self Tests (POST).

Follow these steps to update the BIOS using ASUS EZ Flash.

1. Download the latest BIOS file from the ASUS website (see ASUS contact information on page viii). Save the file to a floppy disk.



Write down the BIOS file name on a piece of paper. You need to type the **exact BIOS file name** at the EZ Flash screen.

2. Reboot the computer.
3. To use EZ Flash, press <Alt> + <F2> during POST to display the following screen.

```
ASUS EZ Flash V1.00
Copyright (C) 2002, ASUSTeK COMPUTER INC.

[Onboard BIOS Information]
BIOS Version      : ASUS P4SGL-MX ACPI BIOS Revision 001
BIOS Model        : P4SGL-MX
BIOS Built Date   : 09/16/02

Please Enter File Name for NEW BIOS: _
*Note: EZ Flash will copy file from A:\, Press [ESC] to reboot
```



The BIOS information in the above screen is for reference only. What you see on your screen may not be exactly the same as shown.

4. Insert the disk that contains the new BIOS file into the floppy drive. You will receive the error message, “**WARNING! Device not ready.**” if you proceed to step 5 without the disk in the drive.

- At the prompt, “**Please Enter File Name for NEW BIOS: _**”, type in the BIOS file name that you downloaded from the ASUS website, then press <Enter>. EZ Flash will automatically access drive A to look for the file name that you typed. When found, the following message appears on screen.

```
[BIOS Information in File]
BIOS Version: P4SGL-MX Boot Block

WARNING! Continue to update the BIOS (Y/N)? _
```

If you accidentally typed in a wrong BIOS file name, the error message, “**WARNING! File not found.**” appears. Press <Enter> to remove the message, then type in the correct file name. Press <Enter>.

- At the above prompt, type **Y** to continue with the update process. Pressing **N** exits the EZ Flash screen and reboots the system without updating the BIOS. The following prompts appear if you typed **Y**.

```
Flash Memory: SST 49LF004

1. Update Main BIOS area      (Y/N)? _
2. Update Boot Block area     (Y/N)? _
```

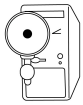
- Press **Y** for both items to completely update the main BIOS area and the boot block area.



DO NOT shutdown or reset the system while updating the BIOS boot block area! Doing so may cause system boot failure.

- When the update process is done, the message, “**Press a key to reboot**” appears. Press any key to reboot the system with the new BIOS.

2.1.2 Using AFLASH to update the BIOS



The BIOS information in the above screen is for reference only. What you see on your screen may not be exactly the same as shown.

Creating a bootable disk

AFLASH.EXE is a Flash Memory Writer utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the motherboard. This file works only in DOS mode. To determine the BIOS version of your motherboard, check the last four numbers of the code displayed on the upper left-hand corner of your screen during bootup. Larger numbers represent a newer BIOS file.

1. Type `FORMAT A:/S` at the DOS prompt to create a bootable system disk. DO NOT copy `AUTOEXEC.BAT` and `CONFIG.SYS` to the disk.
2. Type `COPY D:\AFLASH\AFLASH.EXE A:\` (assuming D is your CD-ROM drive) to copy `AFLASH.EXE` to the boot disk you created.



AFLASH works only in DOS mode. It does not work with certain memory drivers that may be loaded when you boot from the hard drive. It is recommended that you reboot using a floppy disk.

3. Reboot the computer from the floppy disk.



BIOS setup must specify “Floppy” as the first item in the boot sequence.

4. In DOS mode, type `A:\AFLASH <Enter>` to run AFLASH.

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V2.0
Copyright (C) 1994-2001 ASUS/TEK COMPUTER INC.

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01

Choose one of the followings:
1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD

Enter choice: [1]

Press ESC To Exit
```



If the word “unknown” appears after `Flash Memory:`, the memory chip is either not programmable or is not supported by the ACPI BIOS and therefore, cannot be programmed by the Flash Memory Writer utility.

5. Select 1. Save Current BIOS to File from the Main menu and press <Enter>. The Save Current BIOS To File screen appears.

```
Save Current BIOS To File
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01
Please Enter File Name to Save: XXX-XX.XXX

BIOS Saved Successfully
Press ESC To Continue
```

6. Type a filename and the path, for example, A:\XXX-XX.XXX, then press <Enter>.

Updating the BIOS



Update the BIOS only if you are sure that the new BIOS revision will solve your problems. Careless updating may result to more problems with the motherboard!

1. Download an updated ASUS BIOS file from the Internet (WWW or FTP) (see ASUS CONTACT INFORMATION on page viii for details) and save to the boot floppy disk you created earlier.
2. Boot from the floppy disk.
3. At the “A:” prompt, type AFLASH and then press <Enter>.
4. At the Main Menu, type 2 then press <Enter>. The Update BIOS Including Boot Block and ESCD screen appears.
5. Type the filename of your new BIOS and the path, for example, A:\XXX-XX.XXX, then press <Enter>.

To cancel this operation, press <Enter>.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01
Please Enter File Name for NEW BIOS: A:\XXX-XX.XXX
```

6. When prompted to confirm the BIOS update, press **Y** to start the update.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
BIOS Version
[CURRENT ] ASUS XXX-XX ACPI BIOS Revision 100X
[test.awd] ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model
[CURRENT ] XXX-XX
[test.awd] XXX-XX
Date of BIOS Built
[CURRENT ] 09/25/99
[XXXX.XXX] 05/29/00
Check sum of 1001.010 is F266.
Are you sure (Y/N) ? [Y]
Press ESC To Return to Main Menu
```

7. The utility starts to program the new BIOS information into the Flash ROM. The boot block is updated automatically only when necessary. When the programming is done, the message *“Flashed Successfully”* appears.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
BIOS Version
[CURRENT ] ASUS XXX-XX ACPI BIOS Revision 100X
[test.awd] ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model
[CURRENT ] XXX-XX
[test.awd] XXX-XX
Date of BIOS Built
[CURRENT ] 12/25/01
[XXXX.XXX] 05/29/00
Check sum of 1001.010 is F266.
Are you sure (Y/N) ? [Y]
Block Erasing -- Done
Programming -- 3FFFF
Flashed Successfully
Press ESC To Continue
```

8. Follow the onscreen instructions to continue.

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V2.0
Copyright (C) 1994-2001 ASUSTeK COMPUTER INC.
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model : XXX-XX
BIOS Built Date : 12/25/01
Choose one of the followings:
1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD
Enter choice: [1]
You have flashed the EPROM:It is recommended that you turn off
the power, enter SETUP and LOAD Setup Defaults to have CMOS
updated with new BIOS when exits.
Press ESC To Exit
```



DO NOT turn off the system while updating the BIOS. This may cause boot problems. Just repeat the process, and if the problem persists, load the original BIOS file you saved to the boot disk. If the Flash Memory Writer utility is not able to successfully update a complete BIOS file, call the ASUS service center for support.

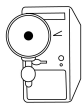
2.2 BIOS Setup program

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to “Run Setup”. This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you may want to change the configuration of your computer in the future. For example, you may want to enable the security password feature or make changes to the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the EEPROM.

The EEPROM on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Delete> during the Power-On Self Test (POST) to enter the Setup utility, otherwise, POST continues with its test routines.

The Setup program is designed to make it as easy to use as possible. It is a menu-driven program, which means you can scroll through the various sub-menus and make your selections among the predetermined choices.



Because the BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purposes only, and may not exactly match what you see on your screen.

2.2.1 BIOS menu bar

The top of the screen has a menu bar with the following selections:

MAIN	Use this menu to make changes to the basic system configuration.
ADVANCED	Use this menu to enable and make changes to the advanced features.
POWER	Use this menu to configure and enable Power Management features.
BOOT	Use this menu to configure the default system device used to locate and load the Operating System.
EXIT	Use this menu to exit the current menu or to exit the Setup program.

To access the menu bar items, press the right or left arrow key on the keyboard until the desired item is highlighted.

2.2.2 Legend bar

At the bottom of the Setup screen is a legend bar. The keys in the legend bar allow you to navigate through the various setup menus. The following table lists the keys found in the legend bar with their corresponding functions.

Navigation Key(s)	Function Description
<F1> or <Alt + H>	Displays the General Help screen from anywhere in the BIOS Setup
<Esc>	Jumps to the Exit menu or returns to the main menu from a sub-menu
Left or Right arrow	Selects the menu item to the left or right
Up or Down arrow	Moves the highlight up or down between fields
- (minus key)	Scrolls backward through the values for the highlighted field
+ (plus key) or spacebar	Scrolls forward through the values for the highlighted field
<Enter>	Brings up a selection menu for the highlighted field
<Home> or <PgUp>	Moves the cursor to the first field
<End> or <PgDn>	Moves the cursor to the last field
<F5>	Resets the current screen to its Setup Defaults
<F10>	Saves changes and exits Setup

General help

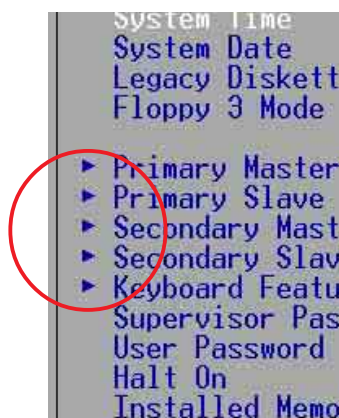
In addition to the Item Specific Help window, the BIOS setup program also provides a General Help screen. You may launch this screen from any menu by simply pressing <F1> or the <Alt> + <H> combination. The General Help screen lists the legend keys and their corresponding functions.

Saving changes and exiting the Setup program

See “2.7 Exit Menu” for detailed information on saving changes and exiting the setup program.

When a scroll bar appears to the right of a help window, it indicates that there is more information to be displayed that will not fit in the window. Use <PgUp> and <PgDn> or the up and down arrow keys to scroll through the entire help document. Press <Home> to display the first page, press <End> to go to the last page. To exit the help window, press <Enter> or <Esc>.

Sub-menu



Note that a right pointer symbol (as shown on the left) appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>. The sub-menu appears. Use the legend keys to enter values and move from field to field within a sub-menu as you would within a menu. Use the <Esc> key to return to the main menu. Take some time to familiarize yourself with the legend keys and their corresponding functions. Practice navigating through the various menus and sub-menus.

If you accidentally make unwanted changes to any of the fields, use the set default hot key <F5> to load the Setup default values. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

2.3 Main Menu

When you enter the Setup program, the following screen appears.



System Time [XX:XX:XX]

Sets the system to the time that you specify (usually the current time). The format is hour, minute, second. Valid values for hour, minute and second are Hour: (00 to 23), Minute: (00 to 59), Second: (00 to 59). Use the <Tab> or <Shift> + <Tab> keys to move between the hour, minute, and second fields.

System Date [XX/XX/XXXX]

Sets the system to the date that you specify (usually the current date). The format is month, day, year. Valid values for month, day, and year are Month: (1 to 12), Day: (1 to 31), Year: (up to 2099). Use the <Tab> or <Shift> + <Tab> keys to move between the month, day, and year fields.

Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed. Configuration options: [None] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

Floppy 3 Mode Support [Disabled]

This is required to support older Japanese floppy drives. The Floppy 3 Mode feature allows reading and writing of 1.2MB (as opposed to 1.44MB) on a 3.5-inch diskette. Configuration options: [Disabled] [Enabled]

Language [English]

This field displays the BIOS language version and allows you to select the language for the BIOS setup screen.

Supervisor Password [Disabled] / User Password [Disabled]

These fields allow you to set passwords. To set a password, highlight the appropriate field and press <Enter>. Type in a password then press <Enter>. You can type up to eight alphanumeric characters. Symbols and other characters are ignored. To confirm the password, type the password again and press <Enter>. The password is now set to [Enabled]. This password allows full access to the BIOS Setup menus. To clear the password, highlight this field and press <Enter>. The same dialog box as above appears. Press <Enter>. The password is set to [Disabled].

A note about passwords

The BIOS Setup program allows you to specify passwords in the Main menu. The passwords control access to the BIOS during system startup. Passwords are not case sensitive, meaning, passwords typed in either uppercase or lowercase letters are accepted. The BIOS Setup program allows you to specify two different passwords: a Supervisor password and a User password. If you did not set a Supervisor password, anyone can access the BIOS Setup program. If you did, the Supervisor password is required to enter the BIOS Setup program and to gain full access to the configuration fields.

Forgot the password?

If you forget your password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. If you need to erase the CMOS RAM, unplug the all the power cables and remove the button cell battery. Re-install the battery after about 2 seconds, then power up the system.

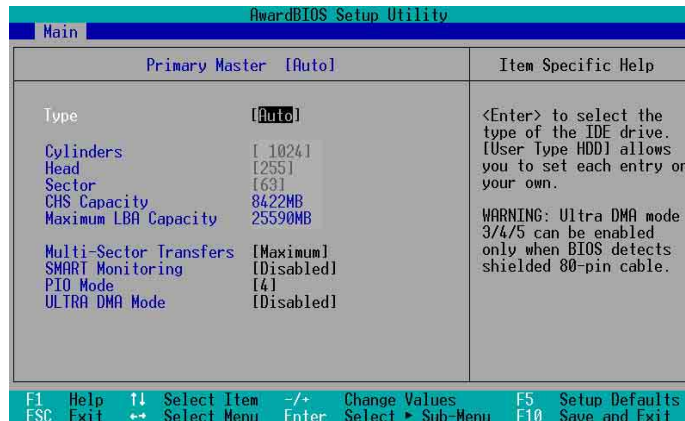
Halt On [All Errors]

This field specifies the types of errors that will cause the system to halt. Configuration options: [All Errors] [No Error] [All but Keyboard] [All but Disk] [All but Disk/Keyboard]

Installed Memory [XXX MB]

This field automatically displays the amount of conventional memory detected by the system during the boot process.

2.3.1 Primary and Secondary Master/Slave



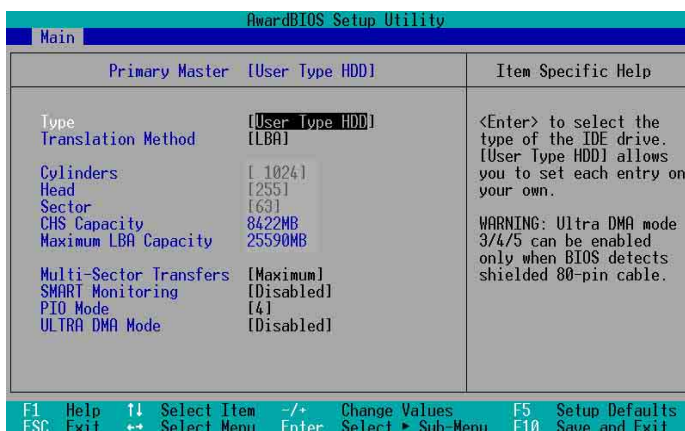
Type [Auto]

Select [Auto] to automatically detect an IDE hard disk drive. If automatic detection is successful, Setup automatically fills in the correct values for the remaining fields on this sub-menu. If automatic detection fails, select [User Type HDD] to manually enter the IDE hard disk drive parameters. Refer to the next section for details.



Before attempting to configure a hard disk drive, make sure you have the correct configuration information supplied by the drive manufacturer.

[User Type HDD]



Manually enter the number of cylinders, heads and sectors per track for the drive. Refer to the drive documentation or label for this information.

If no drive is installed or if you are removing a drive and not replacing it, select [None].

Other options for the Type field are:

[CD-ROM] - for IDE CD-ROM drives

[LS-120] - for LS-120 compatible floppy disk drives

[ZIP] - for ZIP-compatible disk drives

[MO] - for IDE magneto optical disk drives

[Other ATAPI Device] - for IDE devices not listed here

After making your selections on this sub-menu, press the <Esc> key to return to the Main menu. When the Main menu appears, the hard disk drive field displays the size for the hard disk drive that you configured.

Translation Method [LBA]

Select the hard disk drive type in this field. When Logical Block Addressing (LBA) is enabled, the 28-bit addressing of the hard drive is used without regard for cylinders, heads, or sectors. Note that LBA Mode is necessary for drives with more than 504MB storage capacity. Configuration options: [LBA] [LARGE] [Normal] [Match Partition Table] [Manual]

Cylinders

This field configures the number of cylinders. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

Head

This field configures the number of read/write heads. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

Sector

This field configures the number of sectors per track. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

CHS Capacity

This field shows the drive's maximum CHS capacity as calculated by the BIOS based on the drive information you entered.

Maximum LBA Capacity

This field shows the drive's maximum LBA capacity as calculated by the BIOS based on the drive information you entered.

Multi-Sector Transfers [Maximum]

This option automatically sets the number of sectors per block to the highest number that the drive supports. Note that when this field is automatically configured, the set value may not always be the fastest value for the drive. You may also manually configure this field. Refer to the documentation that came with the hard drive to determine the optimum value and set it manually. To make changes to this field, set the Type field to [User Type HDD]. Configuration options: [Disabled] [2 Sectors] [4 Sectors] [8 Sectors] [16 Sectors] [32 Sectors] [Maximum]

SMART Monitoring [Disabled]

This field allows you to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system that utilizes internal hard disk drive monitoring technology. This parameter is normally disabled because the resources used in the SMART monitoring feature may decrease system performance. Configuration options: [Disabled] [Enabled]

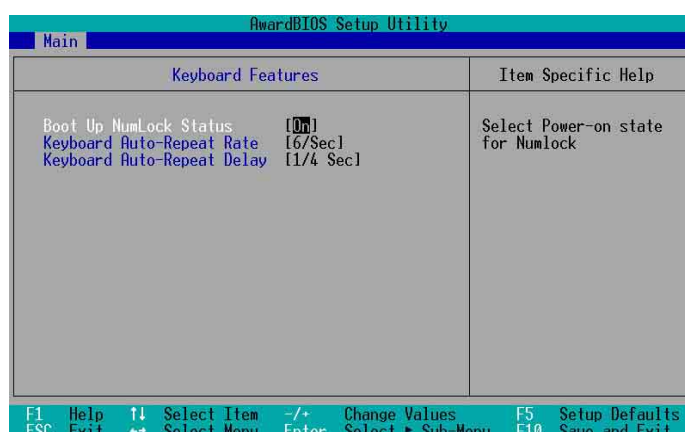
PIO Mode [4]

This option lets you set a PIO (Programmed Input/Output) mode for the IDE device. Modes 0 through 4 provide successive increase in performance. Configuration options: [0] [1] [2] [3] [4]

Ultra DMA Mode [Disabled]

Ultra DMA capability allows improved transfer speeds and data integrity for compatible IDE devices. Set to [Disabled] to suppress Ultra DMA capability. To make changes to this field, set the Type field to [User Type HDD]. Configuration options: [0] [1] [2] [3] [4] [5] [6] [Disabled]

2.3.2 Keyboard Features



Boot Up NumLock Status [On]

This field enables users to activate the Number Lock function upon system boot. Configuration options: [Off] [On]

Keyboard Auto-Repeat Rate [6/Sec]

This controls the speed at which the system registers repeated keystrokes. Options range from 6 to 30 characters per second. Configuration options: [6/Sec] [8/Sec] [10/Sec] [12/Sec] [15/Sec] [20/Sec] [24/Sec] [30/Sec]

Keyboard Auto-Repeat Delay [1/4 Sec]

This field sets the time interval for displaying the first and second characters. Configuration options: [1/4 Sec] [1/2 Sec] [3/4 Sec] [1 Sec]

2.4 Advanced Menu



CPU Speed

This displays the current speed of the CPU installed.

CPU Frequency Multiple

This field displays frequency multiple value between the CPU's internal frequency (CPU speed) and external frequency.

CPU/PCI Frequency (MHz)

This feature tells the clock generator what frequency to send to the system bus and PCI bus. The bus frequency (external frequency) multiplied by the bus multiple equals the CPU speed.

CPU/Memory Frequency Ratio [Auto]

This field determines whether the memory clock frequency is set to be in synchronous or asynchronous mode with respect to the system frequency. The options that appear in the popup menu vary according to the CPU Frequency (MHz). Configuration options: [Auto]

CPU Level 2 Cache [Enabled]

These fields allow you to choose from the default [Enabled] or choose [Disabled] to turn on or off the CPU Level 1 and Level 2 built-in cache. Configuration options: [Disabled] [Enabled]

BIOS Update [Enabled]

This field functions as an update loader integrated into the BIOS to supply the processor with the required data. When set to [Enabled], the BIOS loads the update on all processors during system bootup. Configuration options: [Disabled] [Enabled]

PS/2 Mouse Function Control [Auto]

The default setting [Auto] allows the system to detect a PS/2 mouse at startup. If a mouse is detected, the BIOS assigns IRQ12 to the PS/2 mouse. Otherwise, IRQ12 can be used for expansion cards. When you set this field to [Enabled], BIOS reserves IRQ12, whether or not a PS/2 mouse is detected at startup. Configuration options: [Enabled] [Auto]

USB Legacy Support [Auto]

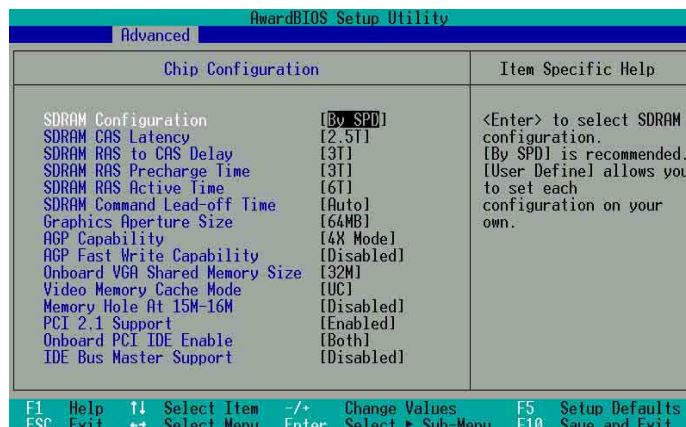
This motherboard supports Universal Serial Bus (USB) devices. The default of [Auto] allows the system to detect a USB device at startup. If detected, the USB controller legacy mode is enabled. If not detected, the USB controller legacy mode is disabled.

When you set this field to [Disabled], the USB controller legacy mode is disabled whether or not you are using a USB device. Configuration options: [Disabled] [Enabled] [Auto]

OS/2 Onboard Memory > 64M [Disabled]

When using OS/2 operating systems with installed DRAM of greater than 64MB, you need to set this option to [Enabled]. Otherwise, leave to the default setting [Disabled]. Configuration options: [Disabled] [Enabled]

2.4.1 Chip Configuration



SDRAM Configuration [By SPD]

This parameter allows you to set the optimal timings for items 2–5, depending on the memory modules that you are using. The default setting is [By SPD], which configures items 2–5 by reading the contents in the SPD (Serial Presence Detect) device. The EEPROM on the memory module stores critical information about the module, such as memory type, size, speed, voltage interface, and module banks. Configuration options: [User Defined] [By SPD]



The SDRAM parameters (items 2~5) become configurable only when you set the SDRAM Configuration to [User Defined].

SDRAM CAS Latency [2.5T]

This item controls the latency between the SDRAM read command and the time the data actually becomes available.

SDRAM RAS to CAS Delay [3T]

This item controls the latency between the DDR SDRAM active command and the read/write command.

SDRAM RAS Precharge Time [3T]

This item controls the idle clocks after issuing a precharge command to the DDR SDRAM.

SDRAM RAS Active Time [6T]

This item controls the number of DDR SDRAM clocks used for DDR SDRAM parameters.

SDRAM Command Lead-off Time [Auto]

Configuration Options: [Auto] [2T] [1T]

Graphics Aperture Size [128MB]

This feature allows you to select the size of mapped memory for AGP graphic data. Configuration options: [128MB] [256MB]

AGP Capability [4X Mode]

This motherboard supports the AGP 4x interface that transfers video data at 1066MB/s. AGP 4X is backward-compatible, so you may keep the default [4X Mode] even if you are using an AGP 1x video card. When set to [1X Mode], the AGP interface only provides a peak data throughput of 266MB/s even if you are using an AGP 4X card. Configuration options: [1X Mode] [2x Mode] [4X Mode]

AGP Fast Write Capability [Disabled]

This field allows enable or disable the AGP Fast Write feature. Configuration options: [Disabled] [Enabled]

Onboard VGA Shared Memory Size [32MB]

This field allows you to set the size of shared memory for internal VGA.

Video Memory Cache Mode [UC]

USWC (uncacheable, speculative write combining) is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must set this to UC (uncacheable) if your display card does not support this feature, otherwise the system may not boot.

Configuration options: [UC] [USWC]

Memory Hole At 15M-16M [Disabled]

When set to [Enabled], this feature frees the PCI bus when the CPU is accessing 8-bit ISA cards. This process normally consumes about 50-60 PCI clocks without PCI delayed transaction. Set this field to [Disabled] when using ISA cards that are not PCI 2.1 compliant. Configuration options: [Enabled] [Disabled]

PCI 2.1 Support [Enabled]

This field enables or disables the PCI 2.1 features.

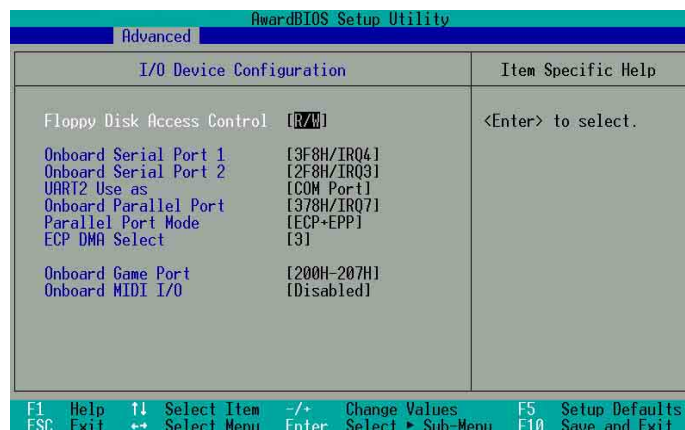
Onboard PCI IDE Enable [Both]

This field allows you to enable either the primary IDE channel or secondary IDE channel, or both. You can also set both channels to [Disabled]. Configuration options: [Both] [Primary] [Secondary] [Disabled]

IDE Bus Master Support [Disabled]

This field enables or disables each IDE channel.

2.4.2 I/O Device Configuration



Floppy Disk Access Control [R/W]

When set to [Read Only], this parameter protects files from being copied to floppy disks by allowing reads from, but not writes to, the floppy disk drive. The default setting [R/W] allows both reads and writes. Configuration options: [R/W] [Read Only]

Onboard Serial Port 1 [3F8H/IRQ4], Port 2 [2F8H/IRQ3]

These fields allow you to set the addresses for the onboard serial connectors. Serial Port 1 and Serial Port 2 must have different addresses.

UART2 Use As [COM Port]

This field allows you to select the device on which to assign UART2. Configuration options: [COM Port] [IR]

Onboard Parallel Port [378H/IRQ7]

This field allows you to set the address of the onboard parallel port connector. If you disable this field, the Parallel Port Mode and ECP DMA Select configurations are not available. Configuration options: [Disabled] [378H/IRQ7] [278H/IRQ5]

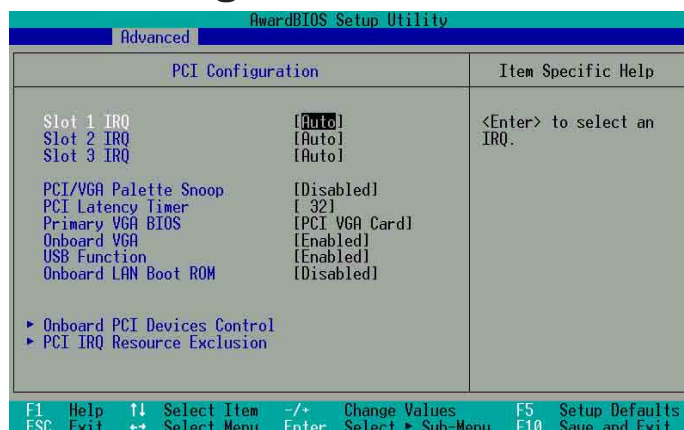
Parallel Port Mode [ECP+EPP]

This field allows you to set the operation mode of the parallel port. [Normal] allows normal-speed operation but in one direction only; [EPP] allows bidirectional parallel port operation; [ECP] allows the parallel port to operate in bidirectional DMA mode; [ECP+EPP] allows normal speed operation in a two-way mode. Configuration options: [Normal] [EPP] [ECP] [ECP+EPP]

ECP DMA Select [3]

This field allows you to configure the parallel port DMA channel for the selected ECP mode. This selection is available only if you select [ECP] or [ECP+EPP] in Parallel Port Mode above. Configuration options: [1] [3]

2.4.3 PCI Configuration



Slot 1, Slot 2, Slot 3 IRQ [Auto]

These fields assign the IRQ for each PCI slot. The default setting for each field is [Auto], which utilizes auto-routing to determine IRQ assignments. Configuration options: [Auto] [NA] [3] [4] [5] [7] [9] [10] [11] [12] [14] [15]

PCI/VGA Palette Snoop [Disabled]

Some non-standard VGA cards, like graphics accelerators or MPEG video cards, may not show colors properly. Setting this field to [Enabled] corrects this problem. If you are using standard VGA cards, leave this field to the default setting [Disabled]. Configuration options: [Disabled] [Enabled]

PCI Latency Timer [32]

Leave this field to the default setting [32] for best performance and stability.

Primary VGA BIOS [PCI VGA Card]

This field allows you to select primary graphics card or onboard VGA as the primary display BIOS.

Configuration options: [PCI VGA Card] [Onboard VGA] [AGP Slot]

Onboard VGA [Enabled]

This field allows you to enable or disable the onboard VGA port.

Configuration options: [Disabled] [Enabled]

USB Function [Enabled]

This field allows you to turn on or off the USB 2.0 controller. Configuration options: [Disabled] [Enabled]

Onboard LAN Boot ROM [Disabled]

This field allows you to turn on or off the onboard LAN boot ROM. This item appears only when onboard LAN is enabled.

Configuration options: [Disabled] [Enabled]

2.4.3.1 Onboard PCI Devices Control



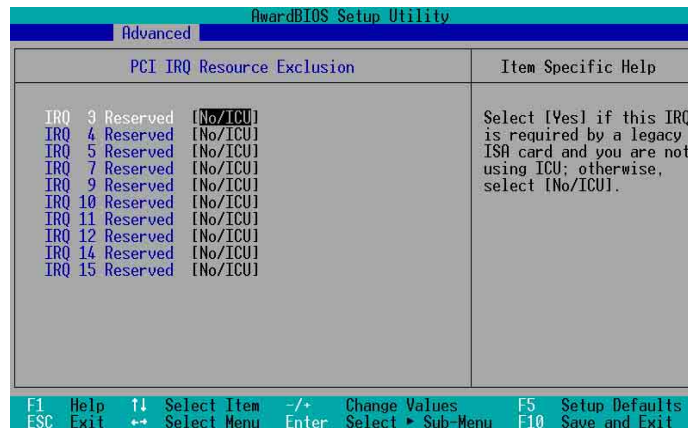
Onboard Lan Controller [Enabled]

This field enables or disables the onboard LAN controller. Configuration options: [Disabled] [Enabled]

Onboard AC97 Audio Controller [Auto]

[Auto] allows the BIOS to detect whether you are using any modem/audio device and enables it, otherwise it is set to [Disabled].

2.4.3.2 PCI IRQ Resource Exclusion

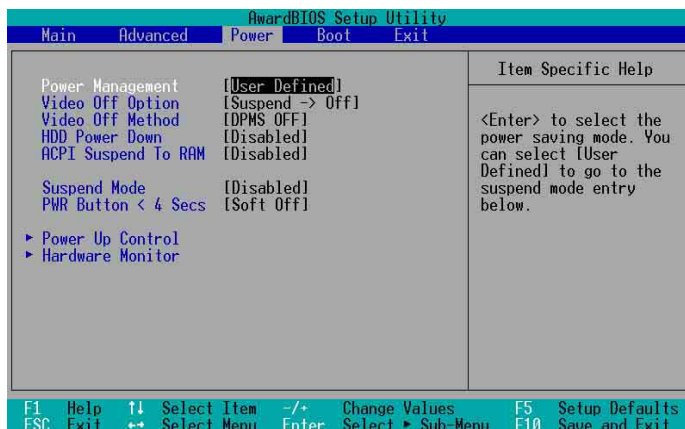


IRQ XX Reserved [No/ICU]

These fields indicate whether or not the displayed IRQ for each field is being used by a legacy (non-PnP) ISA card. The setting [No/ICU] for an IRQ field indicates that you are using the ISA Configuration Utility (ICU), and that this particular IRQ is NOT required by a legacy ISA card. Set the IRQ field to [Yes] if you install a legacy ISA card that requires a unique IRQ and you are NOT using ICU. Configuration options: [No/ICU] [Yes]

2.5 Power Menu

The Power menu allows you to reduce power consumption. This feature turns off the video display and shuts down the hard disk after a period of inactivity.



Power Management [User Defined]

This field allows you to activate or deactivate the automatic power saving features. When set to [Disabled], the power management features do not function regardless of the other settings on this menu. The [User Defined] option allows you to set the period of inactivity before the system enters suspend mode. Refer to “Suspend Mode” later in this section.

When set to [Max Saving], system power is conserved to its greatest amount. This setting automatically puts the system into suspend mode after a brief period of system inactivity. [Min Saving] allows the least power saving as the system enters suspend mode only after a long period of inactivity. Configuration options: [User Defined] [Disabled] [Min Saving] [Max Saving]



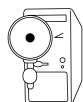
You should install the Advanced Power Management (APM) utility to keep the system time updated even when the computer enters suspend mode. In Windows 3.x and Windows 95, you need to install Windows with the APM feature. In Windows 98 or later, APM is automatically installed as indicated by a battery and power cord icon labeled "Power Management" in the Control Panel. Select the item "Advanced" in the Power Management Properties dialog box.

Video Off Option [Suspend -> Off]

This field determines when to activate the video off feature for monitor power management. Configuration options: [Always On] [Suspend -> Off]

Video Off Method [DPMS OFF]

This field defines the video off features. The Display Power Management System (DPMS) feature allows the BIOS to control the video display card if it supports the DPMS feature. [Blank Screen] only blanks the screen. Use this for monitors without power management or "green" features.



Even if installed, your screen saver does not display when you select [Blank Screen] for the above field.

[V/H SYNC+Blank] blanks the screen and turns off vertical and horizontal scanning. Configuration options: [Blank Screen] [V/H SYNC+Blank] [DPMS Standby] [DPMS Suspend] [DPMS OFF] [DPMS Reduce ON]

HDD Power Down [Disabled]

Shuts down any IDE hard disk drives in the system after a period of inactivity as set in this user-configurable field. This feature does not affect SCSI hard drives. Configuration options: [Disabled] [1 Min] [2 Min] [3 Min]...[15 Min]

ACPI Suspend To RAM [Enabled]

This field allows you to enable or disable the ACPI Suspend-to-RAM feature. To support this feature, the +5VSB of the power supply should have the capacity to provide more than 720mA current. Configuration options: [Disabled] [Enabled]

Suspend Mode [Disabled]

Sets the time period before the system goes into suspend mode. Configuration options: [Disabled] [1~2 Min] [2~3 Min] [4~5 min] [8~9 Min] [20 Min] [30 Min] [40 Min] [1 Hour]

PWR Button < 4 Secs [Soft Off]

When set to [Soft off], the ATX switch can be used as a normal system power-off button when pressed for less than 4 seconds. [Suspend] allows the button to have a dual function where pressing less than 4 seconds puts the system in sleep mode. Regardless of the setting, holding the ATX switch for more than 4 seconds powers off the system. Configuration options: [Soft off] [Suspend]

2.5.1 Power Up Control



AC Power Loss Restart [Disabled]

This allows you to set whether or not to reboot the system after AC power loss. [Disabled] leaves your system off while [Enabled] reboots the system. [Previous State] sets the system back to the state it was before the power interruption. Configuration options: [Disabled] [Enabled] [Previous State]

Wake/Power Up On Ext. Modem [Disabled]

This allows either settings of [Enabled] or [Disabled] for powering up the computer when the external modem receives a call while the computer is in Soft-off mode. Configuration options: [Disabled] [Enabled]

Power Up On PCI Card [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a PCI LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Wake on Lan [Disabled]

When set to [Enabled], this field allows the use of Wake-on-LAN feature to turn on the system. This requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power Up By PS/2 Keyboard [Space Bar]

This parameter allows you to use specific keys on the keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Space Bar] [Ctrl-Esc] [Power Key]

Automatic Power Up [Disabled]

This allows an unattended or automatic system power up. You may configure your system to power up at a certain time of the day by selecting [Everyday] or at a certain time and day by selecting [By Date]. Configuration options: [Disabled] [Everyday] [By Date]

2.5.2 Hardware Monitor

AwardBIOS Setup Utility		
Power		
Hardware Monitor	Item Specific Help	
MB Temperature	37°C/98.5°F	<Enter> to switch between monitoring or ignoring.
CPU Temperature	36°C/96.5°F	
CPU Fan Speed	2393RPM	
Chassis Fan Speed	N/A	
VCORE Voltage	1.53V	
+3.3V Voltage	3.36V	
+5V Voltage	5.10V	
+12V Voltage	12.03V	

F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults
ESC Exit ↔ Select Menu Enter Select ► Sub-Menu F10 Save and Exit

MB Temperature [xxx°C/xxx°F]

CPU Temperature [xxx°C/xxx°F]

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures.

CPU Fan Speed [xxxxRPM] or [N/A]

Chassis Fan Speed [xxxxRPM] or [N/A]

The onboard hardware monitor automatically detects and displays the CPU and chassis fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, that field shows N/A.

VCORE Voltage, +3.3V Voltage, +5V Voltage, +12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.



If any of the monitored items is out of range, the following error message appears: “Hardware Monitor found an error. Enter Power setup menu for details”. You will then be prompted to “Press F1 to continue or DEL to enter SETUP”.

2.6 Boot Menu



Boot Sequence

The Boot menu allows you to select four types of boot devices using the up and down arrow keys. By using the <+> or <Space> key, you can promote devices and by using the <-> key, you can demote devices. Promotion or demotion of devices alters the priority which the system uses to boot device on system power up. Configuration fields include Removable Devices, IDE Hard Drive, ATAPI CD-ROM, and Other Boot Device.

Removable Device [Legacy Floppy]

Configuration options: [Disabled] [Legacy Floppy] [LS-120] [ZIP] [ATAPIMO]

IDE Hard Drive

This field allows you to select which IDE hard disk drive to use in the boot sequence. Pressing [Enter] will show the product IDs of all connected IDE hard disk drives.

ATAPI CD-ROM

This field allows you to select which ATAPI CD-ROM drive to use in the boot sequence. Pressing [Enter] will show the product IDs of all your connected ATAPI CD-ROM drives.

Other Boot Device Select [INT18 Device (Network)]

Configuration options: [Disabled] [SCSI Boot Device] [INT18 Device (Network)]

Plug & Play O/S [No]

This field allows you to use a Plug-and-Play (PnP) operating system to configure the PCI bus slots instead of using the BIOS. When [Yes] is selected, interrupts may be reassigned by the OS. If you installed a non-PnP OS or if you want to prevent reassigning of interrupt settings, keep the default setting [No]. Configuration options: [No] [Yes]

Boot Virus Detection [Enabled]

This field allows you to set boot virus detection, ensuring a virus-free boot sector. The system halts and displays a warning message when it detects a virus. If this occurs, you can either allow the operation to continue or use a virus-free bootable floppy disk to restart and investigate your system. Configuration options: [Disabled] [Enabled]

Quick Power On Self Test [Enabled]

This field speeds up the Power-On-Self Test (POST) routine by skipping retesting several times. Configuration options: [Disabled] [Enabled]

Boot Up Floppy Seek [Enabled]

When enabled, the BIOS will seek the floppy disk drive to determine whether the drive has 40 or 80 tracks. Configuration options: [Disabled] [Enabled]

Full Screen Logo [Enabled]

This allows you to enable or disable the full screen logo display feature. Configuration options: [Disabled] [Enabled]



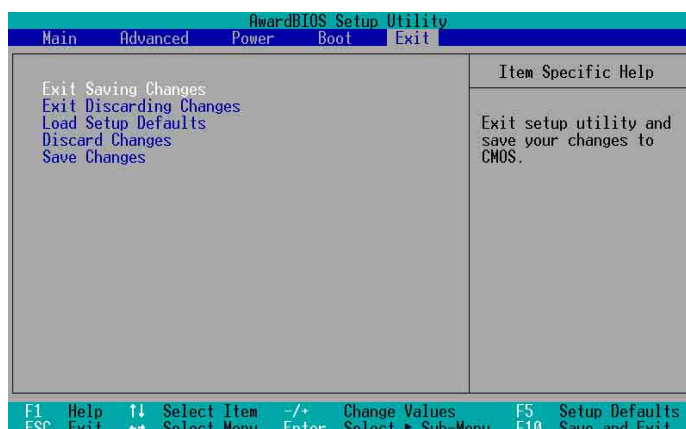
Make sure that the above item is set to [Enabled] if you wish to use the ASUS MyLogo™ feature.

Interrupt Mode [APIC]

The Advanced Programmable Interrupt Controller (APIC) setting allows you to distribute interrupt routings other than the 16 IRQs. The Programmable Interrupt Controller (PIC) setting allows you to use the 16 IRQs only. Configuration options: [PIC] [APIC]

2.7 Exit Menu

When you have made all of your selections from the various menus in the Setup program, save your changes and exit Setup. Select Exit from the menu bar to display the following menu.



Exit Saving Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select [Yes] to save changes and exit.



If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Pressing <Enter> saves the changes while exiting.

Exit Discarding Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than system date, system time, and password, the BIOS asks for a confirmation before exiting.

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select [Yes] to load default values. Select Exit Saving Changes or make other changes before saving the values to the non-volatile RAM.

Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select [Yes] to discard any changes and load the previously saved values.

Save Changes

This option saves your selections without exiting the Setup program. You can then return to other menus and make further changes. After you select this option, a confirmation window appears. Select [Yes] to save any changes to the non-volatile RAM.

Chapter 3

This chapter helps you power up your system and install drivers and utilities that came with the support CD.

Starting Up

3.1 Install an operating system

The P4SGL-MX motherboard supports Windows 98/ME/NT/2000/XP operating systems (OS). Always install the latest OS version and corresponding updates so you can maximize the features of your hardware.



Because motherboard settings and hardware options vary, use the setup procedures presented in this chapter for general reference only. Refer to your OS documentation for more information.

3.2 Support CD information

The support CD that came with the motherboard contains useful software and several utility drivers that enhance the motherboard features.

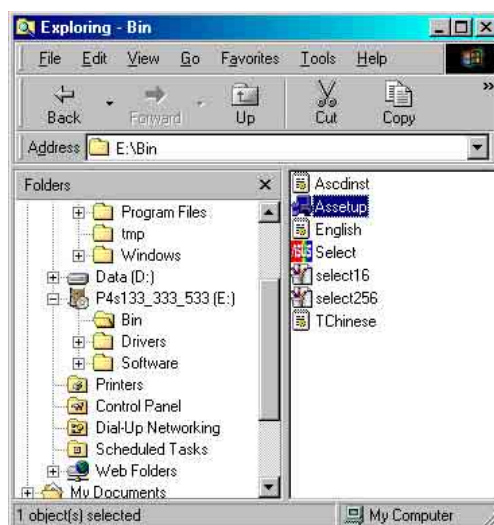


The contents of the support CD are subject to change at any time without notice. Visit the ASUS website for updates.

3.2.1 Running the support CD

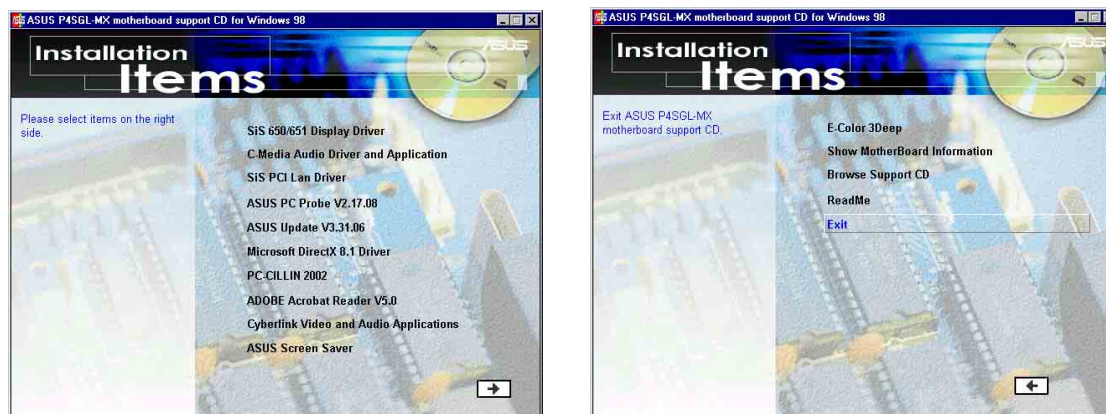
To begin using the support CD, simply insert the CD into your CD-ROM drive. If Autorun is enabled in your computer, the software and drivers menu automatically appears on your screen.

If the installation menu did not appear automatically, locate and double-click on the file ASSETUP.EXE from the BIN folder in the support CD to display the menu.



3.2.2 Software and drivers installation menus

The support CD menu is composed of two screens. Click on the **Right Arrow** on the lower right corner of the first screen to display the second menu screen. To return to the first menu screen, click on the **Left Arrow** on the lower right corner of the second screen.



5.2.3 Software and drivers description

The menu lists the drivers and applications that are available for this motherboard. Simply click on a specific item then follow the installation wizard to install it.

SiS 650/651 Display Driver

Click this item to install the display driver for the SiS 650/651 chipset.

C-Media Audio Driver and Applications

This item is for installing the C-Media audio driver and software applications.

SiS PCI Lan Driver

Click this item to install the PCI LAN driver of SiS.

ASUS PC Probe

This smart utility monitors the fan speed, CPU temperature, and system voltages, and alerts you on any detected problems. This utility helps you keep your computer at a healthy operating condition.

ASUS Update

This item installs the ASUS Update. This program allows you to download the latest version of the BIOS from the ASUS website.

Microsoft Direct X 8.1 Driver

This item installs the Microsoft V8.1 driver.

Cyberlink Video and Audio Applications

This item installs the Cyberlink applications for video and audio.

ASUS Screen Saver

This item installs the ASUS screen saver.

CLICK THE RIGHT ARROW TO SEE THE NEXT MENU

E-Color 3Deep

This item installs the 3Deep software. 3Deep is the first application that gives online gamers the competitive edge in multi-player skirmishes. This application removes dark washed-out graphics to deliver true vibrant colors.

Show Motherboard Information

Click this item to display the general specifications for the P4SGL-MX motherboard.

Browse Support CD

Click this item to display the support CD contents in graphical format.

Readme

This item displays the contents of the support CD and a brief description of each in text format.

Exit

Click this item to exit the P4SGL-MX support CD.

CLICK THE LEFT ARROW TO RETURN TO THE MAIN MENU

3.3 Software information

3.3.1 ASUS Update

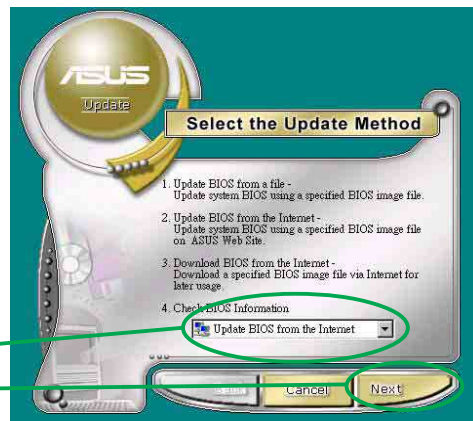
The ASUS Update utility allows you to update the motherboard BIOS and drivers. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP).

Follow these steps to use the ASUS Update.

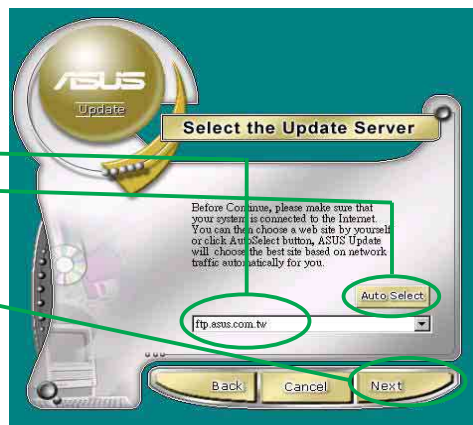
1. Launch the utility from your Windows Start menu:
**Programs/AsusUpdate Vx.xx.xx/
AsusUpdate**

The ASUS Update initial screen appears.

2. Select desired update method.
Click Next.

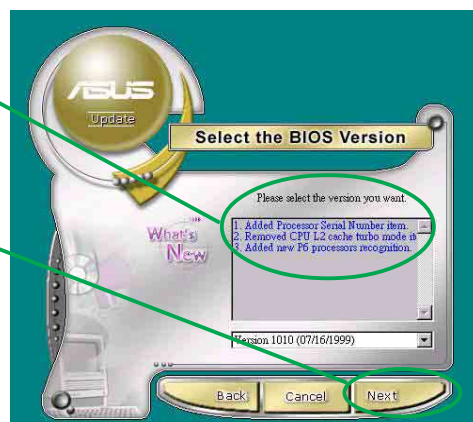


3. If you selected Updating or Downloading from the Internet, select the ASUS FTP site nearest you to avoid network traffic,
or choose Auto Select.
Click Next.



4. From the FTP site, select the BIOS version that you wish to download.
Click Next.

5. Follow the instructions on the succeeding screens to complete the update process.



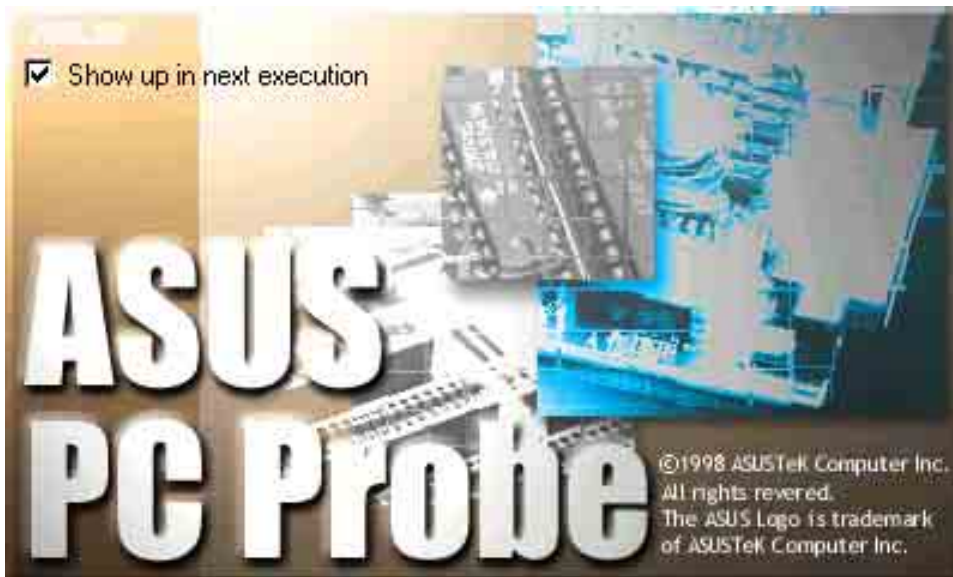
If you selected the option to update the BIOS from a file, a window pops up prompting you to locate the file. Select the file, click Save, then follow the screen instructions to complete the update process.

3.3.2 ASUS PC Probe


ASUS PC Probe is a convenient utility to continuously monitor your computer system's vital components, such as fan rotations, voltages, and temperatures. It also has a utility that lets you review useful information about your computer, such as hard disk space, memory usage, and CPU type, CPU speed, and internal/external frequencies through the DMI Explorer.

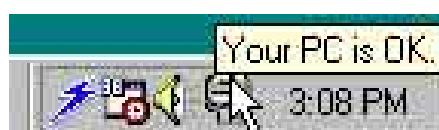
Starting ASUS PC Probe

When ASUS PC Probe starts, a splash screen appears allowing you to select whether to show the screen again when you open PC Probe or not. To bypass this startup screen, clear the **Show up in next execution** check box.



To launch **ASUS PC Probe**, click the Windows **Start** button, point to **Programs**, and then **ASUS Utility**, and then click **Probe Vx.xx**.

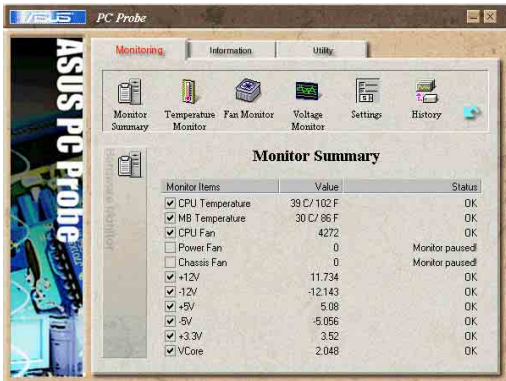
The PC Probe icon  appears on the taskbar system tray indicating that ASUS PC Probe is running. Clicking the icon allows you to see the status of your PC.



Using ASUS PC Probe

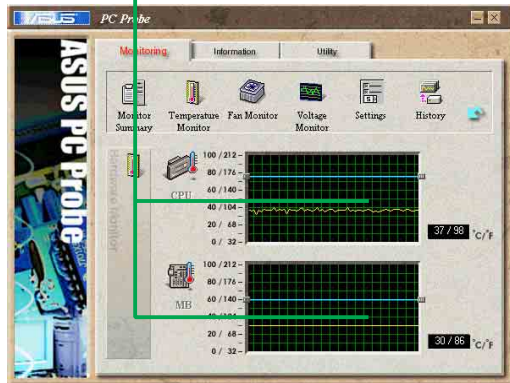
Monitoring

Temperature Warning Threshold Adjustment
(Move the slider up to increase the threshold level or down to decrease the threshold level)



Monitor Summary

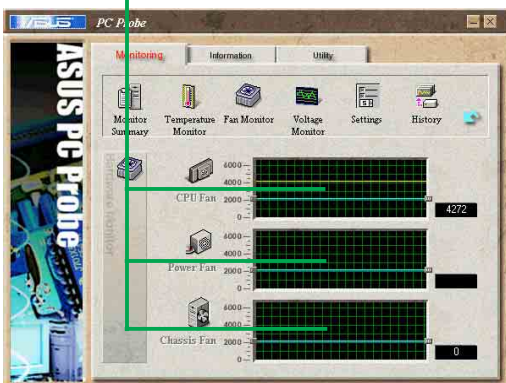
Shows a summary of the items being monitored.



Temperature Monitor

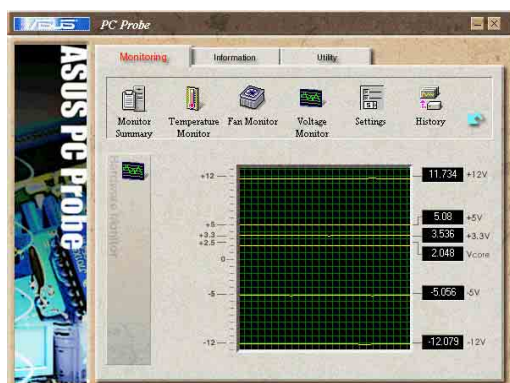
Shows the PC temperature (for supported processors only).

Fan Warning Threshold Adjustment
(Move the slider up to increase the threshold level or down to decrease the threshold level)



Fan Monitor

Shows the PC fan rotation.



Voltage Monitor

Shows the PC voltages.

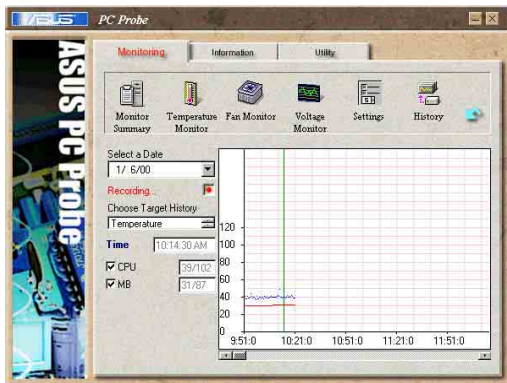
Settings

Lets you set threshold levels and polling intervals or refresh times of the PC's temperature, fan rotation, and voltages.



CPU Cooling System Setup

Lets you select when to enable software CPU cooling. When **CPU Overheated** is selected, the CPU cooling system is enabled whenever the CPU temperature reaches the threshold value.



History

Lets you record the monitoring activity of a certain component of your PC for future reference.



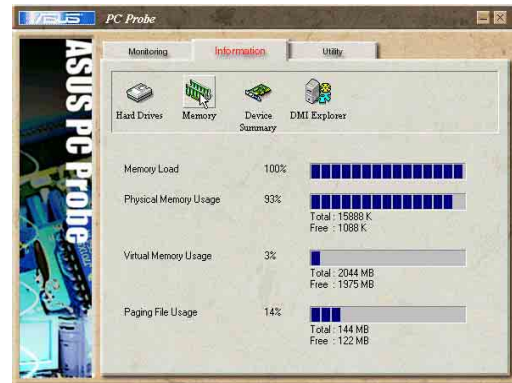
Fan Control

Lets you enable/disable Smart Fan Control. Smart Fan Control adjusts the fan speed automatically based on the current CPU temperature and predefined threshold.



Hard Drives

Shows the used and free space of the PC's hard disk drives and the file allocation table or file system used.



Memory

Shows the PC memory load, memory usage, and paging file usage.



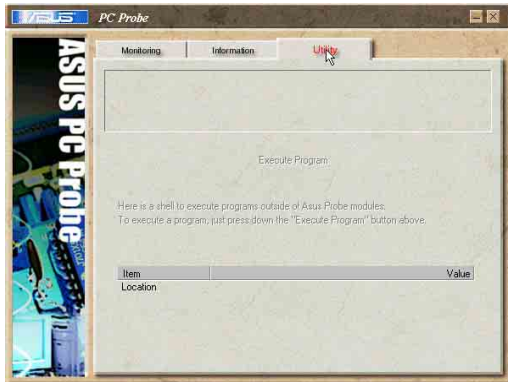
Device Summary

Shows a summary of devices present in your PC.



DMI Explorer

Shows information pertinent to the PC, such as CPU type, CPU speed, and internal/external frequencies, and memory size.



Utility

NOTE: This feature is currently unavailable.

ASUS PC Probe Task Bar Icon

Right clicking the PC Probe icon brings up a menu to open or exit ASUS PC Probe and pause or resume all system monitoring.



When the ASUS PC Probe senses a problem with your PC, portions of the ASUS PC Probe icon change to red, the PC speaker beeps, and the ASUS PC Probe monitor appears.

