MB48/MB48N & MB50/MB50N

Intel Pentium 4/Celeron
478-pin Processor
with 400/533 MHz FSB
Based DDR MAINBOARD

User's Manual

Shuttle® MB48/MB48N & MB50/MB50N

Intel Pentium 4/Celeron
478-pin Processor
with 400/533 MHz FSB
Based DDR Mainboard
Manual Version 1.1

Copyright

Disclaimer

Shuttle® Inc. shall not be liable for any incidental or consequential damages resulting from the performance or use of this product.

This company makes no representations or warranties regarding the contents of this manual. Information in this manual has been carefully checked for reliability; however, no guarantee is given as to the correctness of the contents. In the interest of continued product improvement, this company reserves the right to revise the manual or include changes in the specifications of the product described within it at any time without notice and without obligation to notify any person of such revision or changes. The information contained in this manual is provided for general use by the customers.

Trademarks

Shuttle is a registered trademark of Shuttle Inc.

Intel, Pentium, and Celeron are registered trademarks of Intel Corporation.

PS/2 is a registered trademark of IBM Corporation.

AWARD is a registered trademark of Award Software Inc.

Microsoft and Windows are registered trademarks of Microsoft Corporation.

General Notice: Other product names used in this manual are ascribed to their respective owners and acknowledged.

TABLE OF CONTENTS

WHAT'S IN THE MANUAL

Quick Reference

About This Manual

1 INTRODUCTION

1.1 To Different Users

First-Time DIY System Builder

Welcome to the DIY world! Building your own computer system is not as difficult as you may think. To make your first computer DIY experience successful, right from the start, we have designed **Chapter 3 Hardware Installation** in a step-by-step fashion for all the first-time DIY system builders. Prior to installation, we suggest you read the whole manual to gain a complete understanding of your new MB48/N or MB50/N mainboard.

Experienced DIY User

Congratulate on your purchase of the MB48/N or MB50/N mainboard. You will find installing your new MB48/N or MB50/N mainboard is quite easy. Bundled with an array of onboard functions, the highly-integrated MB48/N or MB50/N mainboard provides you with a total solution to build the stablest and most reliable system. Referring to section **3.2 Jumper Settings** and **Chapter 4 Software Utility**, you will find how to work out your new mainboard. **Chapter 5 BIOS Setup** also contains the relevant information on how to tune up your system to achieve higher performance.

System Integrator

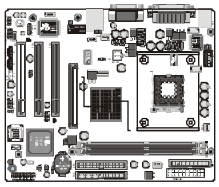
You have wisely chosen MB48/N or MB50/N to construct your system. MB48/N incorporates all the state-of-the-art technology of the 845GV chipset from Intel; MB50/N, of the 845GE chipset from intel. Each integrates the most advanced functions you've ever found in a compact Micro ATX board.

This manual adopted in MB48, MB48N, MB50, and MB50N mainboards at the same time. The difference among them is that MB48N/MB50N equips with onboard LAN. In the manual, if there are some standards, characters, equipment or software only appeared or adopted by MB48, MB48N, MB50, or MB50N; it will be mentioned **(MB48/N only**, **MB48N only**, **MB50/N only**, or **MB50N only)**

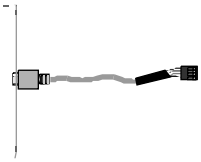
1.2 Item Checklist:

Check all items with your MB48/N or MB50/N mainboard to make sure nothing is missing. A complete package should include:

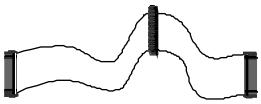
- One Shuttle MB48/N or MB50/N Mainboard



- One Audio Cable (Central/Bass Channel)

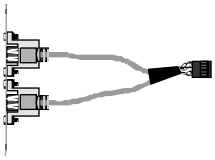


- One ATA **100/66/33** Ribbon Cable



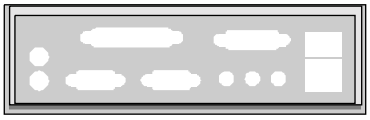
- One Floppy Ribbon Cable

- One Twin-Port USB Cable **(optional)**



- MB48/N & MB50/N User's Manual

- I/O Shielding



- One Bundled CD-ROM, including:
  - MB48/N & MB50/N user's manual in PDF format
  - Intel Chipset Driver
  - IDE Driver
  - VGA Driver
  - Audio Driver
  - LAN Driver (**MB48N/MB50N only**)
  - USB 2.0 Driver
  - Award Flashing Utility

2 FEATURES

MB48/N or MB50/N mainboard is dedicatedly designed for demanding PC users who desire high performance and maximum intelligent features in a compact package.

2.1 Specifications

✸ CPU Support

Intel Pentium 4/Celeron, 478-pin processors with 400/533MHz FSB.

✸ Chipset

Features Intel 845-GV (MCH) for MB48/N, or 845-GE (MCH) for MB50/N, and Intel 82801DB (ICH4).

✸ Onboard 10/100Mb/s LAN

The Realtek RTL8100B incorporated in the chipset provides the mainboard with integrated Fast Ethernet capabilities.

✸ CPU FSB Configuration

Provides jumper J2 to configure front side bus at 400/533MHz.

✸ AC'97 Audio CODEC

Supports 18-bit ADC and DAC resolutions, and four analog line-level stereo inputs.

Compliant with AC'97 2.2 specifications.

✸ Versatile Memory Support

Two **184-pin DIMM** slots support up to 2GB of PC1600 or PC2100 for MB48/N; support up to 2GB of PC1600, PC2100, or PC2700 for MB50/N.

Compliant with **DDR** SDRAM module.

✸ PCI Expansion Slots

Provides three 32-bit PCI slots.

✸ AGP Expansion Slot (MB50/N only)

Provides one AGP slot that supports up to 4X AGP device.

✸ USB 2.0 Interface Onboard

- 2 x USB ports on back-panel and two extended USB headers (4 ports) on front-panel.

✸ I/O Interface

Provides a variety of I/O interfaces:

- 2 x PS/2 ports for Mouse and Keyboard
- 1 x Parallel port
- 1 x Serial port
- 1 x VGA port
- 1 x MIDI/Game port
- 1 x Line-Out port
- 1 x Line-In port
- 1 x Mic-In port
- 1 x LAN port
- 2 x USB ports

✸ PCI Bus Master IDE Controller Onboard

Two ultra DMA 100/66/33 bus master dual-channel IDE ports support up to four IDE devices (one Master and one Slave per channel).

The IDE bus implements data transfer speeds to 100MB/sec and supports enhanced PIO modes.

80-pin cable backward compatible legacy ATAPI devices, ATAPI IDE CD-ROM, CD-R, CD-RW, and LS-120 supports.

✸ ATX Power Supply Connector

ATX power supply unit can be connected to the onboard 20-pin Pentium 4 standard ATX power connector, and 4-pin ATX power connector. The unit supports Suspend and Soft-On/Off modes by the dual-function power button.

✸ Advanced Configuration and Power Interface

Features four power-saving modes: S1 (Snoop), S3 (Suspend to RAM), S4 (Suspend to DISK), and S5 (Soft-Off). ACPI provides more efficient energy-saving features controlled by your operating system that supports OS Direct Power Management (OSPM) functionality.

✸ System BIOS

Provides licensed Award BIOS V6.0 PG on the 2Mb Flash EEPROM, and supports Green PC, Desktop Management Interface (DMI).

✸ Form Factor

System board conforms to the Micro ATX specification.

Board dimension: 244mm x 200mm.

✸ Advanced Features

- **Low EMI -** Built in spread spectrum. Unused PCI/SDRAM slots are shut off by the automatic clock for reducing EMI.
- **Dual Function Power Button -** The system can be in any of the two states: one is Suspend mode and the other is Soft-Off mode. Pushing the power button for less than 4 seconds places the system into Suspend mode. When the power button is pressed for longer than 4 seconds, the system will enter Soft-Off mode.
- **Modem Ring Power-On -** The system can be powered on automatically by the activation of modem ringing.
- **CPU Clock Setting** - This item allows users to adjust CPU host clock in BIOS.
- **CPU Multiplier Setting** - This item allows users to adjust CPU multiplier in BIOS.

✸ Intelligent Features

- **Voltage Monitoring -** Monitors various voltages of key elements, such as the CPU, and other critical system voltage levels to ensure a stable current passing through mainboard components.
- **Fan Status Monitoring -** To prevent the CPU from overheating, the CPU fan is monitored by RPM, with which the cooling fan is required.
- **Temperature Monitoring -** This item allows users to make sure whether the CPU or system runs under a suitable temperature.

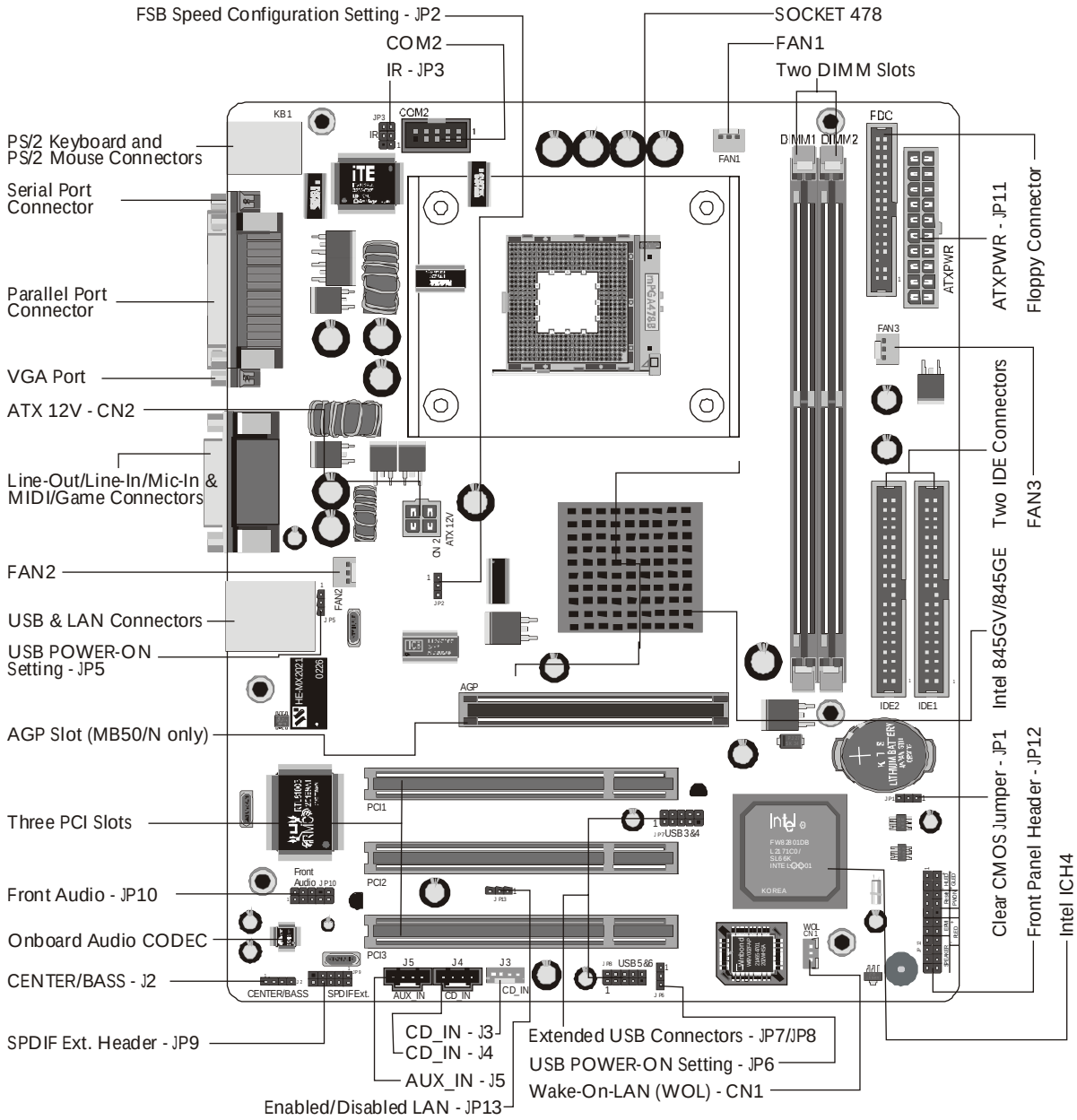
3 HARDWARE INSTALLATION

Before removing/installing any of these devices: CPU, DIMMs, Add-On Cards, and Cables, please unplug the onboard power connector.

This section outlines how to install and configure your mainboard. Referring to the following mainboard layout helps you identify various jumpers, connectors, slots, and ports. Steps described herein will lead you to a quick and correct installation of your system.

3.1 Step-by-Step Installation

Accessories Of MB48/N & MB50/N



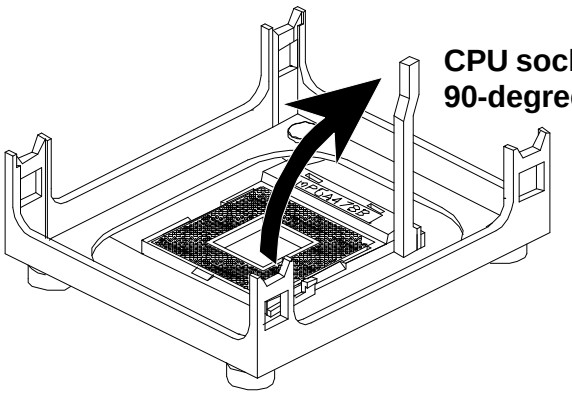
Step 1

CPU Installation:

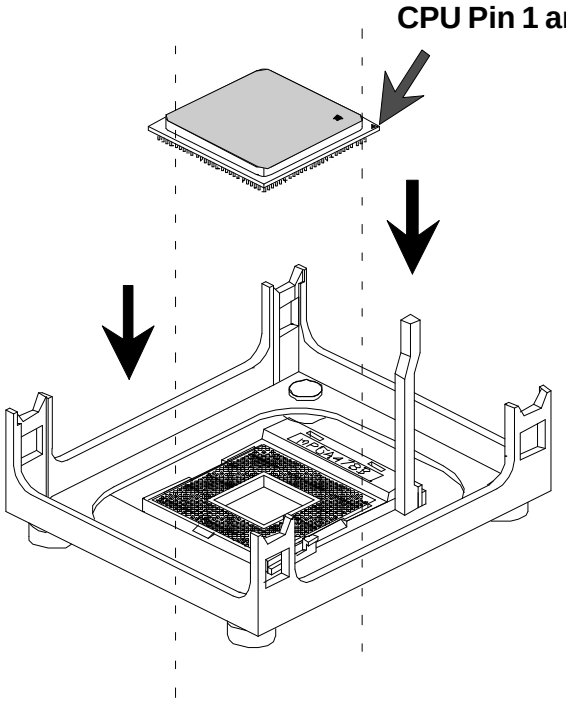
This mainboard supports Intel Pentium 4/Celeron Socket 478 series CPU. Please follow the step as listed below to finish the CPU installation.

Note the CPU orientation as you place it into the CPU socket.

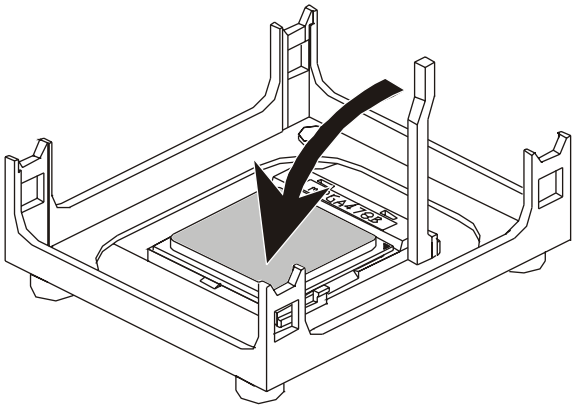
1. Pull up the CPU socket lever to 90-degree angle.



2. Locate Pin 1 in the socket and look for a black dot or cut edge on the CPU upper interface. Match Pin 1 and cut edge, and insert the CPU into the socket.



3. Press down the CPU socket lever and the CPU installation is completed.



Note: The CPU might be damaged if you do not match the CPU socket Pin 1 and cut edge well.

4. Intel Pentium 4/Celeron processor requires a set of heatsink and fan to cool down the processor. You need to purchase a heatsink and fan if they are not bundled with your CPU. Required is that install the set and plug its cable in the CPU fan power connector. Note that there are kinds of CPU fan connectors. Normally, if your mainboard supports a hardware monitoring function, a 3-pin fan power connector can have your system detect the CPU fan's speed. A CPU fan with a 2-pin or 4-pin fan power connector does not support the detection of the CPU fan's speed, and must directly be connected to the system's power supply unit.

Step 2.

Set Jumpers

The default jumper settings have been set for the common usage standard of this mainboard. Therefore, you need not to reset the jumpers unless you require special adjustments as any of the following cases:

1. Clear CMOS Setting
2. FSB Speed Configuration Setting
3. USB3/4 Power-On Setting
4. USB5/6 Power-On Setting
5. Onboard LAN Enabled/Disabled Setting

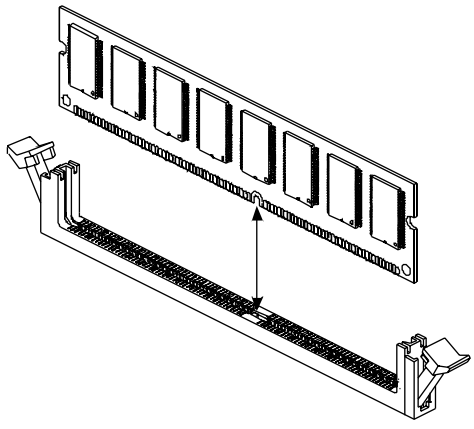
For first-time DIY system builders, we recommend that you not change the default jumper settings if you are not quite familiar with the mainboard configuration procedures. The factory-set default settings are tuned for optimum system performance. For advanced users who prefer to customize their system, section **3.2 Jumper Settings** provides the detailed information on how to configure your mainboard manually.

Step 3

Install DDR SDRAM System Memory

To install memory, insert DDR SDRAM memory module(s) in the DIMM banks. Note that DDR SDRAM modules are directional and will not go in the DIMM banks if they are not properly oriented. After the module is fully inserted into the DIMM bank, lift the clips of both sides of the DIMM bank to lock the module in place.

DDR SDRAM



Step 4

Install Internal Peripherals in System Case

Before you place the mainboard into your system case, we recommend that you first assemble all the internal peripheral devices into the computer housing, including, but not limited to, the hard disk drive (IDE/HDD), floppy disk drive (FDD), CD-ROM drive, and ATX power supply unit.

To install IDE & FDD drives, follow these procedures:

1. Set the required jumpers on each device according to the instructions provided by the manufacturer. (IDE, HDD, and CD-ROM have to set jumpers to Master or Slave mode depending on whether you install more than one device of each kind.)

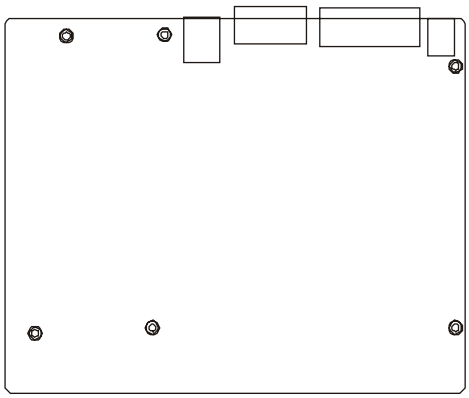
2. Connect the IDE cable and FDD cable on the back-panel of the internal peripheral devices to the corresponding headers on board. Note that the cable should be oriented with its colored stripe (usually red or magenta) connected to pin#1 of the IDE or FDD connector on the mainboard and on the device as well.

3. Connect an available power cable from your system power supply unit to the back-panel of each peripheral device. Note that the power cable is directional and cannot fit in if not properly positioned.

Step 5

Mount the Mainboard on the Computer Chassis

1. You may find there are a lot of mounting holes on your computer chassis and mainboard. To match the holes on both properly, the key point is to make the back-panel of the mainboard in a close fit with your system case, as shown below.



2. Position the studs between the chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the them, for avoiding any electrical shorts in-between

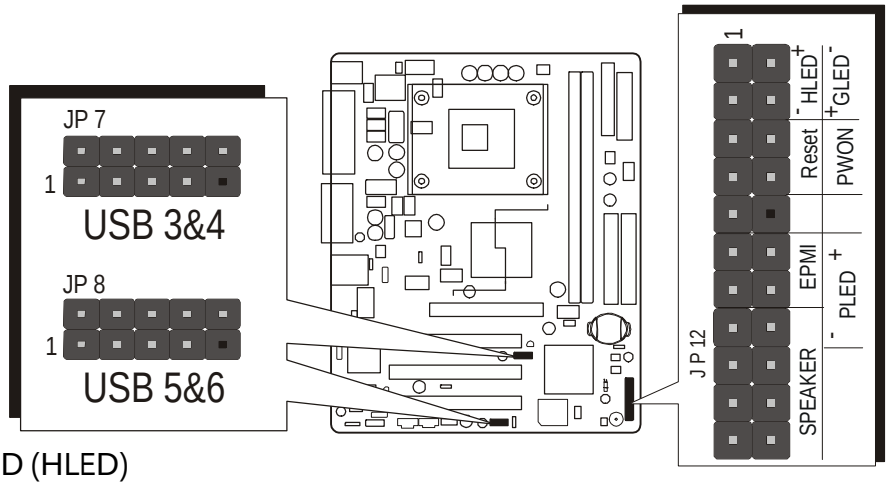
   (If your computer case is already equipped with mounting studs, you need to tighten the screws to attach the mainboard.)

Note: In most computer housings, you can find 4 or more holes to place studs for fixing the mainboard. If there aren't enough matching holes, screw at least 4 studs to ensure the proper attachment of the mainboard.

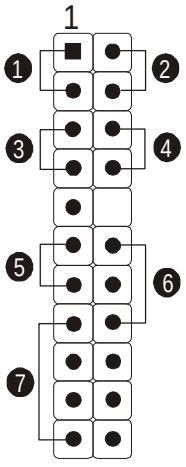
Step 6

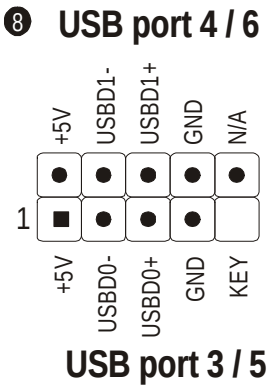
Connect Front-Panel LEDs/Switches/Speaker/USBs

You can find there are several cables existing in the system case and originating from the front-panel devices (HDD LED, Green LED, Reset switch, PC Speaker, and USB devices etc.). These cables serve to connect the front-panel LEDs, switches, speaker, and USB connectors to JP12, JP7, and JP8, as shown below.



1. HDD LED (HLED)
2. Green LED (GLED)
3. Hardware Reset Switch (Reset)
4. ATX Soft Power On/Off (PWON)
5. Hardware System Management Interface (EPMI)
6. Power LED (PLED)
7. PC Speaker (SPEAKER)
8. Extended USB Headers (USB 3&4/USB 5&6)

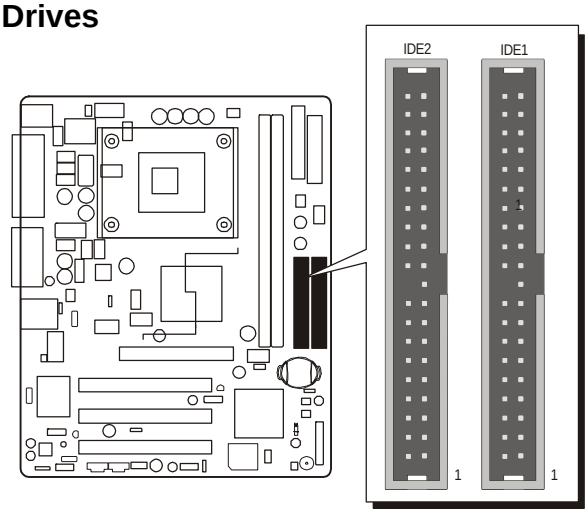




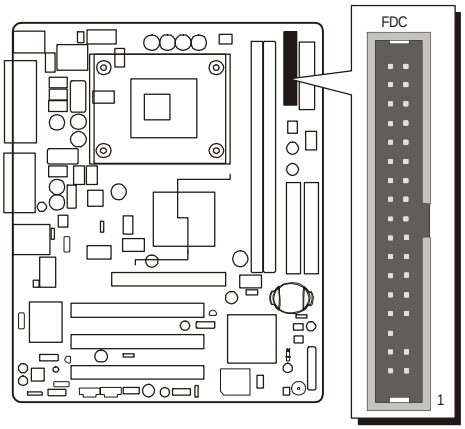
Step 7

Connect IDE and Floppy Disk Drives

1. IDE cable connectors



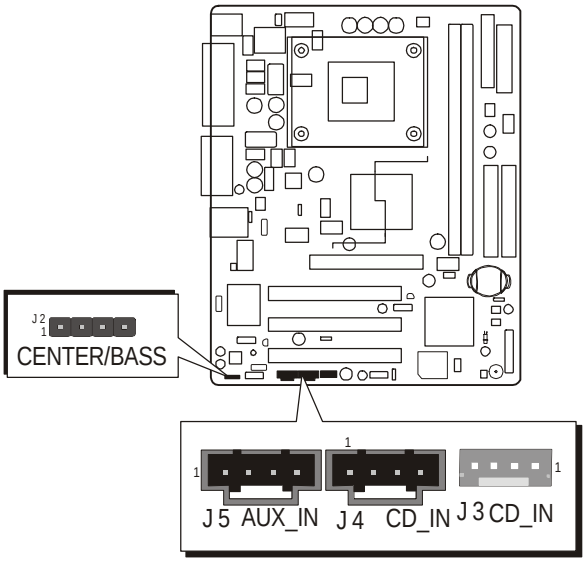
2. Floppy cable connector



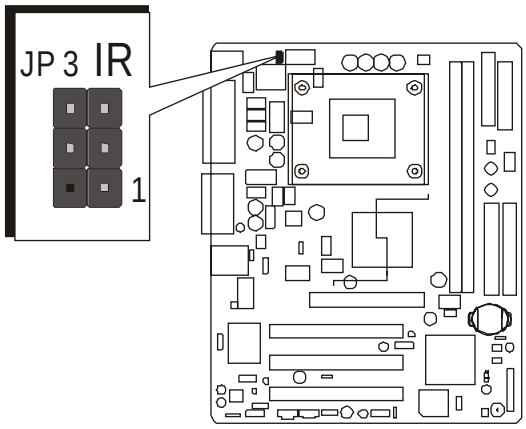
Step 8

Connect Other Internal Peripherals

1. CD_IN, AUX_IN, and CENTER/ BASS connectors



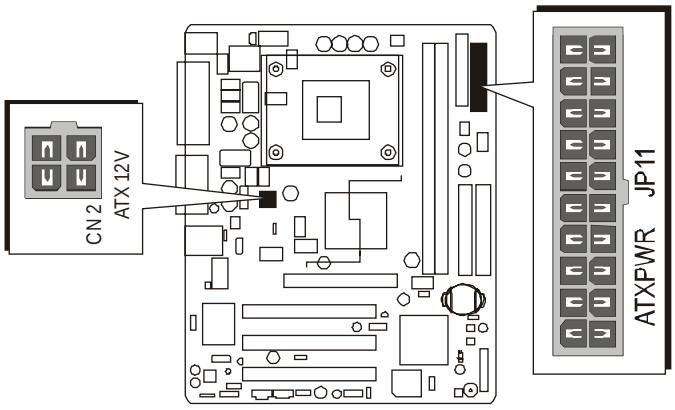
2. IR connector



Step 9

Connect the Power Supplies

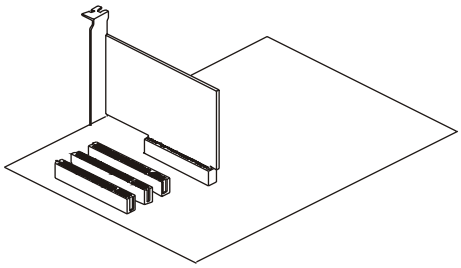
1. System power connectors



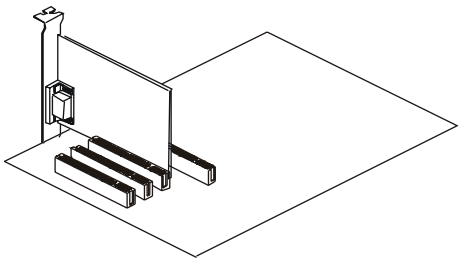
Step 10

Install Add-On Cards in Expansion Slots

1. Accelerated Grapics Port (AGP) Card **(MB50/N only)**



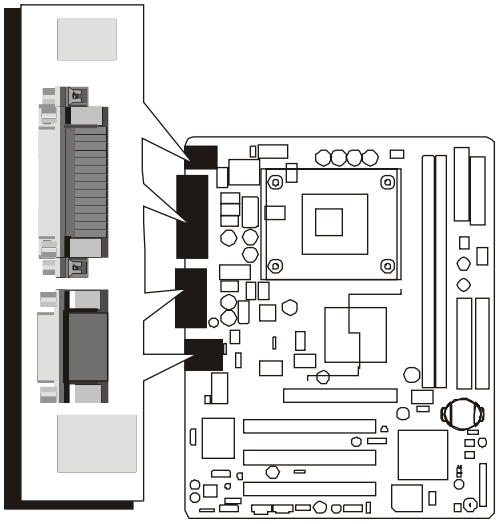
2. PCI Card



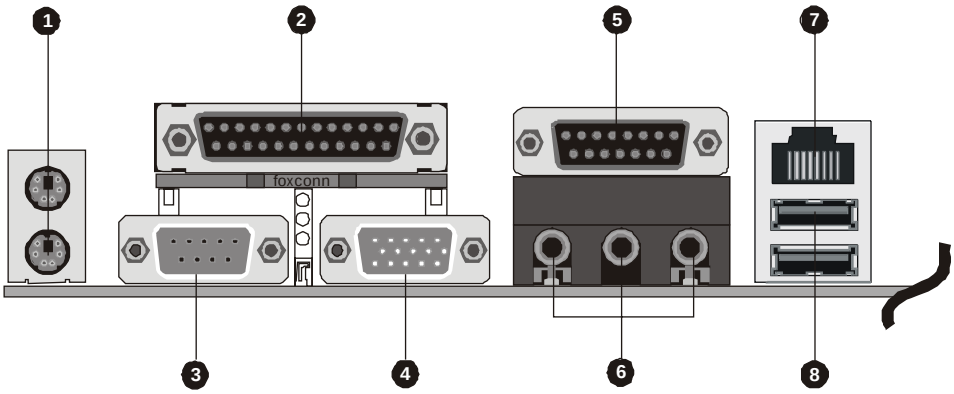
Step 11

Connect External Peripherals to Back-Panel

You are now ready to connect the external peripherals to your system's back-panel.



1. PS/2 Mouse and PS/2 Keyboard
2. Parallel Port
3. COM Port
4. VGA Port
5. MIDI/Game Port
6. Audio Line-Out/Line-In/Mic-In Ports
7. LAN Port
8. USB Port1/2



Step 12

System Boot Up For the First-Time

To ensure your system completedly and correctly installed, please refer to the above installation steps once again before first booting up your system.

1. Insert a system-bootable floppy disk (DOS 6.2X, Windows 9X/NT, or others), which contains the FDISK and FORMAT utilities.

2. Turn on the system power.

3. First, you need to use the FDISK utility to create a primary partition of the hard disk. You can also add an extended partition if your primary partition does not use all of the available hard disk space. If you choose to add an extended partition, you will have to create one or more logical partitions to occupy all the space available to the extended partition. The FDISK utility will assign a drive letter (i.e. C:, D:, E:,.....) to each partition shown in the FDISK program. After the FDISK procedure, reboot your system by using the same disk.

Note: DOS 6.2X and Windows 95A can only support up to 2.1GB of HDD partition. If you use the FDISK utility with one of the operating systems mentioned above, you can only install your HDD into any partitions no larger than 2.1GB.

4. Now, use the FORMAT utility to format all the partitions you've created. When formatting the primary partition (C:), key in the command, "FORMAT C:/S."

Note: FORMAT C:/S can transfer all the necessary system files into the primary partition of your hard disk. Afterwards, your HDD will become a bootable drive.

5. Install all the necessary drivers for CD-ROM, Mouse, etc.

6. Setup the complete operating system according to your OS installation guide.

Step 13

Install Drivers & Software Components

Please note that all the system utilities and drivers are designed for Win 9x/ 2000/ME/NT/XP operating systems. Make sure your operating system is already installed before running the installation programs on CD-ROM.

1. Insert the MB48/N & MB50/N bundled CD-ROM into your CD-ROM drive. The auto-run program will display the main installation window on screen.
2. Choose "Install Mainboard MB48/N Software" and complete it, or
3. Choose "Install Mainboard MB50/N Software" and complete it.
4. Choose "Install Intel Chipset driver" and complete it.
5. Choose "Install Intel Ultra ATA Driver" and complete it.
6. Choose "Install VGA Driver" and complete it.
7. Choose "Install Audio Driver" and complete it.
8. Choose "Install LAN Driver" and complete it **(MB48N/MB50N only)**.
9. Choose "Install USB 2.0 Driver" and complete it.
10. Quit (from the auto-run installation program).

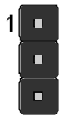
3.2 Jumper Settings

Several hardware settings are made through the use of mini jumpers to connect jumper pins on the mainboard. Pin #1could be located at any corner of jumpers, and the corner with a white right angle stands for Pin #1. There are several types of Pin #1 as shown below:

3-pin and multi-pin (> 3) jumpers shown as follows:

Pin #1 to the left:

Pin #1 on the top:



Pin #1 to the right:

Pin #1 on the bottom:

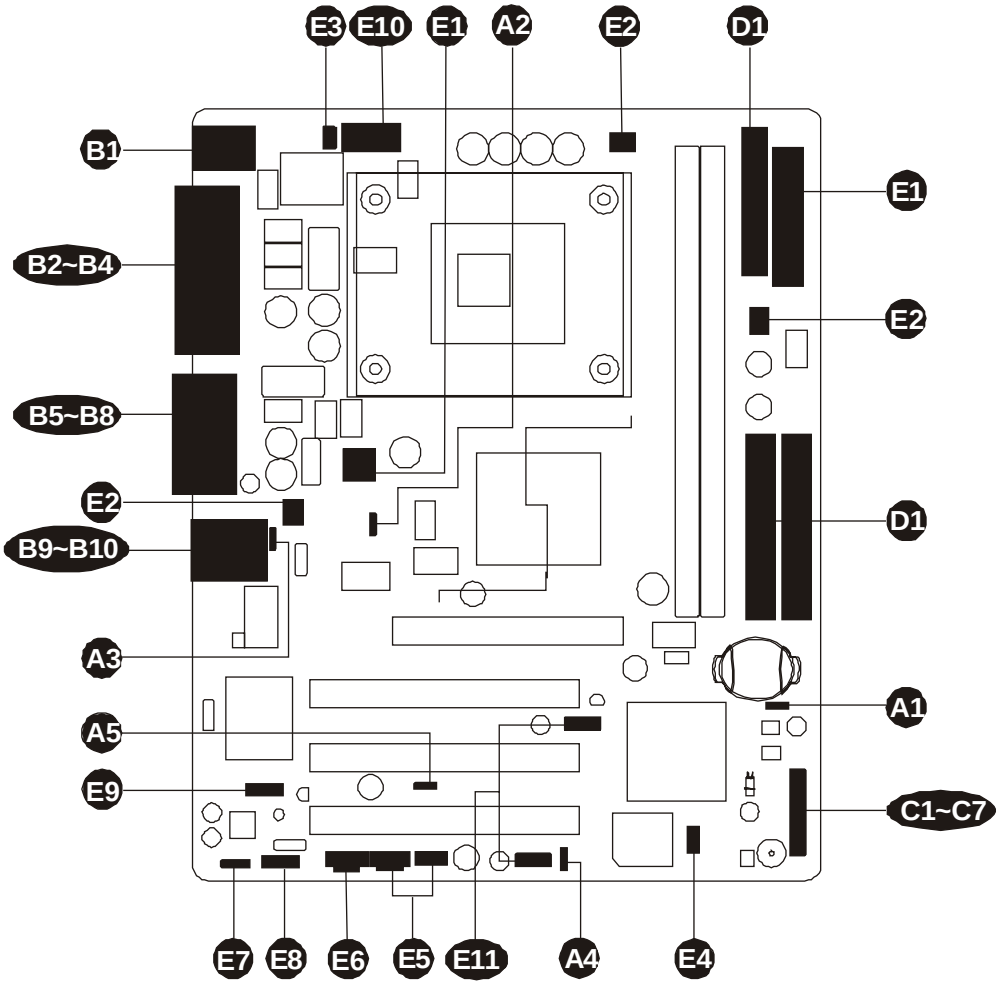
Jumpers with two pins capped are shown as  for Close [On] or  for Open [Off]. To do this, please place a plastic mini cap on the desired pair of pins.

Caution!

1. Do not remove the mainboard from its antistatic protective packaging until you are ready to install it.
2. Carefully hold the mainboard by its edges and avoid touching its components. When putting the mainboard down, place it on top of its original packaging film, with the component side up.
3. Wear an antistatic wrist strap or take other suitable measures to prevent electrostatic discharge (ESD) as handling this equipment.

Jumpers & Connectors Guide

Refer to the mainboard layout on page 10 and this section to help you identify jumpers, slots, and connectors along with their assigned functions during installation:



CPU/Memory/Expansion Slots

Socket 478	: CPU socket for Pentium 4/Celeron, 478-pin processors
DIMM1/2	: Two DIMM slots for 128, 256, 512 MB, and 1GB of 2.5V DDR SDRAM (The total installed memory does not exceed 2GB.)
AGP	: One 4X AGP slot **(MB50/N only)**
PCI	: Three 32-bit PCI expansion slots

Jumpers

A1 JP1 : Clear CMOS setting
A2 JP2 : FSB speed configuration setting
A3 JP5 : USB3/4 power-on setting
A4 JP6 : USB5/6 power-on setting
A5 JP13 : Onboard LAN setting

Back-Panel Connectors

B1 MS : PS/2 mouse port
B1 KB : PS/2 keyboard port
B2 PRN1 : Parallel port (printer)
B3 COM1 : Serial port
B4 VGA1 : VGA port
B5 LINE-OUT : Line-Out port
B6 LINE-IN : Line-In port
B7 MIC-IN : Mic-In port
B8 MIDI/GAME : MIDI/Game port
B9 USB : USB1/USB2 ports
B10 LAN1 : LAN port **(MB48N/MB50N only)**

Front-Panel Connectors

C1 HLED : HDD LED
C2 GLED : Green LED
C3 Reset : Hardware reset switch
C4 PWON : ATX power on/off switch
C5 EPMI : EPMI connector
C6 PLED : Power LED
C7 SPEAKER : Speaker connector

Internal-Peripheral Connectors

D1 IDE1 : IDE primary interface (dual-channel)
D1 IDE2 : IDE secondary interface (dual-channel)
D1 FDC : Floppy disk drive interface

Other Connectors

E1	JP11/CN2	: ATX power supply connectors
E2	FAN1	: CPU fan connector
E2	FAN2	: System fan connector
E2	FAN3	: System fan connector
E3	JP3	: IR header
E4	CN1	: Wake-On-LAN connector
E5	J3/J4	: Audio CD_IN connectors
E6	J5	: Audio AUX_IN connector
E7	J2	: Audio Center/Bass connector
E8	JP9	: SPDIF Ext. header
E9	JP10	: Front-panel audio connector
E10	COM2	: Serial port connector
E11	JP7/ JP8	: Extended USB headers (USB 3&4/USB 5&6)

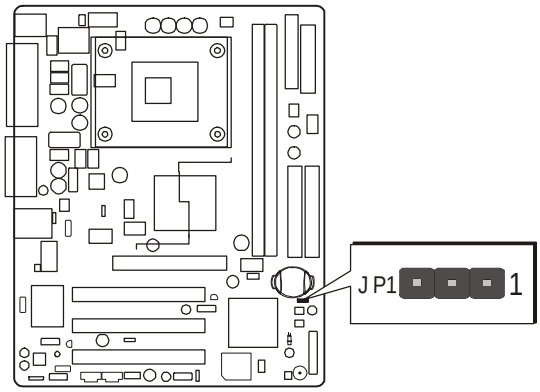
☞ *Jumpers*

A1 Clear CMOS Setting (JP1)

JP1 is used to clear CMOS data. Clearing CMOS will result in permanently erasing previous system configuration settings and the original factory-set system settings.

Pin 1-2 (Default)

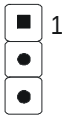
Pin 2-3 (Clear CMOS)



Step 1. Turn off the system power (PC-- > Off).
Step 2. Remove the ATX power cable from the ATX power connector.
Step 3. Remove the jumper cap from pins 1-2.
Step 4. Place the jumper cap on pins 2-3 for a few seconds.
Step 5. Restore the jumper cap to pins 1-2.
Step 6. Plug the ATX power cable into the ATX power connector.
Step 7. Turn on the system power (PC-- > On).

A2 FSB Speed Configuration Setting (JP2)

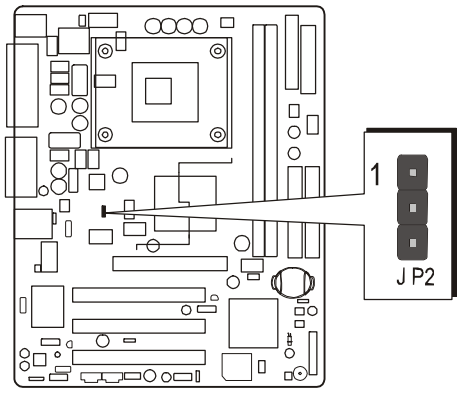
MB48/N or MB50/N provides JP2 to set front side bus at 400/533MHz. Insert the mini-jumper cap on pins 1-2 to set FSB at 400MHz. Removing the cap will set FSB at 533MHz.



Open: 533MHz

Pin 1-2: 400MHz

Pin 2-3: Auto



A3 USB3/4 Power-On Setting (JP5)

MB48/N or MB50/N provides JP5 to have USB devices connected to back-panel stay power-on from soft-off stage.

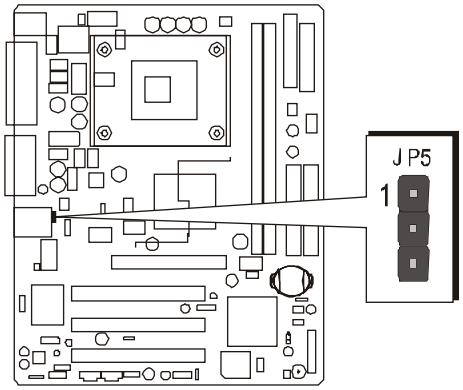
Place the jumper cap on pins 2-3 to enable the USB device (USB 3&4) stay power-on on back-panel.

Pin 1-2 (Disabled/Default)

(USB 5V function)

Pin 2-3 (Enabled)

(USB 5VSB function)



A4 USB5/6 Power-On Setting (JP6)

MB48/N or MB50/N provides JP6 to have USB devices connected to back-panel stay power-on from soft-off stage.

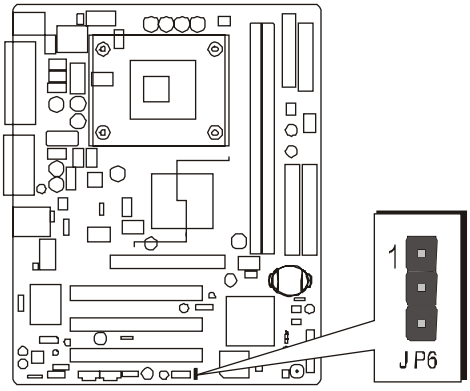
Place the jumper cap on pins 2-3 to enable the USB device (USB 5&6) stay power-on on back-panel.

Pin 1-2 (Disabled/Default)

(USB 5V function)

Pin 2-3 (Enabled)

(USB 5VSB function)

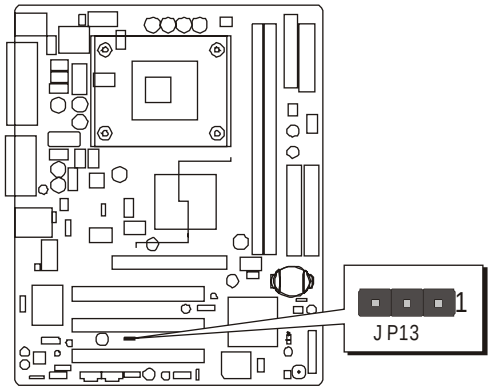


A5 Onboard LAN Setting (JP13)

JP13 is used to enable or disable the built-in LAN adapter.

Pin 1-2 (Enabled)

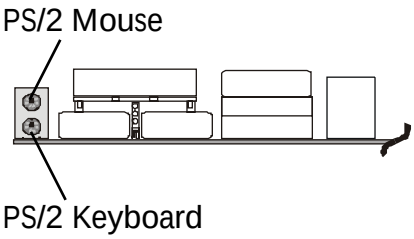
Pin 2-3 (Disabled)



☞ *Back-Panel Connectors*

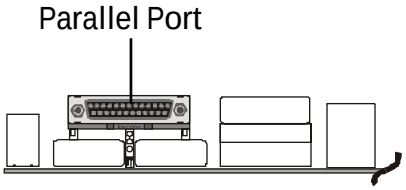
B1 PS/2 Mouse & PS/2 Keyboard Connectors

Two 6-pin female PS/2 Mouse & Keyboard connectors are located on the rear panel of the mainboard. In a desktop computer, the PS/2 Mouse connector is situated on the top of the PS/2 Keyboard connector. In a tower computer, the PS/2 Mouse connector is located on the right side of the PS/2 Keyboard connector.



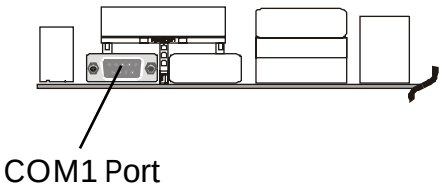
B2 Parallel Port Connector

One DB25 female parallel connector is located on the rear panel of the mainboard. Plug the cable from your parallel device (printer, scanner, etc.) into this connector.



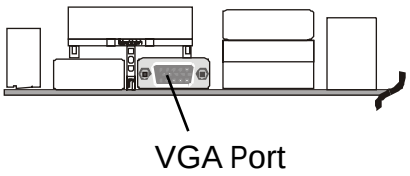
B3 COM1 Port Connector

This mainboard can accommodate one serial device on COM1. Attach a serial device cable to the DB9 serial port COM1 on the back-panel of your computer.



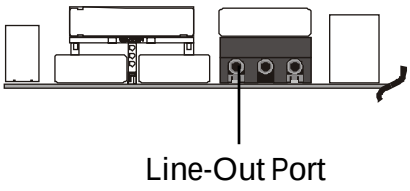
B4 VGA Port Connector

One 15-pin VGA connector is located on the rear panel of the mainboard.



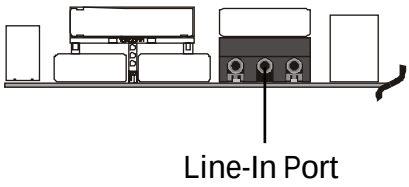
B5 Line-Out Port Connector

Line-Out is a stereo output port through which the combined signal of all internal and external audio sources on the board is output. It can be connected to 1/8-inch TRS stereo headphones or to amplified speakers.



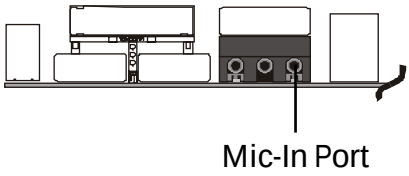
B6 Line-In Port Connector

Line-In is a stereo line-level input port that accepts a 1/8-inch TRS stereo plug. It can be used as a source for digital sound recording, a source to be mixed with the output, or both.



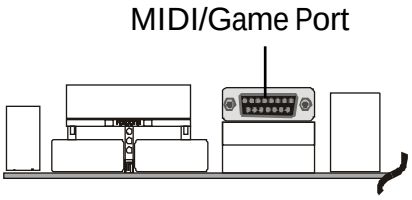
B7 Mic-In Port Connector

Mic-In is a 1/8-inch jack that provides a mono input. It can use a dynamic mono or stereo microphone with a resistance of not more than 600 Ohms.



B8 MIDI/Game Port Connector

The MIDI/Game port is a 15-pin female connector. This port can be connected to any IBM PC compatible game with a 15-pin D-sub connector.

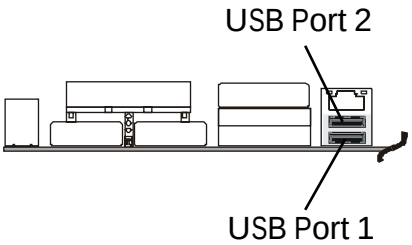


MIDI Instrument Connection

You will need a MIDI adapter to connect a MIDI compatible instrument to the sound card. The MIDI adapter can in turn be connected to the Joystick/MIDI port. You will also need the MIDI sequencing software to run MIDI instruments with your computer into this connector.

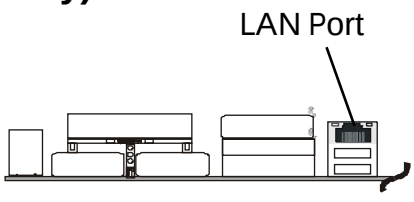
B9 USB1/USB2 Port Connectors

This mainboard offers 2 USB ports on back-panel. Plug each USB device jack into an available USB1/2 connector.



B10 LAN Port Connector (MB48N/MB50N only)

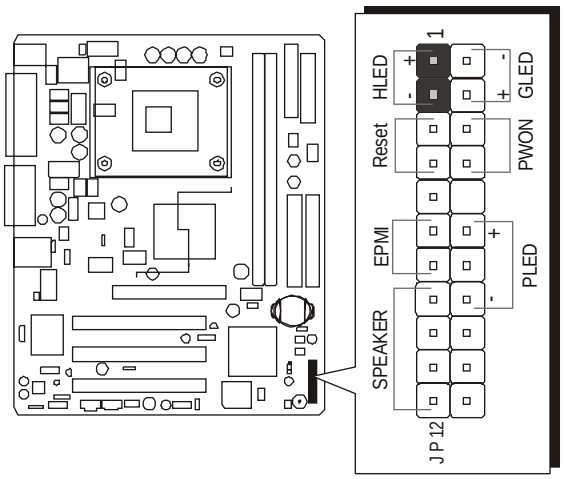
This mainboard can accommodate one device on LAN. Attach a RJ-45 cable to this LAN port connector on back-penel.



☞ *Front-Panel Connectors*

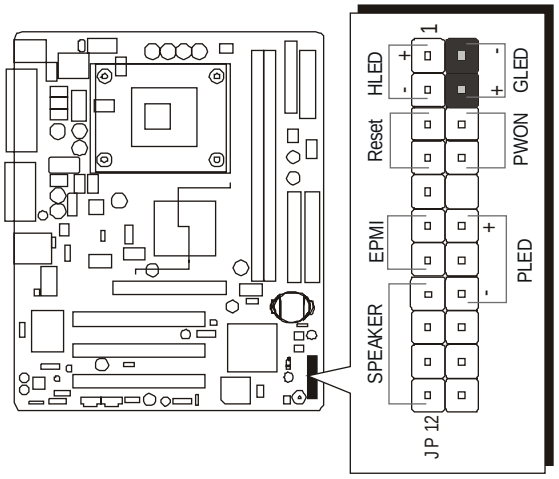
ⓒ1 HDD LED Connector (HLED)

Attach a connector cable from the IDE device LED to the 2-pin (HLED) header. The HDD LED lights up whenever an IDE device is active.



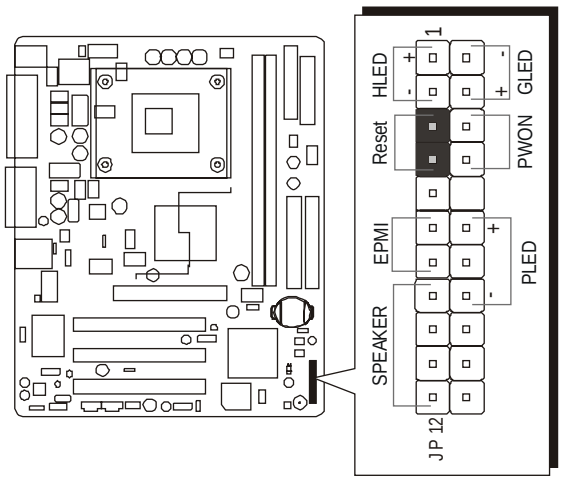
ⓒ2 Green LED Connector (GLED)

The Green LED (GLED) indicates that the system is currently in one of the power saving modes (Doze/Standby/Suspend). When the system resumes to the normal operation mode, the Green LED will go off. Attach a 2-pin Green LED cable to the GLED header.



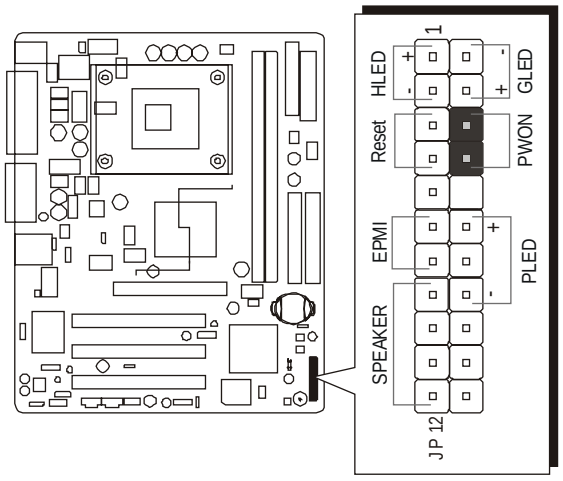
③ Hardware Reset Connector (Reset)

Attach a cable to the 2-pin (Reset) header. Pressing the reset switch causes the system to restart.



④ ATX Power On/Off Switch Connector (PWON)

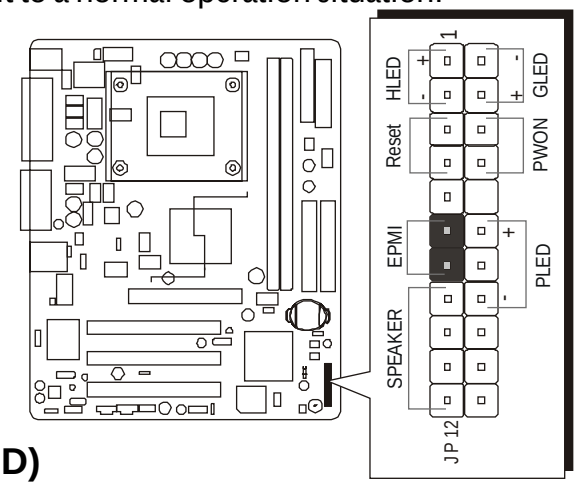
The Power On/Off Switch is a momentary type switch used for turning on or off the ATX power supply. Attach a connector cable to the 2-pin (PWON) header on the mainboard.



Note : Please notice all the LED connectors are directional. If your chassis's LED does not light up during running, please change it to the opposite direction.

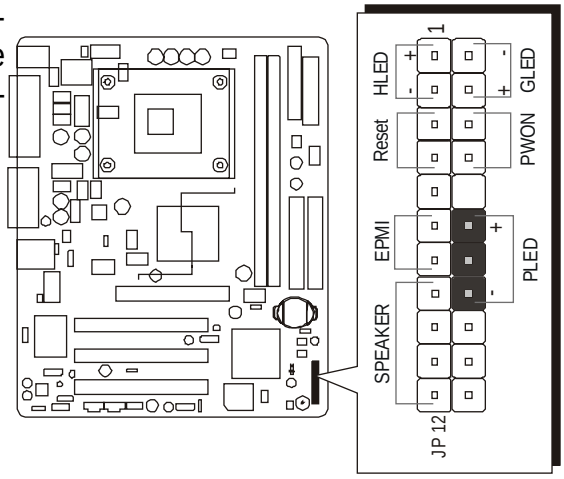
⑤ EPMI Connector (EPMI)

A Hardware System Management Interface (EPMI) header may be attached to a 2-pin momentary switch. Press the switch to force the system into a power saving mode; press it again to resume it to a normal operation situation.



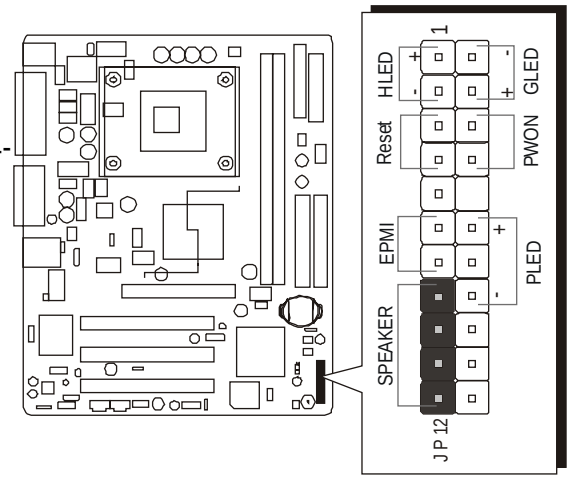
⑥ Power LED Connector (PLED)

Attach a 3-pin Power LED connector cable to the (PLED) header. The power LED stays light while the system is on.



⑦ Speaker Connector (SPEAKER)

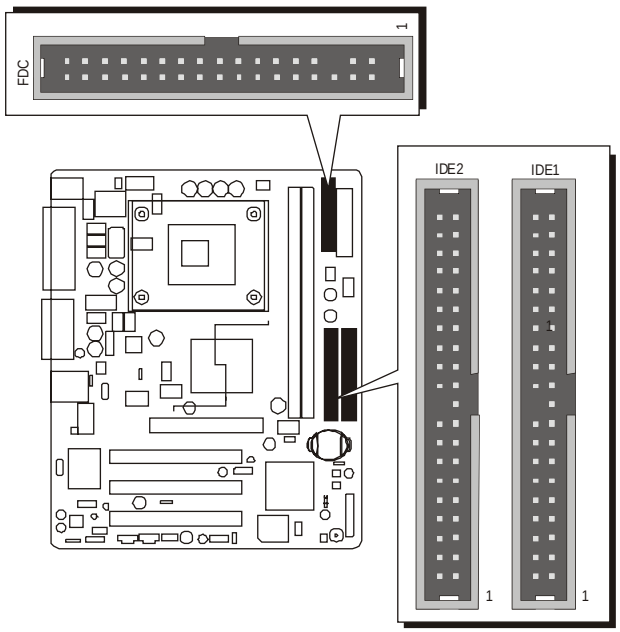
Attach a PC speaker cable to the 4-pin speaker connector (SPEAKER).



☞ *Internal Peripheral Connectors*

D1 Enhanced IDE and Floppy Connectors (IDE1/2 & FDC)

MB48/N or MB50/N mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2), providing support for up to four IDE devices, such as CD-ROM and Hard Disk Drive (HDD). This mainboard also includes one 34-pin floppy disk controller (FDC) to accommodate the Floppy Disk Drive (FDD). Moreover, this mainboard comes with one 80-pin ATA **100/66/33** ribbon cable to connect IDE HDD, and one 34-pin ribbon cable for FDD connection.

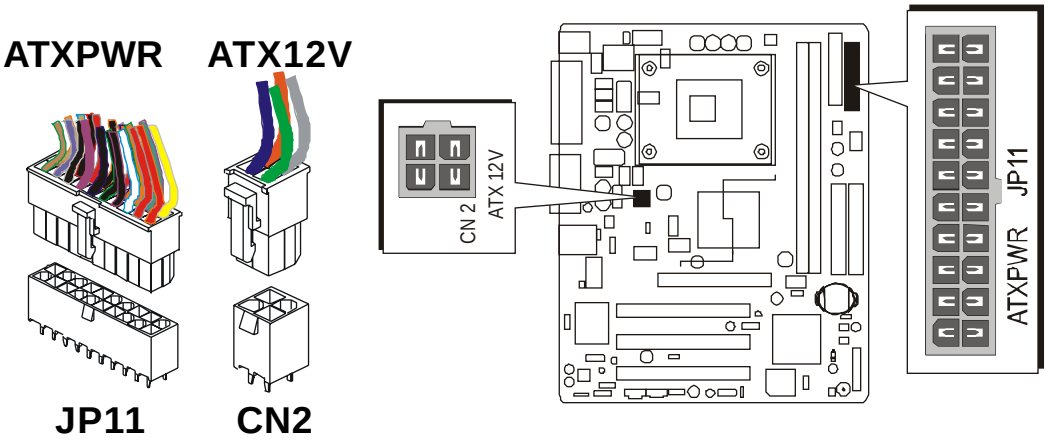


Important: Ribbon cables are directional; therefore, connect the red cable stripe to the same side.

☞ *Other Connectors*

ATX Power Supply Connectors (JP11 & CN2)

This motherboard uses 20-pin Pentium 4 standard ATX power header (ATXPWR, JP11), and comes with the other one (ATX12V, CN2) header. Please make sure you plug each in the right direction.

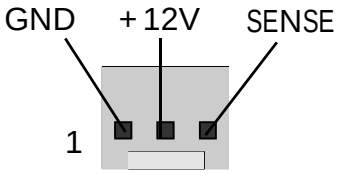


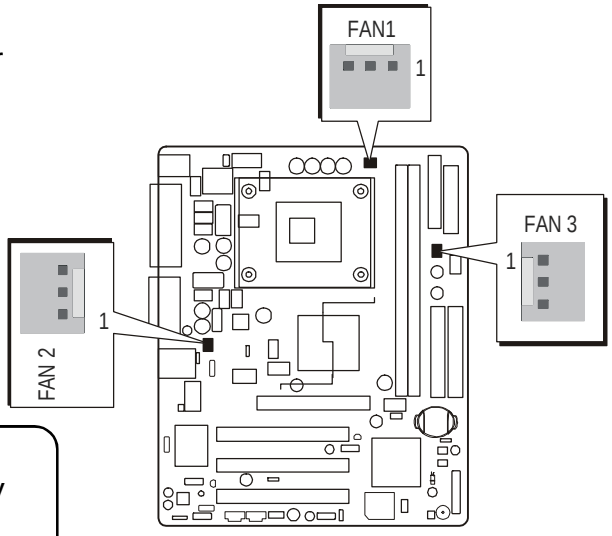
A traditional ATX system remains in the power-off stage when AC power resumes from power failure. However, it is inconvenient for a network server or workstation if there is not an UPS to execute power-on. Thus, this motherboard supports an AC Power Auto Recovery function to solve this problem. You may enable the function, "PWRON After PWR-Fail," in the sub-menu of "Power Management Setup" within the BIOS setup program.

Note 1:	The ATX power connector is directional and will not go in unless the guides match perfectly, making sure that pin#1 is properly positioned.
Note 2:	Make sure the latch of the ATX power connector clicks into place to ensure a solid attachment.
Note 3:	Your ATX power supply must be supplied to ACPI + 5V stand-by power and at least 720mA compatible.
Note 4:	Make sure your power supply have enough power for higher speed processor installed.

E2 CPU and System Fan Connectors (FAN1/2/3)

The mainboard provides three onboard 12V cooling fan power connectors to support CPU (FAN1) & the system (FAN2/3).





Note:
Both cable wiring and type of plug may vary, which depend on the fan maker. Keep in mind that the red wire should always be connected to the +12V header and the black wire to the ground (GND) header.

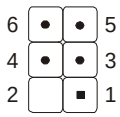
E3 IR Header (JP3)

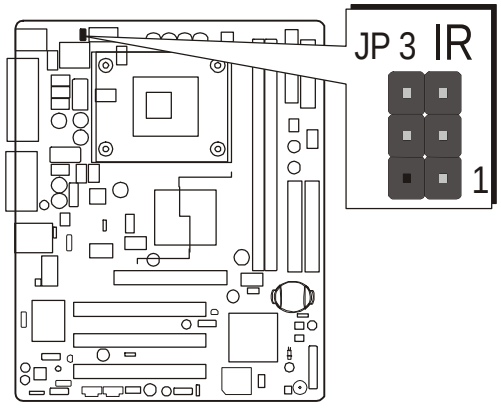
If you have an Infrared device, this mainboard can implement IR transfer function. This mainboard supports Normal, IrDA, ASKIR, or SCR transfer mode. To enable this function, follow the step below:

Attach a 5-pin infrared device cable to the IR (JP3) header. (Refer to the diagram below for the IR pin assignments.)

Pin Assignments:

1 = NC
2 = KEY
3 = +5V
4 = GND
5 = IRTX
6 = IRRX

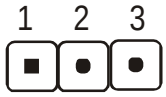




Note: Before connect your IR device to the IR (JP3) header, please note that every pin is properly allocated. If not, your IR device may be damaged.

E4 Wake-On-LAN Connector (CN1)

Attach a 3-pin connector through the LAN card that supports the Wake-On-LAN (WOL, CN1) function. This function lets users wake up the system through the LAN card.

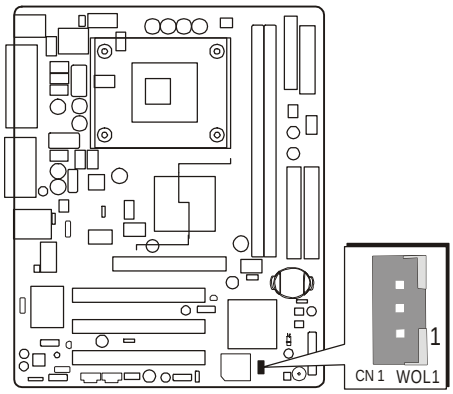


Pin Assignments:

1 = 5VSB

2 = GND

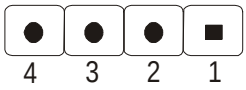
3 = Ring#



E5 Audio CD_IN Connectors (J3/J4)

Ports CD_IN (J3/J4) can be used to connect stereo audio inputs from CD-ROM, TV-tuner or MPEG card.

J3



Pin Assignments:

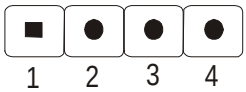
1 = CD-GND

2 = CD-R

3 = CD-GND

4 = CD-L

J4



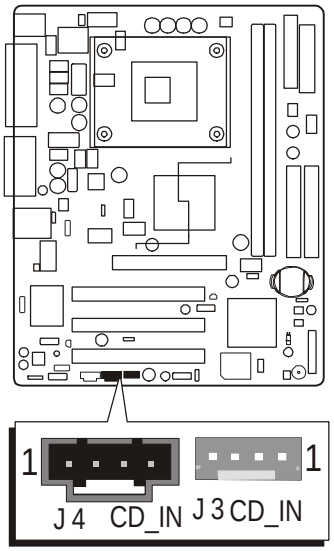
Pin Assignments:

1 = CD-L

2 = CD-GND

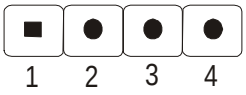
3 = CD-GND

4 = CD-R



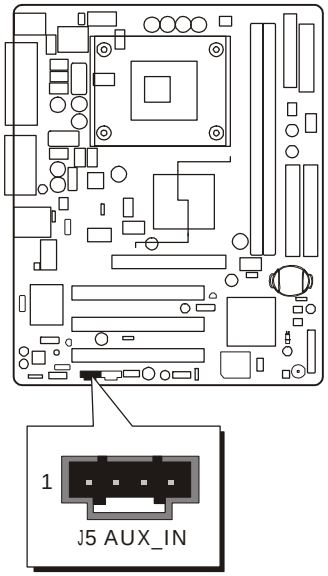
E6 Audio AUX_IN Connector (J5) (White)

Port J5 can be used to connect a stereo audio input from CD-ROM, TV-tuner or MPEG card.



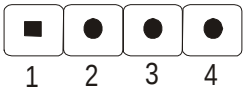
Pin Assignments:

1 = AUXL
2 = AGND
3 = AGND
4 = AUXR



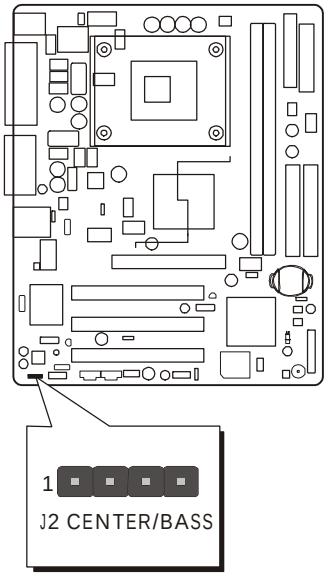
E7 Audio Center/Bass Connector (J2)

Port J2 can be used to connect a cable attached to center/bass amplified speakers.



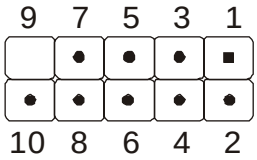
Pin Assignments:

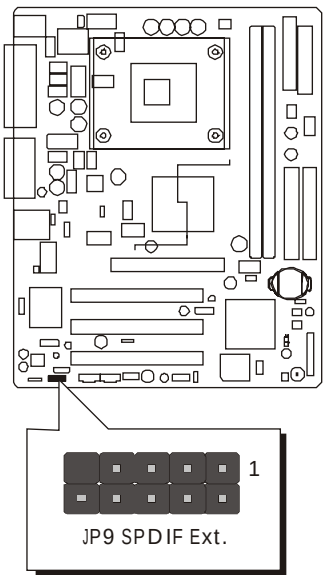
1 = CENTER
2 = GND
3 = GND
4 = BASS



E8 SPDIF Ext. Header (JP9)

Port JP9 can be used to connect a special device.



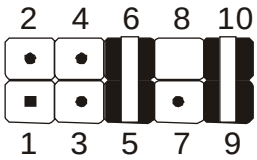


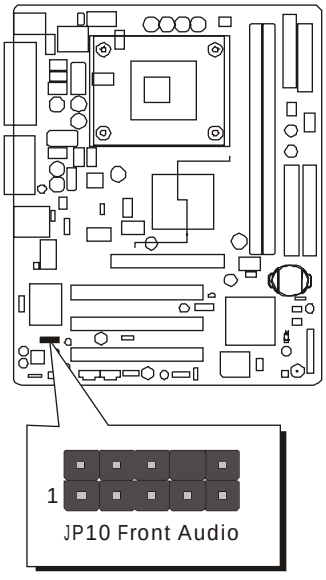
Pin Assignments:

1 = +12V	6 = GND
2 = VCC	7 = N/A
3 = N/A	8 = N/A
4 = SPDIF-OUT	9 = KEY
5 = SPDIF-IN	10 = GND

E9 Front-Panel Audio Connector (JP10)

This header allows users to install an auxiliary Front-Oriented Audio port for easier access. Either the Line-Out port connector on back-panel or Front-Panel Audio header is available at the same time. If you would like to use this header on front-panel, please remove all jumpers from the Audio header and install your special extra audio cable instead. Two mini jumpers must be setted on pins 5-6 and pins 9-10, when this header is not used.



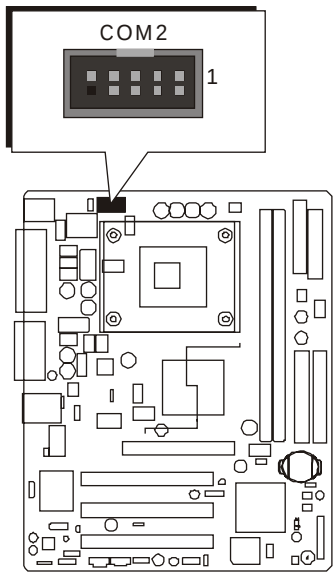


Pin Assignments:

1 = AUD_MIC	6 = AUD_RET_R
2 = AUD_GND	7 = N/C
3 = AUD_MIC_BIAS	8 = KEY
4 = AUD_VCC	9 = AUD_FRONT_L
5 = AUD_FRONT_R	10 = AUD_RET_L

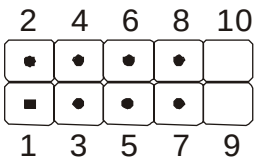
E10 Serial Port Connector (COM2)

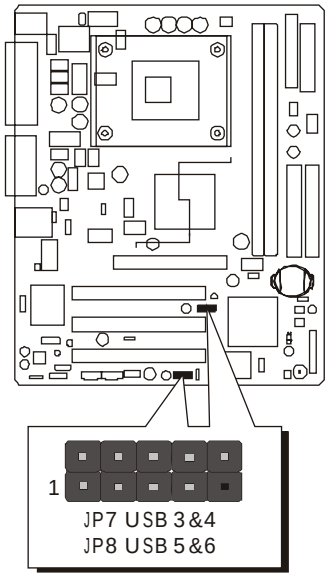
Port COM2 can be used to connect a serial port connector.



E11 Extended USB Headers (JP7/JP8)

Headers JP7 (USB 3&4) and JP8 (USB 5&6) are used to connect cables to USB connectors mounted on front-panel or back-panel. The USB cable is optional at the time of purchase.





Pin Assignments:

1 = +5V	6 = USBD1+
2 = +5V	7 = GND
3 = USBD0-	8 = GND
4 = USBD1-	9 = KEY
5 = USBD0+	10 = N/A

3.3 System Memory Configuration

The MB48/N or MB50/N mainboard has two 184-pin DIMM slots that allow you to install from 128MB up to 2GB of system memory.

Each 184-pin DIMM (Dual In-line Memory Module) slot can accommdate 128MB, 256MB, 512MB, and 1GB of PC1600/PC2100 (MB48/N), or of PC1600/PC2100/PC2700 (MB50/N) compliant 2.5V single or double side 64-bit wide data path DDR SDRAM modules.

1. Install Memory:

Install memory in any or all of the banks. The combination shown as follows.

DIMM Socket	Memory Modules	Module Quantity
DIMM 1	128MB, 256MB, 512MB and 1GB184-pin 2.5V DDR SDRAM DIMM	x 1
DIMM 2	128MB, 256MB, 512MB and 1GB184-pin 2.5V DDR SDRAM DIMM	x 1

Note: The total installed memory does not exceed 2 GB.

Note: You do not need to set any jumper to configure memory since the BIOS utility can detect the system memory automatically. You can check the total system memory value in the BIOS Standard CMOS Setup menu.

2. Upgrade Memory:

You can easily upgrade the system memory by inserting additional DDR SDRAM modules in available DIMM banks. The total system memory is calculated by simply adding up the memory in all DIMM banks After upgrade, the new system memory value will automatically be computed and displayed in the field "Standard CMOS Setup" of BIOS setup program.

4 SOFTWARE UTILITY

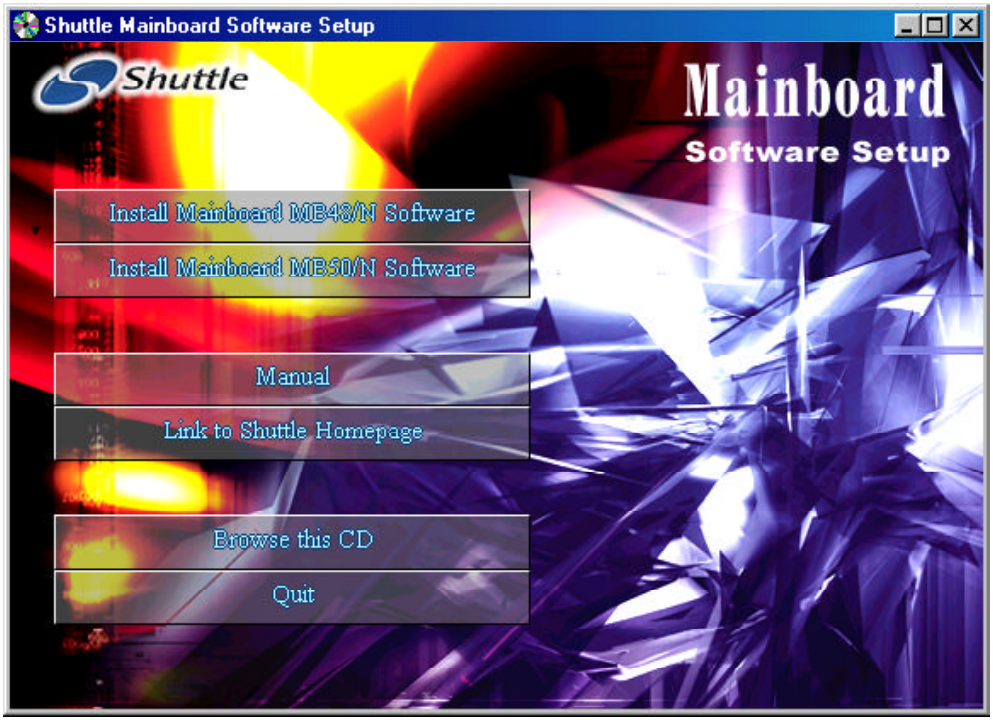
4.1 Mainboard CD Overview

Note: The CD contents attached in MB48/N or MB50/N mainboard are subject to change without notice.

To start your mainboard CD disc, just insert it into your CD-ROM drive and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click or run D:\Autorun.exe (assuming that your CD-ROM drive is drive D:)

Navigation Bar Description:

- ☞ Install Mainboard MB48/N Software - Installing Chipset, Ultra ATA, VGA, Audio, LAN (MB48N only), and USB 2.0 drivers.
- ☞ Install Mainboard MB50/N Software - Installing Chipset, Ultra ATA, VGA, Audio, LAN (MB50N only), and USB 2.0 drivers.
- ☞ Manual - MB48/N and MB50/N user's manual in PDF format.
- ☞ Link to Shuttle Homepage - Link to shuttle website homepage.
- ☞ Browse this CD - Allows you to see contents of this CD.
- ☞ Quit - Close this CD.



4.2 Install Mainboard Software

Insert the attached CD into your CD-ROM drive and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in My Computer to bring up Shuttle Mainboard Software Setup screen.

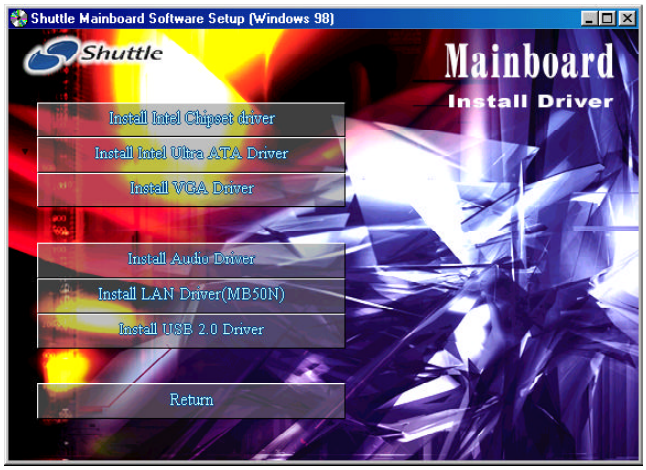
Select using your pointing device (e.g. mouse) on the"Install Mainboard MB48/N Software or Install Mainboard MB50/N Software" bar to install the mainboard software.

The Mainboard MB48/N Software includes:

[4.2.A] Install Intel Chipset Driver
[4.2.B] Install Intel Ultra ATA Driver
[4.2.C] Install VGA Driver
[4.2.D] Install Audio Driver
[4.2.E] Install LAN Driver (MB48N only)
[4.2.F] Install USB 2.0 Driver

The Mainboard MB50/N Software includes:

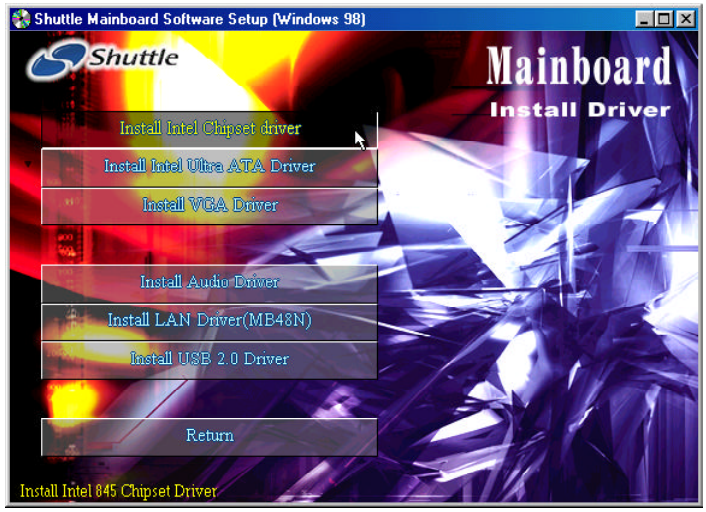
[4.2.A] Install Intel Chipset Driver
[4.2.B] Install Intel Ultra ATA Driver
[4.2.C] Install VGA Driver
[4.2.D] Install Audio Driver
[4.2.E] Install LAN Driver (MB50N only)
[4.2.F] Install USB 2.0 Driver



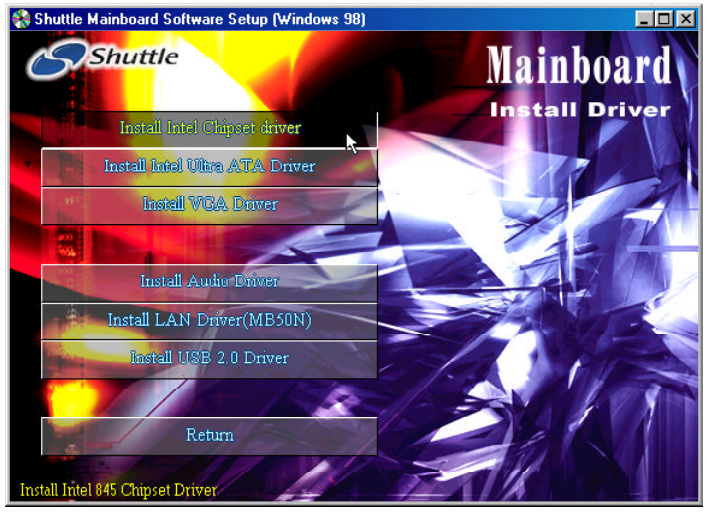
4.2.A Install Intel Chipset Driver

Select using your pointing device (e.g. mouse) on the "Install Intel Chipset driver" bar to install the chipset driver.

MB48/N



MB50/N



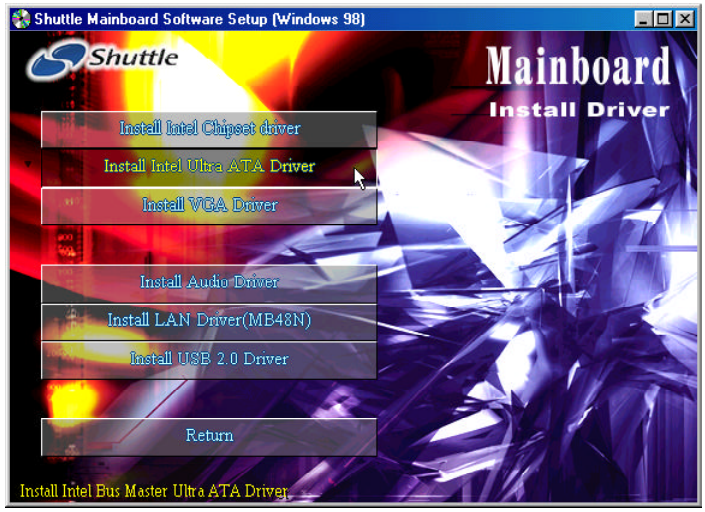
Once you made your selection, a Setup window run the installation automatically.

When the copying files is done, make sure you **reboot** the system to take the installation effect.

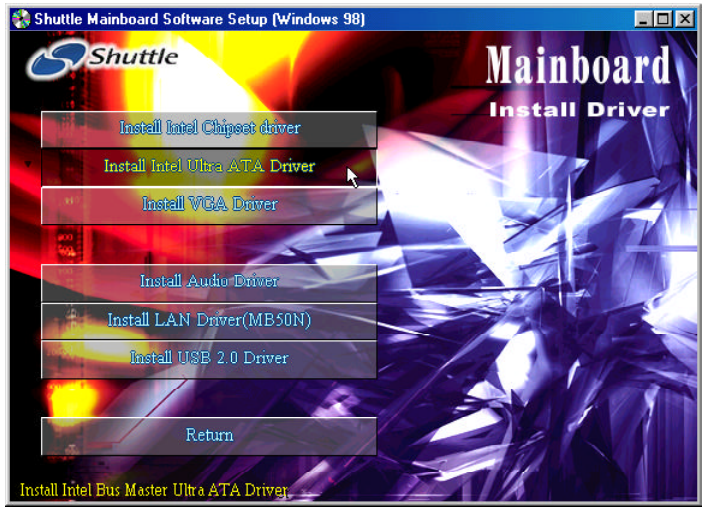
4.2.B Install Intel Ultra ATA Driver

Select using your pointing device (e.g. mouse) on the "Install Intel Ultra ATA Driver" bar to install the ultra ATA driver.

MB48/N



MB50/N



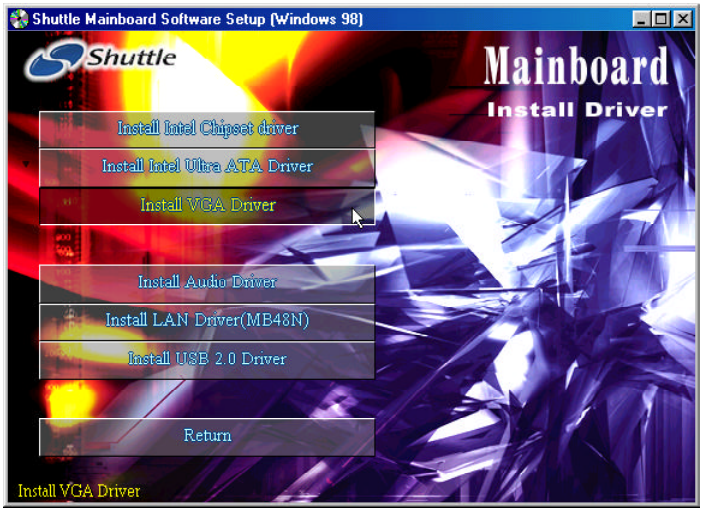
Once you made your selection, a Setup window run the installation automatically.

When the copying files is done, make sure you **reboot** the system to take the installation effect.

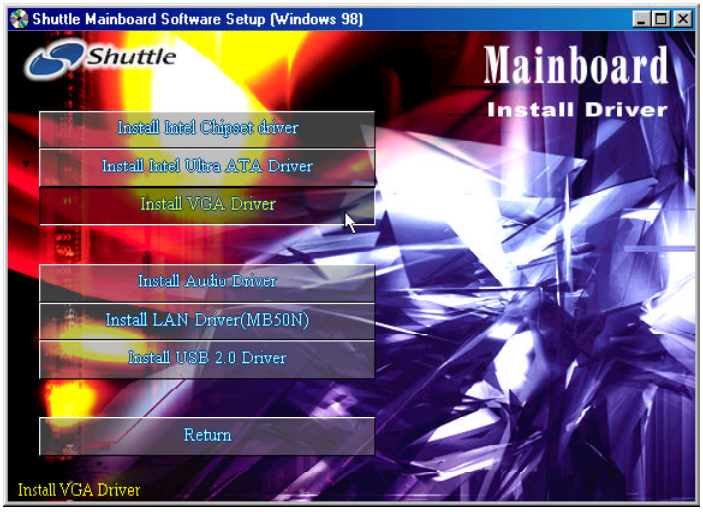
4.2.C Install VGA Driver

Select using your pointing device (e.g. mouse) on the "Install VGA Driver" bar to install the VGA driver.

MB48/N



MB50/N



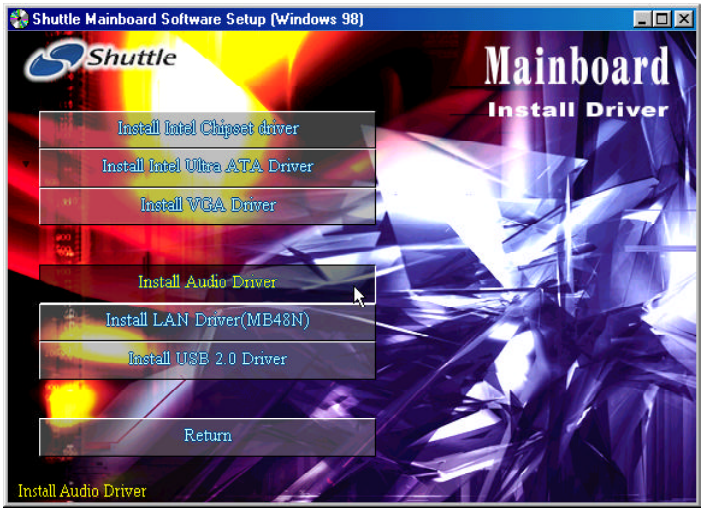
Once you made your selection, a Setup window run the installation automatically.

When the copying files is done, make sure you reboot the system to take the installation effect.

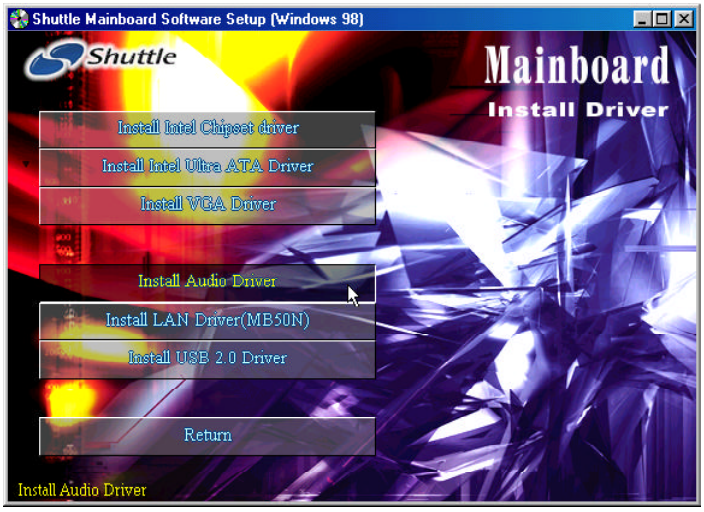
4.2.D Install Audio Driver

Select using your pointing device (e.g. mouse) on the "Install Audio Driver" bar to install the audio driver.

MB48/N



MB50/N



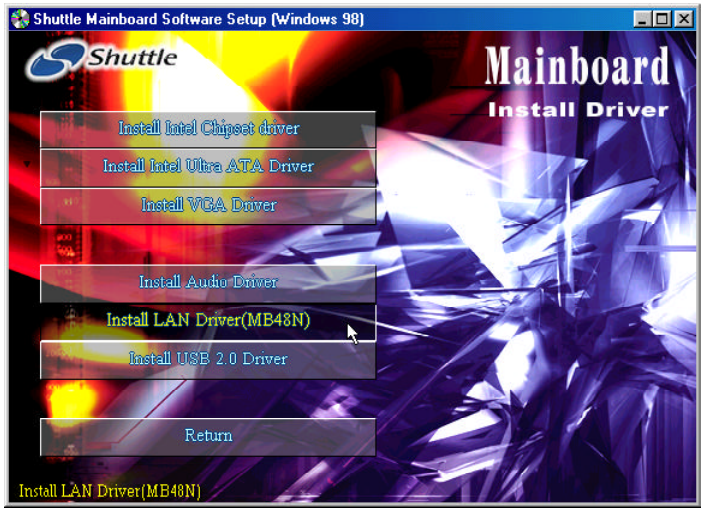
Once you made your selection, a Setup window run the installation automatically.

When the copying files is done, make sure you reboot the system to take the installation effect.

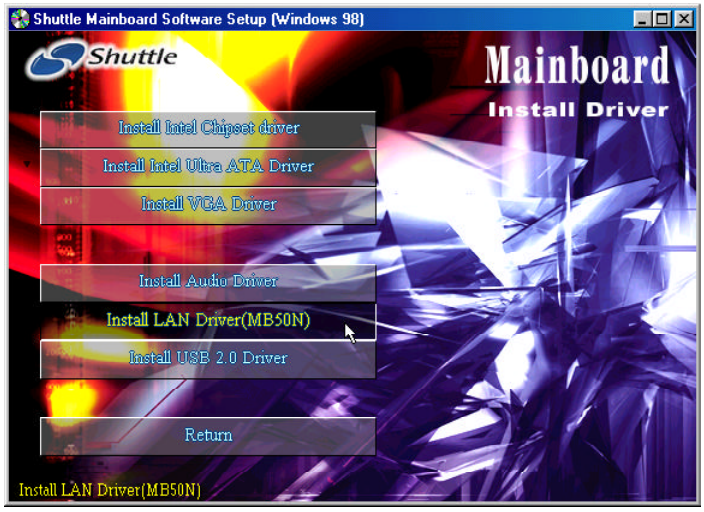
4.2.E Install LAN Driver (MB48N/MB50N only)

Select using your pointing device (e.g. mouse) on the "Install LAN Driver" bar to install the LAN driver.

MB48N



MB50N



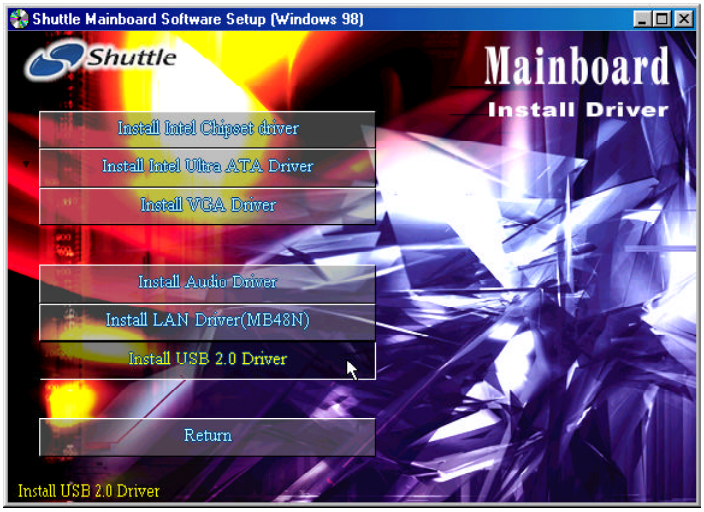
Once you made your selection, a Setup window run the installation automatically.

When the copying files is done, make sure you **reboot** the system to take the installation effect.

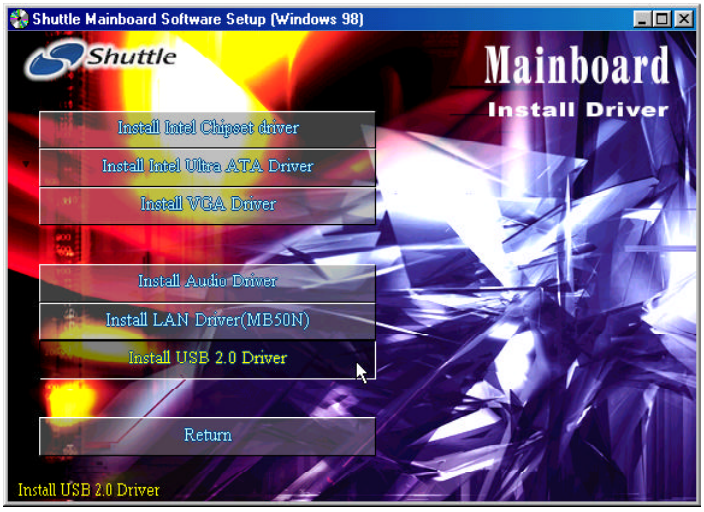
4.2.F Install USB 2.0 Driver

Select using your pointing device (e.g. mouse) on the "Install USB 2.0 Driver" bar to install the USB 2.0 driver.

MB48/N



MB50/N

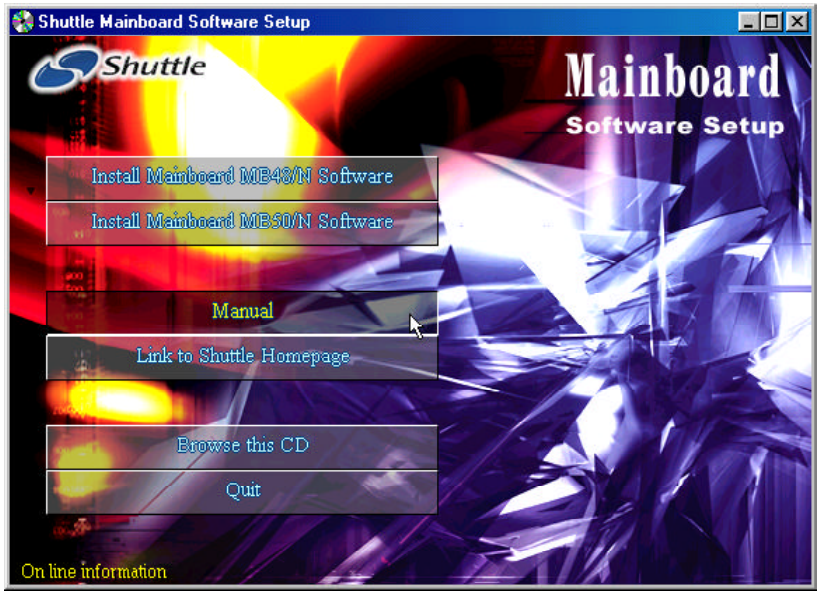


Once you made your selection, a Setup window run the installation automatically.

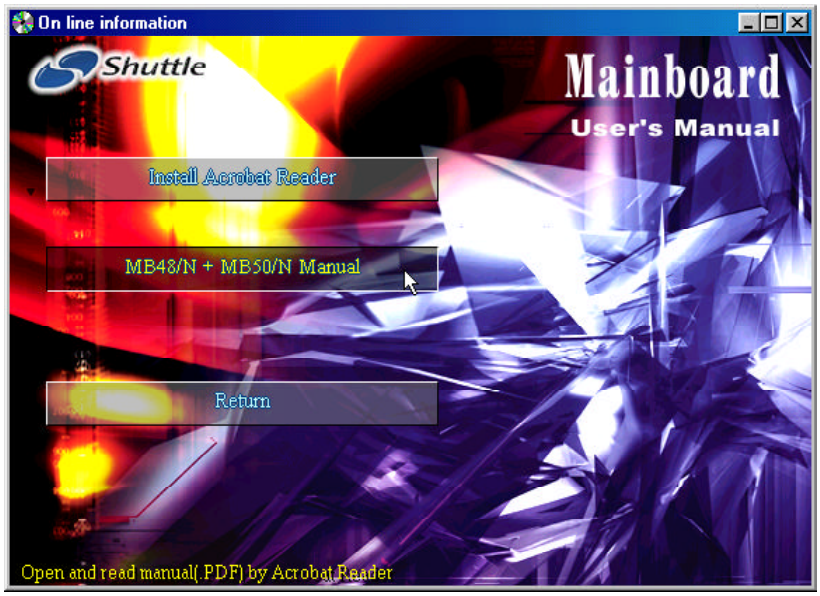
When the copying files is done, make sure you reboot the system to take the installation effect.

4.3 View the User's Manual

Select using your pointing device (e.g. mouse) on the "Manual" bar.



Click on the "Install Acrobat Reader" bar if you need to install it, or click on the "MB48/N + MB50/N Manual" bar to view user's manual.



5 BIOS SETUP

MB48/N or MB50/N BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed RAM so that it retains the Setup information even if the system power is turned off.

The system BIOS is managing and executing a variety of hardware related functions in the system, including:

System date and time
Hardware execution sequence
Power management functions
Allocation of system resources

5.1 Enter BIOS

To enter the BIOS (Basic Input /Output System) utility, follow these steps:

Step 1. Power on the computer, and the system will perform its POST (Power-On Self Test) routine checks.

Step 2. Press < Del > key immediately, or at the following message:
Press DEL to enter SETUP, or simultaneously press < Ctrl > , < Alt > , < Esc > keys

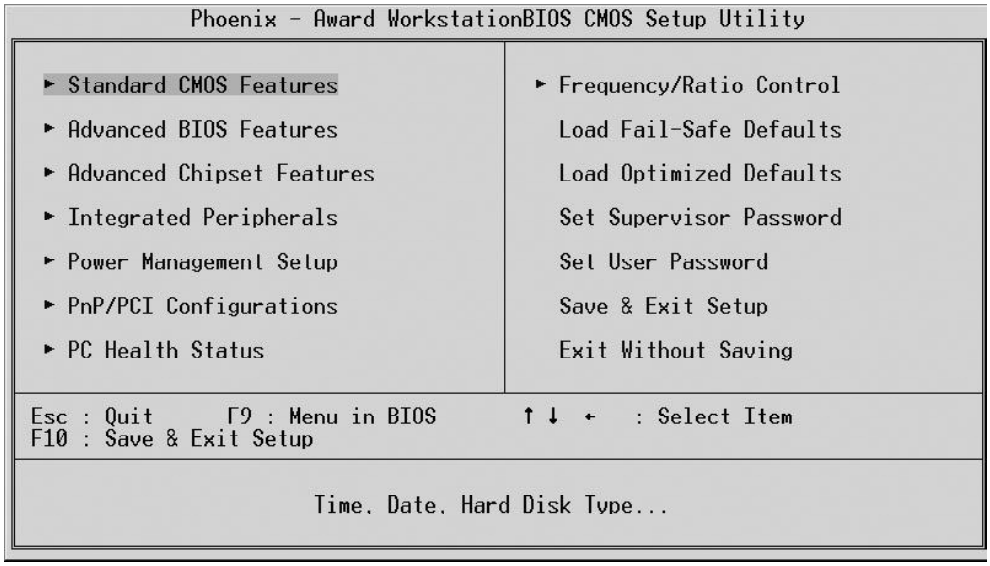
Note1. If you miss trains of words meationed in step2 (the message disappears before you can respond) and you still wish to enter BIOS Setup, restart the system and try again by turning the computer OFF and ON again or by pressing the < RESET > switch located at the computer Front-panel. You may also reboot by simultaneously pressing the < Ctrl > , < Alt > , < Del > keys.

Note2. If you do not press the keys in time and system does not boot, the screen will prompt an error message, and you will be given the following options:
"Press F1 to Continue, DEL to Enter Setup"

Step 3. As you enter the BIOS program, CMOS Setup Utility will prompt you the Main Menu, as shown in the next section.

5.2 The Main Menu

Once you enter the Award BIOS(tm) CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press < Enter > to accept and enter the sub-menu.



Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Features

This menu displays the basic information about your system.

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

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

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI Configurations

This option configures how PnP (Plug and Play) and PCI expansion cards operate in your system.

PC Health Status

This entry shows the current system temperature, voltage, and fan speed.

Frequency/Ratio Control

Use this menu to set the clock speed and system bus for your system.

Load Fail-Safe Defaults

Use this menu to install fail-safe defaults for all appropriate items in the setup utility.

Load Optimized Defaults

Use this menu to install optimized defaults for all appropriate items in the setup utility.

Set Supervisor/User Password

Use this menu to change, set, or disable supervisor / user password. It allows you to limit access to the system and Setup, or only to Setup.

Save & Exit Setup

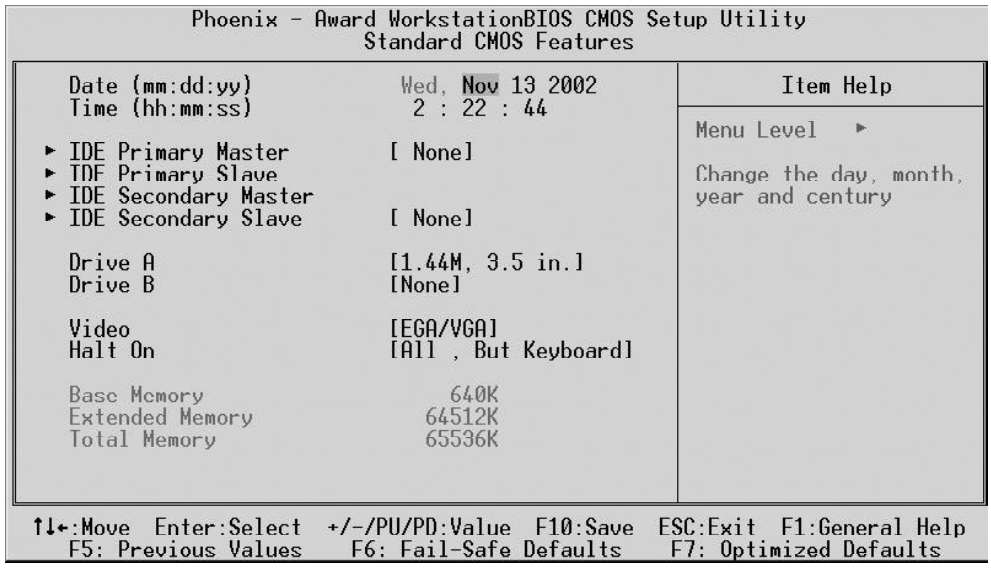
Save the changes that you have made in the Setup Utility and exit the Setup Utility.

Exit Without Saving

Abandon all changes that you have made in the Setup Utility and exit the Setup Utility.

Standard CMOS Features

These items in Standard CMOS Setup Menu are divided into 10 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 you want in each item.



Date

(mm : dd : yy)

Set the system date. Note that if you are running a Windows OS, this items are automatically updated whenever you make changes to the Windows Date.

Time

(hh : mm : ss)

Set the system time. The time is converted based on the 24-hour military-time clock. For example, 5:00:00 p.m. is 17:00:00.

IDE Primary Master

The options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

IDE Primary Slave

The options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

IDE Secondary Master

The options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

IDE Secondary Slave

The options are in its sub menu.

Press < Enter > to enter the sub-menu of detailed options.

Drive A/B

Select the type of floppy disk drive and installed in your system.

- The choice: None, 360K, 5.25 in, 1.2M, 5.25 in, 720K, 3.5 in, 1.44M, 3.5 in, or 2.88M, 3.5 in.

Video (EGA/VGA)

This item define the video mode of the system. This mainboard has a built-in VGA graphics system; you must leave this item at the default value.

- The choice: EGA / VGA, CGA 40, CGA 80, or MONO.

Halt On

This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which situation you want the BIOS to stop the POST process and notify you.

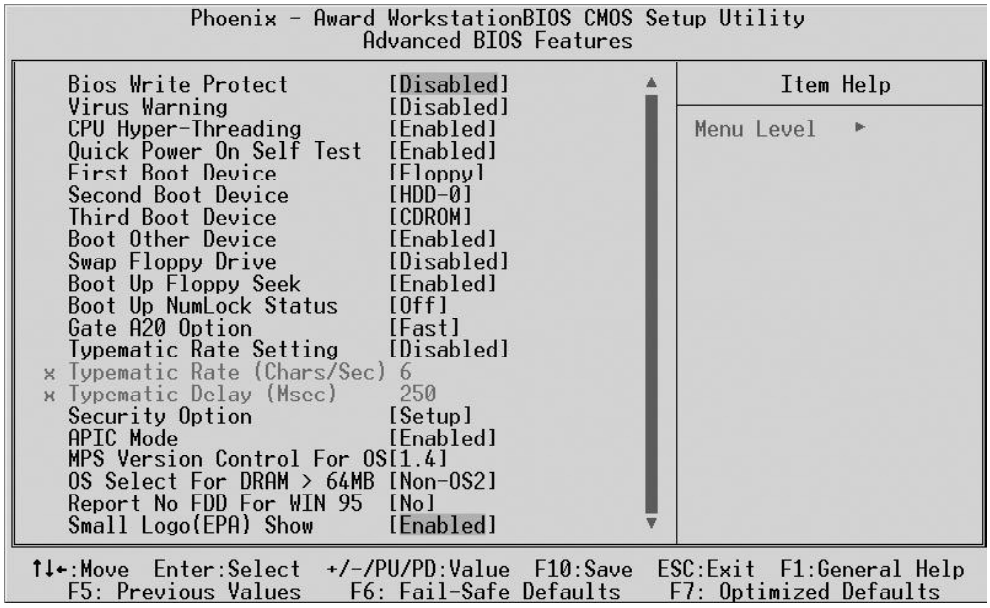
- The choice: All Errors, No Errors, All, But Keyboard, All, But Diskette, or All, But Disk/Key.

Base Memory/Extended Memory/Total Memory

These items are automatically detected by the system at start up time. These are display-only fields. You can't make change to these fields.

Advanced BIOS Features

This section allows you to configure your system for basic operation.



Bios Write Protect

This item let you enable or disable the Bios Write Protect.

- The choice: Enabled or Disabled.

Virus Warning

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

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

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

- The choice: Enabled or Disabled.

CPU Hyper-Threading

If your CPU supports the hyper-threading function, please leave this item enabled.

- The choice: Enabled or Disabled.

Quick Power On Self Test

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to this item after you are confident that your system hardware is operating smoothly.

- The choice: Enabled or Disabled.

First/Second/Third Boot Device

Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.

- The Choice: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD, USB-ZIP,USB-CDRAM, USB-HDD, LAN, or Disabled.

Boot Other Device

If you enable this item, the system searches all other possible locations for and operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices.

- The choice: Enabled or Disabled.

Swap Floppy Drive

If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A.

- The choice: Enabled or Disabled.

Boot Up Floppy Seek

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360k capacity.

- The choice: Enabled or Disabled.

Boot Up NumLock Status

This item defines if the keyboard Num Lock key is active when your system is started.

- The choice: Off or On.

Gate A20 Option

This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the deafult value.

- The choice: Normal or fast.

Typematic Rate Setting

If this item is enabled, you can use the following two items to see the typematic rate and the typematic delay settings for your keyboard.

- The choice: Enabled or Disabled.

Typematic Rate (Chars/Sec)

This item sets how many times the keystroke will be repeated in a second when you hold a key down.

- The choice: 6, 8, 10, 12, 15, 20, 24 or 30.

Typematic Delay (Msec)

Sets the delay time after a key is held down.

- The choice: 250, 500, 750 or 1000.

Security Option

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required with a user tries to enter the Setup Utility.

- The choice: Setup or System.

APIC Mode

This option is used to enable or disable APIC (Advanced Programmable Interrupt Controller) functionality. The APIC is an Intel chip that provides symmetric multiprocessing (SMP) for its Pentium system.

- The choice: Enabled or Disabled.

MPS Version Control For OS

Selects the operating system multiprocessor support version.

- The choice: 1.1 or 1.4

OS Select For DRAM > 64MB

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

- The choice: Non-OS2 or OS2.

Report No FDD For Win 95

If you are running a system with no floppy drive and using the Windows 95, select " Yes " for this item to ensure compatibility with Windows 95 logo certification.

- The choice: Yes or No.

Small Logo (EPA) Show

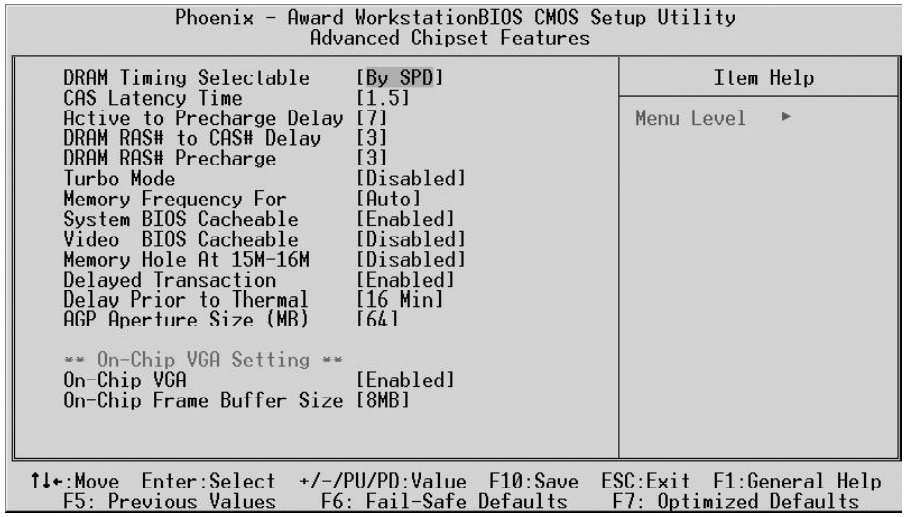
This item allows you to enable or disable the EPA Logo.

- The choice: Enabled or Disabled.

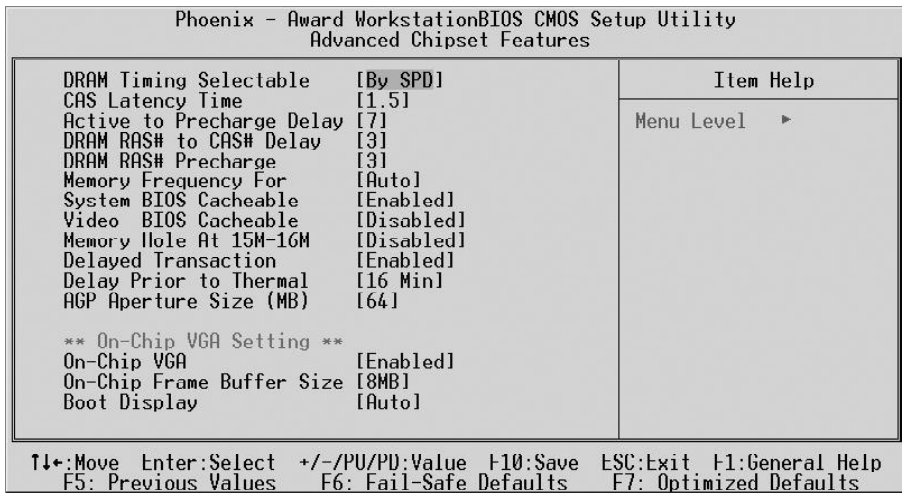
Advanced Chipset Features

These items define critical timing parameters of the mainboard. You should leave the items on this page at their default values unless you are very familiar with the technical, specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.

MB48/N



MB50/N



DRAM Timing Selectable

The value in this field depends on performance parameters of the installed memory chips (DRAM). Don't change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

- The Choice: Manual or By SPD.

CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the Dram timing. Don't reset this field from the default value specified by the system designer.

- The Choice: 1.5, 2, 2.5 or 3.

Active to Precharge Delay

The precharge time is the number of cycles it takes for DRAM to accumulate its charge before refresh.

- The Choice: 7, 6 or 5.

DRAM RAS# to CAS# Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, and you can use it when DRAM is written to, read from, or refreshed. Faster performance is gained in high speed, more stable performance, in low speed. This field is applied only when synchronous DRAM is installed in the system.

- The Choice: 3 or 2.

DRAM RAS# Precharge

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be-incompleted, and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field is applied only when synchronous DRAM is installed in the system.

- The Choice: 3 or 2.

Turbo Mode (MB48/N only)

This item allows you to enable/disable the turbo mode .

- The Choice: Enabled or Disabled.

Memory Frequency For

This item defines SDRAM frequency.

- The Choice: DDR200, DDR266, or Auto for MB48/N.
- The Choice: DDR200, DDR266, DDR333, or Auto for MB50/N.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program is written to this memory area, a system error may result.

- The choice: Enabled or Disabled.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program is written to this memory area, a system error may result.

- The Choice: Enabled or Disabled.

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it can't be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

- The Choice: Disabled or Enabled.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delayed transactions cycles. Enabled this item to support compliance with PCI specification version 2.1.

- The Choice: Disabled or Enabled.

Delay Prior to Thermal

Enable this item to set the delay time before the CPU enters auto thermal mode.

- The Choice: 4 Min, 8 Min, 16 Min, or 32 Min.

AGP Aperture Size (MB)

This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to section of the PCI memory address range used for graphics memory. We recommend that you leave this item at the default value.

- The Choice: 4, 8, 16, 32, 64, 128, or 256.

** On-Chip VGA Setting **

On-Chip VGA

This item allows you to enable or disable On-Chip AGP.

- The Choice: Enabled or Disabled.

On-Chip Frame Buffer Size

This item allows you to set the VGA frame buffer size.

- The Choice: 1MB or 8MB.

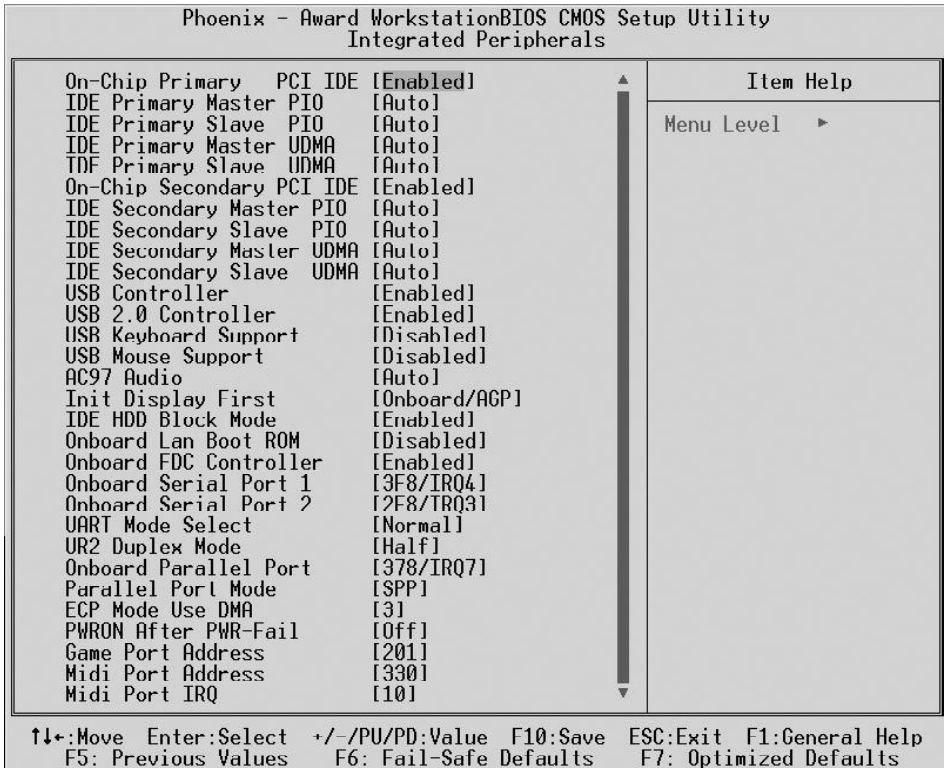
Boot Display (MB50/N only)

This item allows you to set the VGA frame buffer size.

- The Choice: Auto,CRT,TV,EFP.

Integrated Peripherals

These options display items that define the operation of peripheral components on the system's input / output ports.



On-Chip Primary/Secondary PCI IDE

Use these items to enable or disable the PCI IDE channels that are integrated on the mainboard.

- The choice: Enabled or Disabled.

IDE Primary/Secondary Master/Slave PIO

Each IDE channel supports a master device and a slave device. These four items let you assign which kind of PIO (Programmed Input / Output) is used by IDE devices. Choose Auto to let the system auto detect which PIO mode is best or select a PIO mode from 0-4.

- The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3 or Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Each IDE channel supports a master device and a slave device. This mainboard supports UltraDMA technology, which provides faster access to IDE devices.If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver supplied with this mainboard in order to use an UltraDMA device.

- The Choice: Auto or Disabled.

USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) port on this mainboard.

- The choice: Enabled or Disabled.

USB 2.0 Controller

Select Enabled if your system contains a Universal Serial Bus (USB) 2.0 controller and you have USB peripherals.

- The choice: Enabled or Disabled.

USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

- The choice: Enabled or Disabled.

USB Mouse Support

Enabled this item if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) the does not support Plug and Play.

- The choice: Enabled or Disabled.

AC97 Audio

This item allows you to select AC 97 audio chip to support Audio. Disable this item If you are going to install a PCI audio add-on card.

- The Choice: Auto or Disabled.

Init Display First

Use this item to specify whether your graphics adapter is installed in one of the PCI slots or is integrated on the mainboard.

- The choice: PCI Slot or Onboard for MB48/N.
- The choice: PCI Slot or Onboard/AGP for MB50/N.

IDE HDD Block Mode

If your IDE hard drive supports block mode (most new drives do), select Enabled to automatic detect the optimal number of block read and writes per sector that the drive can support and improves the speed of access to IDE devices.

- The choice: Enabled or Disabled.

Onboard Lan Boot ROM

This item allows you to enable or disable the onboard LAN Boot ROM function.

- The Choice: Enabled or Disabled.

Onboard FDC Controller

This item specifices onboard floppy disk drive controller. This setting allows you to connect your floppy disk drives to the onboard floppy connector.

- The choice: Enabled Disabled.

Onboard Serial Port 1/2

Used to assign an I/O address and interrupt request (IRQ) for the on-board serial port1/2 (COM1/2).

- The choice: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, or Auto.

UART Mode Select

Available if the onboard serial port2 is set to any option. It enables you to select an infrared communication protocol.

- The choice: Normal, IrDA, ASKIR, or SCR.

UR2 Duplex Mode

Available as UART2 mode is set to either ASKIR or IrDA. It determines the infrared function of the onboard infrared chip. Full duplex enables you to transmit/send information simultaneously. Half one suggests data transmitted in both directions, but only one direction at a time.

- The choice: Full or Half.

Onboard Parallel Port

Allows you to determine an I/O address and interrupt request (IRQ) for the onboard parallel port.

- The choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7 or Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel port. Select Normal or SPP unless you are certain your system supports other modes.

- The choice: SPP, EPP, ECP, or ECP + EPP.

ECP Mode Use DMA

When the parallel port mode is set to ECP, this item becomes seletable.

- The choice: 1 or 3.

PWRON After PWR-Fail

This item enables your computer to automatically restart or return to its last operating status after power fails.

- The choice: OFF , ON or Former-Sts.

Game Port Address

This item defines an I/O address for the game port.

- The choice: Disabled, 201 or 209.

Midi Port Address

This item defines an I/O address for the MIDI port.

- The choice: Disabled, 330, or 300.

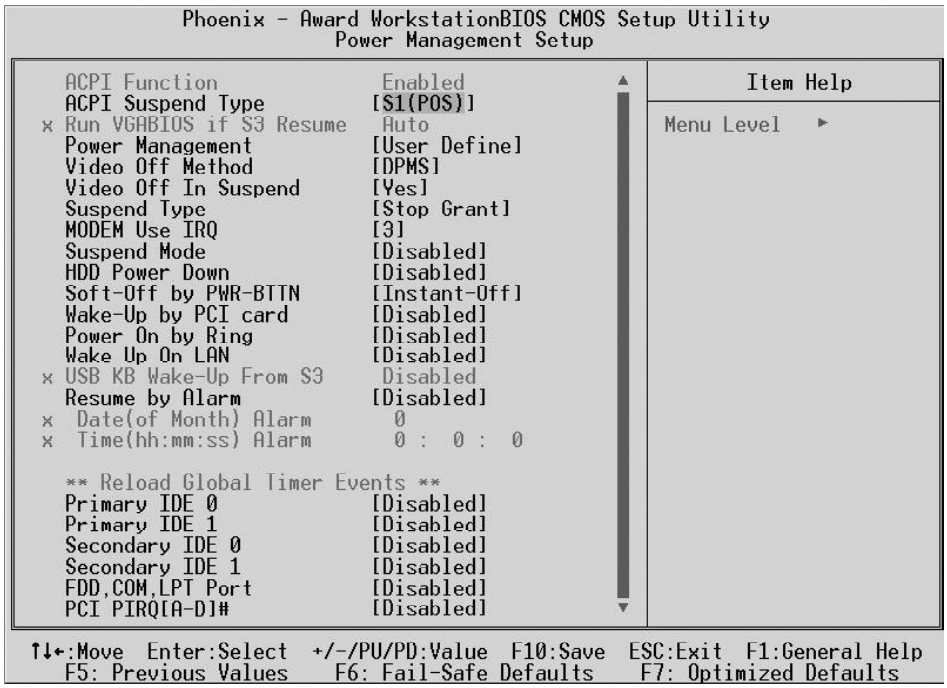
Midi Port IRQ

This item defines an interrupt request for the MIDI port.

- The choice: 5 or 10.

Power Management Setup

The Power Management Setup allows you to configure your system to most effectively saving energy while operating in a manner consistent with your own style of computer use.



ACPI Function (Enabled)

This item allows you to enable the ACPI (Advanced Configuration and Power Management) feature.

> Note: ACPI is a power management specification that makes hardware status information available to the operating system. ACPI enables a PC to turn its peripherals on or off for improving the power management. It also allows a PC to be turned on or off by external devices, so that a mouse or keyboard can wake up the computer.

ACPI Suspend Type

This item allows you to select sleep state when suspend. In the default, S1(POS), the suspend mode is equivalent to a software power down. If you select S3(STR), the suspend mode is a suspend to RAM. i.e., the system shuts down with the exception of a refresh current to the system memory.

- The choice: S1(POS), S3(STR) or S1&S3.

Run VGABIOS if S3 Resume (Auto)

Allows the system to initialize a VGA BIOS from S3 (Suspend to RAM) sleep state.

Power Management

As a master switch for the power-saving mode and hard disk timeouts. Max Saving suggests a power-saving mode occurs after a short timeout. Min Saving implies a power-saving mode occur after a long timeout. User Define means you can define timeouts for the power-saving mode.

- The choice: User Define, Min Saving or Max Saving.

Video Off Method

Determines to save power if the video is powered down.

- The choice: Blank Screen, V/H SYNC + Blank or DPMS.

Video Off In Suspend

Decides if the video turns off as the system enters a suspend mode.

- The choice: Yes or No.

Suspend Type

Defines a suspend type for your system. Stop Grant means the CPU enters an idle mode druing a power-saving mode.

- The choice: PwrOn Suspend, Stop Grant.

MODEM Use IRQ

Defines which IRQ the modem can use.

- The choice: 3, 4, 5, 7, 9, 10, 11 or NA.

Suspend Mode

When enabled, all devices except the CPU will be shut off.

- The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40Min or 1 Hour.

HDD Power Down

As enabled, the hard disk drive will be powered down with other devices activized.

- The choice: Disabled or 1 Min ~ 15 Min.

Soft-Off by PWR-BTTN

When set as delay for 4 seconds, pressing down the power button for more than 4 seconds forces the system to enter the soft-off state.

- The choice: Instant-Off or Delay 4 Sec.

Wake-Up by PCI card

This item enables/disables the power-on function of a PCI card.

- The choice: Enabled or Disabled.

Power On by Ring

Determines if the system will resume by a modem ring.

- The choice: Enabled or Disabled.

Wake Up On LAN

This item enables/disables a wake-up LAN function.

- The choice: Enabled or Disabled.

USB KB Wake-Up From S3

Awaken the system by a USB keyboard as enabled. As ACPI suspend type enters S1(POS), this item becomes unselectable and disabled.

- The choice: Enabled or Disabled.

Resume by Alarm

When enabled, set the date and time of the RTC (Real-Time Clock) alarm will awaken the system from a suspend mode.

- The choice: Disabled or Enabled.

Data (of Month) Alarm

This item selects the alarm date.

- Key in a DEC number: Min = 0, Max = 31.

Time (hh:mm:ss) Alarm

This item selects the alarm time.

[hh] ➢ Key in a DEC number: Min = 0, Max = 23.
[mm/ss] ➢ Key in a DEC number: Min = 0, Max = 59.

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

Global Timer (power management) events are I/O events whose occurrence can prevent the system from entering a power-saving mode, or can awaken the system from such a mode. The system stays alert as a device is enabled, even as the system is in a power-down mode.

Primary/Secondary IDE 0/1

As enabled, the system will restart when any activity is detected from drives or devices on the primary or secondary IDE channels.

- The choice: Disabled or Enabled.

FDD, COM, LPT Port

As enabled, the system will restart when any activity is detected from the floppy disk drive, serial ports, or the parallel port.

- The choice: Disabled or Enabled.

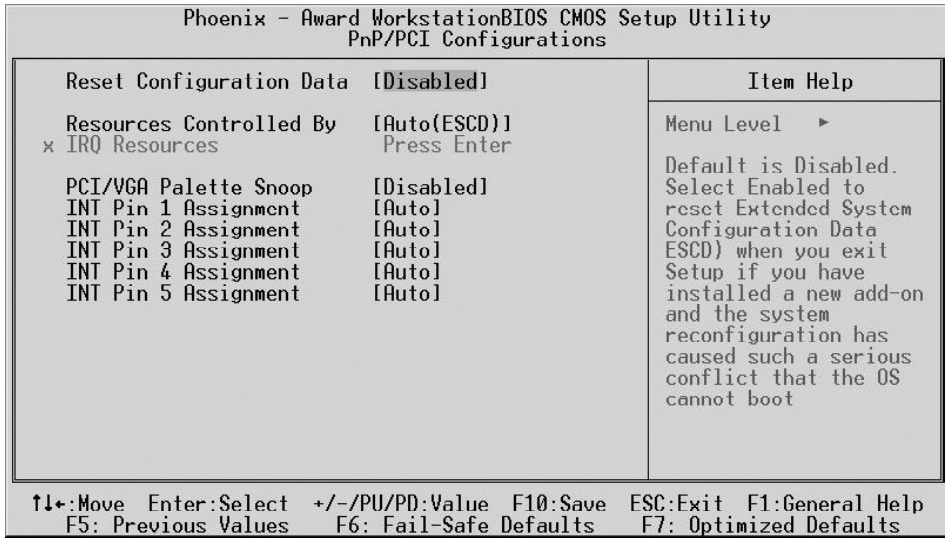
PCI PIRQ [A-D]#

As disabled, any PCI device set as Master will not power on the system.

- The choice: Disabled or Enabled.

PNP/PCI Configurations

This category configures how PnP and PCI operate in your system. Correctly setting up the IRQ and DMA (both PnP and PCI use) assignments will make your system work stably. It is strongly recommended that only technical users make changes to the default settings.



Reset Configuration Data

When enabled, any PnP configuration data stored in the BIOS will be cleared from memory, with new data created.

- The choice: Enabled or Disabled.

Resource Controlled By

As stays auto(ESCD), the system will dynamically allocate resources to PnP devices as they are required. As set to manual, the following item become available.

- The choice: Auto(ESCD) or Manual.

IRQ Resources

When the previous item is set to manual, this item allows you respectively assign an interruptive type for IRQ-3, 4, 5, 7, 9, 10, 11, 12, 14, and 15.

- The choice: PCI Device or Reserved.

PCI/VGA Palette Snoop

The item is designed to solve problems caused by some non-standard VGA cards. A built-in VGA system does not need this function.

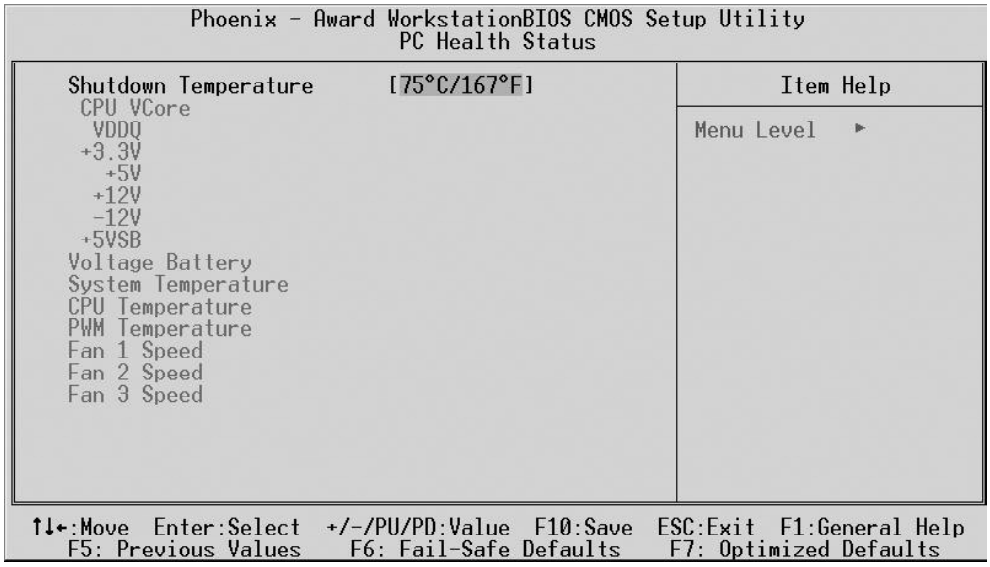
- The choice: Enabled or Disabled .

INT Pin 1 ~ 5 Assignment

Names the interrupt request (IRQ) line assigned to a device connected to the PCI interface on your system.

- The Choice: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14, 15.

PC Health Status



Shutdown Temperature

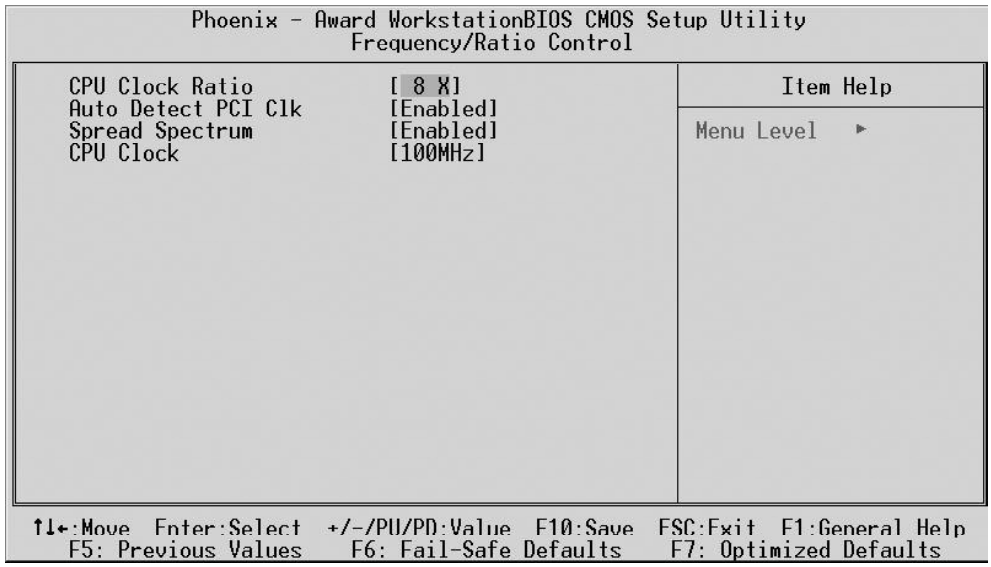
Enables you to set the maximum temperature the system can reach before powering down.

- The choice: 60°C/140°F, 65°C/149°F, 70°C/158°F, or 75°C/ 167°F.

The following items provide you with information about the current operating status on your system. You cannot make any changes to one of them, including:

CPU Vcore
VDDQ
+3.3V
+5V
+12V
-12V
+5VSB
Voltage Battery
System Temperature
CPU Temperature
PWM Temperature
Fan 1 Speed
Fan 2 Speed
Fan 3 Speed

Frequency/Ratio Control



CPU Clock Ratio

The item defines a multiplier for the system FSB frequency. The formula is presented as follows:

Multiplier X FSB Frequency = CPU Clock Speed

For example, a processor at 450MHz and FSB frequency at 100MHz ought to set the multiplier at 4.5 for: 4.5 (Multiplier) X 100MHz (FSB Frequency) = 450MHz (CPU Clock Speed).

- Key in a DEC number: Min = 8, Max = 50.

Auto Detect PCI Clk

When enabled, the BIOS will disable the clock signal of the free PCI slots.

- The choice: Enabled or Disabled.

Spread Spectrum

This item can reduce the EMI (Electro-Magnetic Interference) generated by the system.

- The choice: Disabled or Enabled.

CPU Clock

This item allows users to adjust the CPU host clock from 100MHz to 165MHz.

- Key in a DEC number: Min = 100, Max = 165.

Load Fail-Safe Defaults

When you press < Enter > on this item, you will see a dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N)? N

Press < Y > and < Enter > to install the defaults, and v.v.

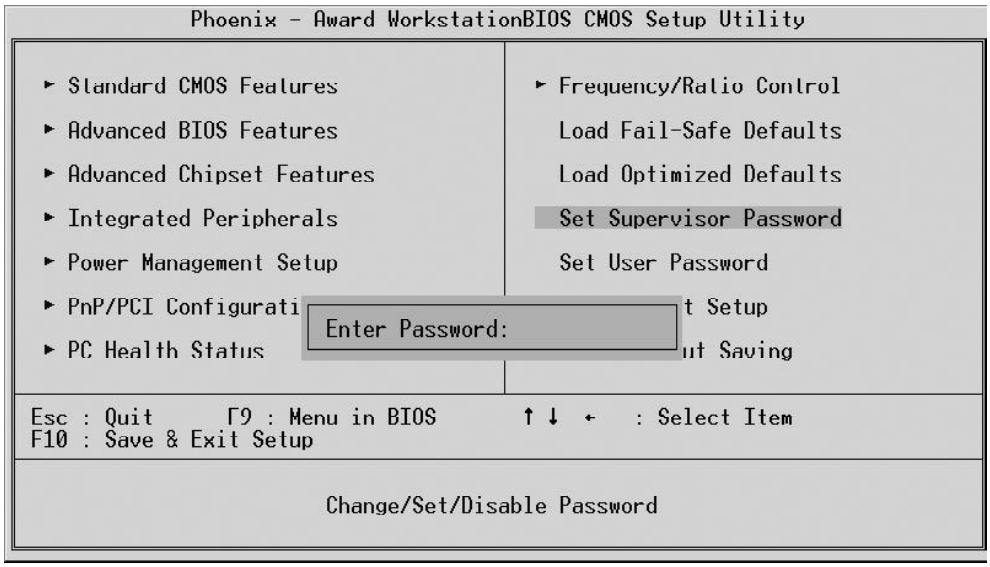
Load Optimized Defaults

When you press < Enter > on this item, you will see a dialog box with a message similar to:

Load Optimized Defaults (Y/N)? N

Press < Y > and < Enter > to install the defaults, and v.v.

Set Supervisor/User Password



Steps to set supervisor/user password are described as follows:

New Password Setting:

1. While pressing < Enter > to set a password, a dialog box appears to ask you enter a password.
2. Key in a new password. The password can not exceed eight characters.
3. System will request you to confirm the new password again.
4. When completed, new code takes effect.

No Password Setting:

If you want to disable the password, just press < Enter > as a password input is requested.

If You Forget Password:

If you forget the password, the only way to access the system is to clear the CMOS memory. Please refer to page 26 on clear CMOS setting.

Save & Exit Setup

When you press < Enter > on this item, you will see a dialog box with a message similar to:

Save to CMOS and EXIT (Y/N)? Y

Press < Y > to save the changes you have made in the Setup Utility and exit, or press < N > to return to the main menu.

Exit Without Saving

When you press < Enter > on this item, you will see a dialog box with a message similar to:

Quit Without Saving (Y/N)? N

Press < Y > to discard the changes you have made in the Setup Utility and exit, or press < N > to return to the main menu.