AB48P & AB48PN

**Intel Pentium 4/Celeron
478-pin Processor
with 400/533/800 MHz FSB
Based DDR MAINBOARD**

User's Manual

Shuttle® AB48P & AB48PN

**Intel Pentium 4/Celeron
478-pin Processor
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Based DDR Mainboard
Manual Version 1.1**

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M772

Statement of Shuttle Mainboard via the EMI Test

Shuttle mainboards have been via the EMI test in terms of series of regulations: EN55022/CISPR22/AS/NZS3548 Class B, EN55024 (1998/AS/NZS), EN4252.1 (1994), EN61000, ANSI C63.4 (1992), CFR47 Part 15 Subpart B, and CNS13438 (1997). The items tested are illustrated as follows:

(A) Voltage: AC 110V/60HZ & AC 230V/50HZ

(B) Tested Product Information:
        Product Name: PC Mainboard
        Status: Sample
        Model Name: AB48PN/AB48P
        S/N: N/A
        CPU:
            External Frequency: 100 MHz
                Intel Pentium IV 1.4/1.5/1.6/1.7/1.8/1.9/2.0/2.2/2.4 GHz
            External Frequency: 133 MHz
                Intel Pentium IV 1.6/1.7/2.26/2.4/2.8/3.06 GHz
            External Frequency: 200 MHz
                Intel Pentium IV 2.4/2.6/2.8 GHz
        Mouse Port: one port with 6 pins
        Keyboard Port: one port with 6 pins
        Parallel Port: one port with 25 pins
        Serial Port: two ports with 9 pins respectively
        MIDI/Game Port: one port with 15 pins
        Line-Out & Line-In & Mic-In Ports: one port for each
        LAN Port: one port with 8 pins (10Mbps/100Mbps)(AB48PN Only)
        USB Port: two ports with 4 pins respectively
        DDR Memory: 256 MB*2

All CPUs have completely been tested, and values offered by the worst EMI combination of CPU external frequency are listed as follows:

Test Mode	External Frequency	CPU	Power Supply	Case Open/Closed
1	133 MHz	P4 3.06 GHz	ENP-0730(ATX12V)	Closed
2	133 MHz	P4 3.06 GHz	ENP-0730(ATX12V)	Open
3	100 MHz	P4 2.4 GHz	ENP-0730(ATX12V)	Closed
4	100 MHz	P4 2.4 GHz	ENP-0730(ATX12V)	Open
5	200 MHz	P4 2.8 GHz	ENP-0730(ATX12V)	Closed
6	200 MHz	P4 2.8 GHz	ENP-0730(ATX12V)	Open

(C) Remedy for the Tested Product & Its EMI Interference:
        Remedy: N/A
        EMI Interference:
            Crystal: 32.768 KHz(X1)/14.318 MHz(X10)/24.576 MHz(X3)/25.00 MHz(X4)
            Clock Generator: U4
            Clock Generator Buffer: V150

(D) Difference between AB48PN and AB48P:
To discriminate AB48PN from AB48P lies in the extent that chips in AB48PN support LAN, and the combination for testing is based on AB48PN.

(E) Supported Host Peripherals:

Host Peripheral	Product Name	Model Name	S/N	FCC ID
#1	Case	KF45A	N/A	
#2	Power Supply (300W)	ENP-0730 (ATX12V)	1000002885	
#3	IBM HDD (30.7GB)	91024UB	YKFY7981	3892I168
#4	MITSUMI FDD	D353M		
#5	SONY VCD Player	CDU4811		3892A291
#6	AGP Card	Winfast Geforce 2 MX		3892C520
#7	Power Cable	Detachable and Shielded		

(F) Notices for Assembling Computers:
1. Cases should be made of iron or other metal that has good electric conductivity.
2. Cylinders in a case should be made of metal, and as having a mainboard mounted in a case, make sure screws are all utilized and fastened on a mainboard.
3. An I/O shielding should be contacted with I/O metallic parts of a mainboard.
4. Cables should appropriately be arranged and fixed in a case. Follow instructions:
   - Leave IDE cables not crossed upon CPU and SDRAM;
   - Leave power cables minimum in length, and not crossed upon a mainboard;
   - Leave CPU fan cables minimum in length, and not near CPU;
   - Leave cables on panels and other spare cables tied in a computer case.
5. Make sure an EMI shielding attached to a case has properly been installed.
6. Make sure a 5.25" or 3.5" FDD and screws are fastened to an EMI shielding.
7. Make sure a case is closely in contact with EMI connected points.
8. Make sure there is no cleft in a case which is not deformed.
9. Make sure a PCI or AGP door is bound to a case.
10. Make sure cables of other devices (fans or some others) are fixed in a case.

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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 the 3.1 Hardware Installation section in a step-by-step fashion for all the first-time DIY system builders. Prior to installation, we also suggest you to read the whole manual carefully to gain a complete understanding of your new Shuttle AB48P/AB48PN mainboard.

Experienced DIY User

Congratulate on your purchase of the Shuttle AB48P/AB48PN mainboard. You will find that installing your new Shuttle AB48P/AB48PN mainboard is just easy. Bundled with an array of onboard functions, the highly-integrated AB48P/AB48PN mainboard provides you with a total solution to build the most stable and reliable system. Refer to sections 3.2 Jumper Settings and Chapter 4 Drivers/Software Utilities to find out how to get the best out of your new mainboard. Chapter 5 BIOS Setup also contains the relevant information on how to tune up your system to achieve higher performance.
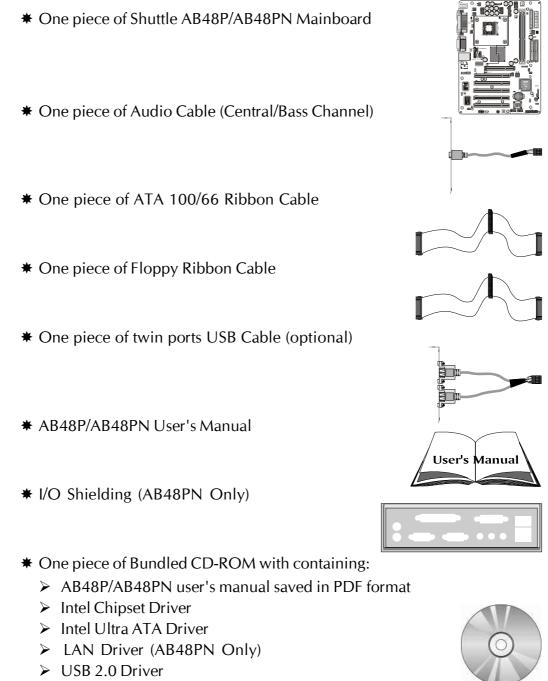
System Integrator

You have wisely chosen Shuttle AB48P/AB48PN to construct your system. Shuttle AB48P/AB48PN incorporates all the state-of-the-art technology of the 845PE (MCH) chipset from Intel. It integrates the most advanced functions you can find to date in a compact ATX board.

This manual is all-purpose for two kinds of mainboards: AB48P and AB48PN. The main difference between them is that AB48PN is equipped with an onboard LAN. In the manual, if there are some standards, characteristics, equipment, or software adopted only by AB48PN, it will be highlighted in brackets.

1.2 Item Checklist:

Check all items with your AB48P/AB48PN mainboard to make sure nothing is missing. The complete package should include:

✹ One piece of Shuttle AB48P/AB48PN Mainboard

✹ One piece of Audio Cable (Central/Bass Channel)

✹ One piece of ATA 100/66 Ribbon Cable

✹ One piece of Floppy Ribbon Cable

✹ One piece of twin ports USB Cable (optional)

✹ AB48P/AB48PN User's Manual

✹ I/O Shielding (AB48PN Only)

✹ One piece of Bundled CD-ROM with containing:
  ➢ AB48P/AB48PN user's manual saved in PDF format
  ➢ Intel Chipset Driver
  ➢ Intel Ultra ATA Driver
  ➢ LAN Driver (AB48PN Only)
  ➢ USB 2.0 Driver
  ➢ Audio Driver
  ➢ Award Flashing Utility

2 FEATURES

AB48P/AB48PN mainboard is carefully designed for the demanding PC user who wants high performance and maximum intelligent features in a compact package.

2.1 Specifications

✸ CPU Support

Intel Pentium 4/Celeron, 478-pin processors with 400/533/800 MHz FSB. The CPU FSB might reach 800 MHz as the system is overclocked.

✸ Chipset

Features Intel 845PE (MCH) N.B. and Intel 82801DB (ICH4) S.B..

✸ Hyper-Threading Technology

The latest Intel application defines a high-speed calculating ability to optimize your system by two CPUs supported (one virtual, one physical) in a multi-task environment.

✸ CPU FSB Configuration

Soft-configuration FSB (The FSB speed is software configurable from 100MHz to 233MHz by 1MHz step in the Frequency/Voltage Control of BIOS setup program.)

✸ Onboard 10/100Mb/s LAN (AB48PN Only)

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

✸ On Board 6 Channel AC'97 Audio

Realtek ALC650 compliant with AC'97 2.2 involves SPDIF In/Out function. 6 channel slot selectable DAC Output for multi-channel applications.

✸ Versatile Memory Support

Two 184-pin DIMM slots to support max 2GB of PC1600/PC2100/PC2700/PC3200 (overclocked) compliant with DDR SDRAM module.

✸ PCI Expansion Slots

Provides five 32-bit PCI slots.

✸ AGP Expansion Slot

Provides one AGP 2.0 compliant slot which supports up to 4X AGP devices.

✴ 6 USB 2.0 Interface Onboard

2 * USB connectors on back-panel and 2 sets of dual USB ports headers on mid-board.

✴ I/O Interface

Provides a variety of I/O interfaces:

➢ 1* PS/2 mouse connector.

➢ 1* PS/2 keyboard connector.

➢ 1* DB25 Parallel port.

➢ 2* Serial Ports.

➢ 1* Infrared communication port. (Serial port COM2 can also be redirected to an external IrDA Adapter for wireless connection.)

➢ 1* MIDI/GAME port.

➢ 1* Line-Out port.

➢ 1* Line-In port, shared with rear speaker output when multi-channel audio is enabled.

➢ 1* Mic-In port.

➢ 1* LAN Port. (AB48PN Only)

➢ 2* USB 2.0 Ports.

✴ PCI Bus Master IDE Controller Onboard

Two Ultra DMA 100/66/33 Bus Master Dual-channel IDE ports provide support to a maximum of four IDE devices (one Master and one Slave per channel). The IDE Bus implements data transfer speeds of up to 100/66/33 MB/sec and also 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 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 Intel Firmware Hub 2Mb Flash core and supports Green PC, Desktop Management Interface (DMI).

✴ ATX Form Factor

System board conforms to ATX specification.
Board dimension: 305 mm* 190 mm.

✴ 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 Host/AGP/PCI Clock Setting - This item allows users to adjust CPU Host Clock, AGP Clock, and PCI 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 AB48P/AB48PN

FAN1 ATX12V Connector - CN17

PS/2 Keyboard & PS/2 Mouse Connectors
Serial Port Connector (COM1)
Intel 82801DB Chipset
Socket 478
Parallel Port Connector
Audio Controller - Realtek ALC650
Serial Port Connector (COM2)
Center/Bass Header - CN13
Line-Out & Line-In & Mic-In & MIDI/Game Port Connectors
AUX_IN Connector - CN11
USB Port Connectors & LAN Port Connector (AB48PN Only)
CD_IN Connectors - CN4/CN12
Front Panel Audio Header - JP10
FAN2
One AGP Slot
Intel 845PE Chipset
LPC I/O & H/W Monitoring - ITE 8712F
Five PCI Slots
10/100 Fast Ethernet - Realtek 8100B (AB48PN Only)
Onboard LAN Enabled/ Disabled Setting - JP21
SPDIF Ext. Header - JP14
Wake-On-LAN (WOL) Connector - JP6

Floppy Connector
Two DIMM Slots
Two IDE Connectors
ATX Power Connector - CN6
Clear CMOS Setting - JP2
Extended USB Headers - JP7/JP8

IR Header - JP9 FAN3 Front Panel Header - JP11

Step 1

CPU Installation:
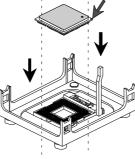
This mainboard supports Intel Pentium 4/Celeron Socket 478 series CPU. Please follow the steps as follows to finish CPU installation.

Note the CPU orientation when you plug it into CPU socket.

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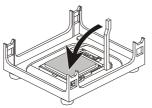
CPU socket lever up to 90-degree angle

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.

CPU Pin 1 and cut edge

3. Press down the CPU socket lever and finish CPU installation.

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 processors require 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 do not need to reset the jumpers unless you require special adjustments as any of the following cases:

1. Clear CMOS
2. Onboard LAN Enabled/Disabled
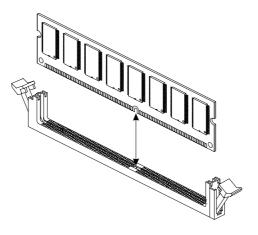
For first-time DIY system builders, we recommend that you do not change the default jumper settings if you are not totally familiar with the mainboard configuration procedures. The factory-set default settings are tuned for optimum system performance. For the advanced users who wish to customize their system, section 3.2 Jumper Settings will provide 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 any one or two DIMM banks. Note that 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
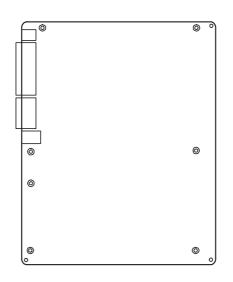
Before you install and connect the mainboard into your system case, we recommend that you first assemble all the internal peripheral devices into the computer housing, including but not limited to the hard disk drive (IDE/HDD), floppy disk drive (FDD), CD-ROM drive, and ATX power supply unit. This will greatly facilitate in making the connections to the mainboard described below.

To install IDE & FDD drives, follow this procedure:

1. Set the required jumpers on each device according to the instructions provided by the manufacturer. (IDE devices, 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 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 both on the mainboard IDE or FDD connector 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.
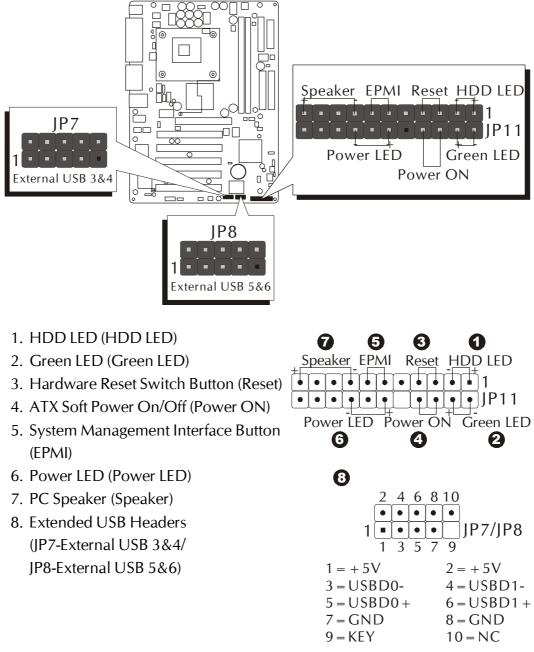
2. Position the studs between the chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the them, for avoiding any electrical shorts in-between.

   (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
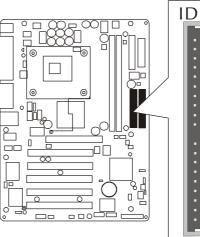
Connect Front Panel Switches/LEDs/Speaker/USBs
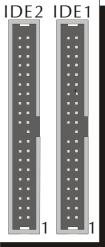
You can find there are several different cables already existing in the system case and originating from the computer's front-panel devices (HDD LED, Power LED, Reset Switch, PC Speaker, or USB devices etc.). These cables serve to connect the front-panel switches, LEDs, speaker, and USB connectors to the mainboard's front-panel connectors JP11 and JP7/JP8, as shown below.

1. HDD LED (HDD LED)
2. Green LED (Green LED)
3. Hardware Reset Switch Button (Reset)
4. ATX Soft Power On/Off (Power ON)
5. System Management Interface Button (EPMI)
6. Power LED (Power LED)
7. PC Speaker (Speaker)
8. Extended USB Headers
   (JP7-External USB 3&4/
   JP8-External USB 5&6)

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

Step 7
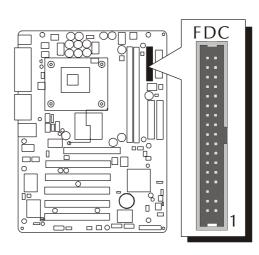
Connect IDE and Floppy Disk Drives

1. IDE cable connectors

IDE2 IDE1

1   1
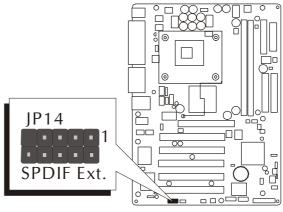
2. Floppy cable connector

FDC

1
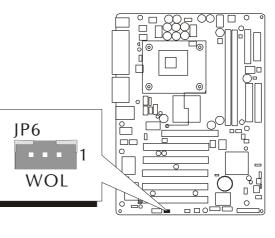
Step 8

Connect Other Internal Peripherals

1. SPDIF Ext. header (JP14)

JP14

1

SPDIF Ext.
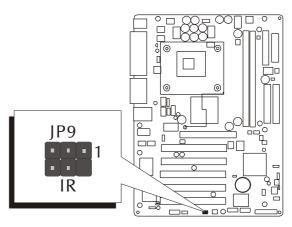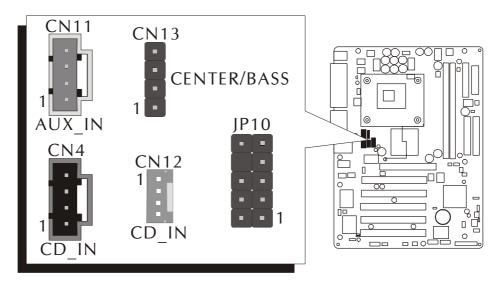
2. Wake-On-LAN connector (JP6)

JP6

WOL

1

3. IR header (JP9)

JP9

IR

1
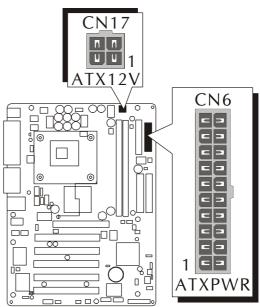
4. Front panel audio (JP10) and center/Bass (CN13) headers &
   CD_IN (CN4/CN12) and AUX_IN (CN11) connectors

CN11

1

AUX_IN

CN13

CENTER/BASS

1

JP10

1

CN4

1

CD_IN

CN12

1

CD_IN

Step 9

Connect the Power Supplies
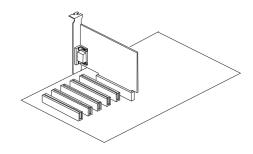
1. System power connectors (CN6/CN17)
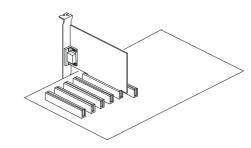
Step 10

Install Add-On Cards in Expansion Slots

1. Accelerated Grapics Port (AGP) Card

2. PCI Card

Step 11
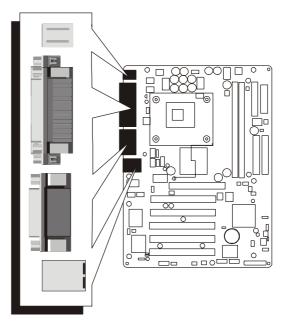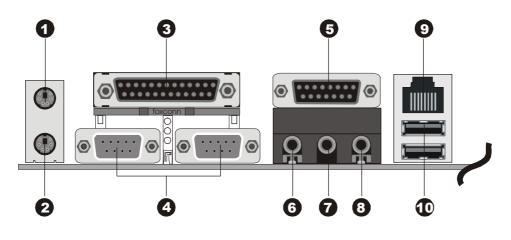
Connect External Peripherals to Back-Panel

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

1. PS/2 Mouse Port
2. PS/2 Keyboard Port
3. Parallel Port
4. Serial Ports 1/2
5. MIDI/Game Port
6. Audio Line-Out Port
7. Audio Line-In Port
8. Audio Mic-In Port
9. LAN Port (AB48PN Only)
10. USB Ports 1/2

Step 12

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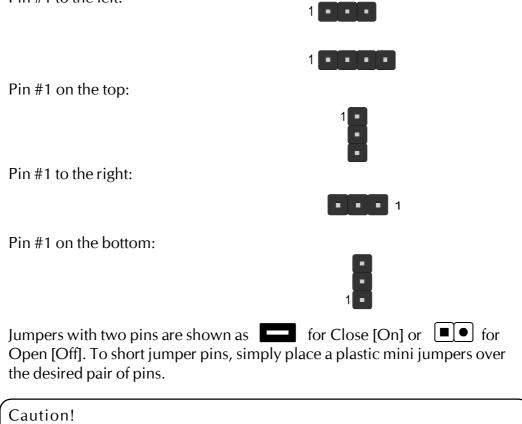
Please note that all the system utilities and drivers are designed for Win 9x/ 2000/ME/NT/XP operating systems only. Make sure your operating system is already installed before running the drivers installation CD-ROM programs.

1. Insert the AB48P/AB48PN bundled CD-ROM into your CD-ROM drive. The auto-run program will display the drivers main installation window on screen.
2. Choose "Install Intel Chipset Driver" and complete it.
3. Choose "Install Intel Ultra ATA Driver" and complete it.
4. Choose "Install LAN Driver" and complete it. (AB48PN Only)
5. Choose "Install USB 2.0 Driver" and complete it.
6. Choose "Install Audio Driver" and complete it.
7. Return to the main installation window and exit from the auto-run driver's 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 #1 could be located at any corner of each jumper, you just find the location with a white right angle which stands for pin #1. There are several types of pin #1 shown as below:
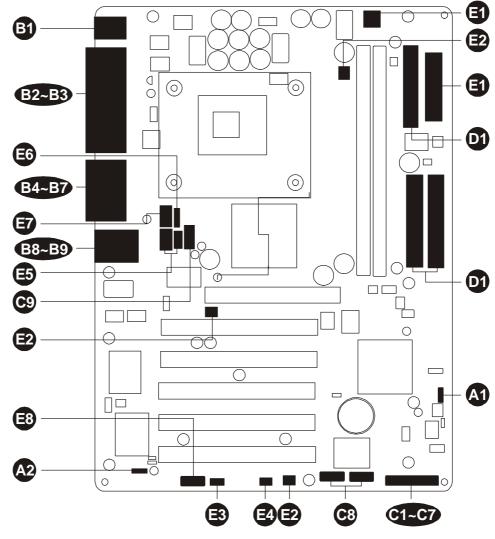
3-pin and multi (> 3) pin jumpers shown as following:
Pin #1 to the left:

Pin #1 on the top:

Pin #1 to the right:

Pin #1 on the bottom:

Jumpers with two pins are shown as ▬▬ for Close [On] or ▣● for Open [Off]. To short jumper pins, simply place a plastic mini jumpers over 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, on an even surface, and components side up.

3. Wear an antistatic wrist strap or take other suitable measures to prevent electrostatic discharge (ESD) whenever handling this equipment.

Jumpers & Connectors Guide

Use the mainboard layout on page 11 to locate CPU socket, memory banks, expansion slots, jumpers and connectors on the mainboard during the installation. The following list will help you to identify jumpers, slots, and connectors along with their assigned functions:

CPU/Memory/Expansion Slots

Socket 478	:	CPU Socket for Pentium 4/Celeron, 478-pin processors
DIMM1/2	:	Two DIMM Slots for 64, 128, 256, 512 MB, and 1GB of 2.5V DDR SDRAM (The total installed memory does not exceed 2GB.)
AGP	:	One 4X AGP (Accelerated Graphics Port) Slot
PCI	:	Five 32-bit PCI Expansion Slots

Jumpers

(A1) JP2   : Clear CMOS setting

(A2) JP21   : Onboard LAN enabled/disabled setting

Back Panel Connectors

(B1) MS   : PS/2 mouse port

(B1) KB   : PS/2 keyboard port

(B2) PRINTER   : Parallel port (DB25 female)

(B3) COM1/COM2 : Serial ports 1/2 (DB9 male)

(B4) MIDI/GAME   : MIDI/Game port

(B5) LINE_OUT   : Line-Out (6-Channel Front-Out) port

(B6) LINE_IN   : Line-In (6-Channel Rear-Out) port

(B7) MIC_IN   : Mic-In (6-Channel Center/Bass-Out) port

(B8) LAN   : 1 LAN port (AB48PN Only)

(B9) USB   : 2 USB (Universal Serial Bus) ports

Front Panel Connectors

(C1) HDD LED   : IDE drive active LED

(C2) Green LED   : Green LED

(C3) Reset   : Hardware reset switch

(C4) Power ON   : ATX power on/off momentary type switch

(C5) EPMI   : System Management Interface

(C6) Power LED   : System power LED

(C7) Speaker   : Internal speaker in housing

(C8) JP7/JP8   : Extended USB headers

(C9) JP10   : Front panel audio header

Internal Peripherals Connectors

(D1) FDC   : Floppy disk drive interface

(D1) IDE1   : IDE primary interface (dual-channel)

(D1) IDE2   : IDE secondary interface (dual-channel)

Other Connectors
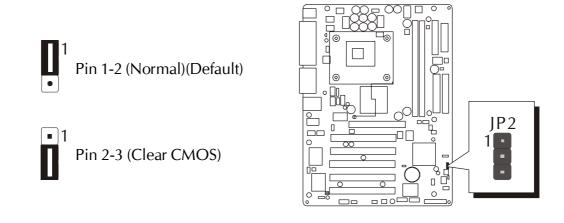
(E1) CN6/CN17   : ATX power connectors

(E2) FAN1   : CPU fan connector

E2	FAN2	: AGP fan connector
E2	FAN3	: Chassis fan connector
E3	JP6	: Wake-On-LAN connector
E4	JP9	: IR header
E5	CN4/CN12	: CD_IN connectors
E6	CN13	: Center/Bass_Out header
E7	CN11	: AUX_IN connector
E8	JP14	: SPDIF Ext. header

☞ *Jumpers*

Ⓐ **Clear CMOS Setting (JP2)**

JP2 is used to clear CMOS data. Clearing CMOS will result in the permanently erasing previous system configuration settings and the restoring original (factory-set) system settings.

Pin 1-2 (Normal)(Default)

Pin 2-3 (Clear CMOS)

JP2

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

A2 Onboard LAN Enabled/Disabled Setting (JP21)
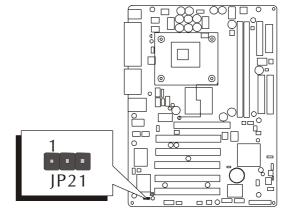
JP21 is used to enable or disable built-in LAN adapter.

Pin 1-2 (Enabled)
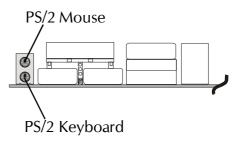
Pin 2-3 (Disabled)

☞ *Back-Panel Connectors*
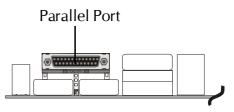
B1 PS/2 Mouse & PS/2 Keyboard Connectors
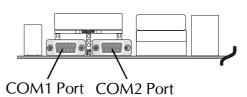
Two 6-pin female PS/2 Mouse & Keyboard connectors are located at the rear panel of the mainboard. Depending on the computer housing you use (desktop or tower), the PS/2 Mouse connector is situated at the top of the PS/2 Keyboard connector when the mainboard is laid into a desktop, as opposed to a tower where the PS/2 Mouse connector is located at the right of the PS/2 Keyboard's. Plug the PS/2 Mouse/Keyboard jacks into their corresponding connectors.

PS/2 Mouse

PS/2 Keyboard

B2 Parallel Port Connector

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

Parallel Port

B3 COM1/COM2 Port Connectors
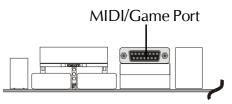
Attach a serial device cable to the DB9 serial port COM1/COM2 at the back panel of your computer.

COM1 Port   COM2 Port
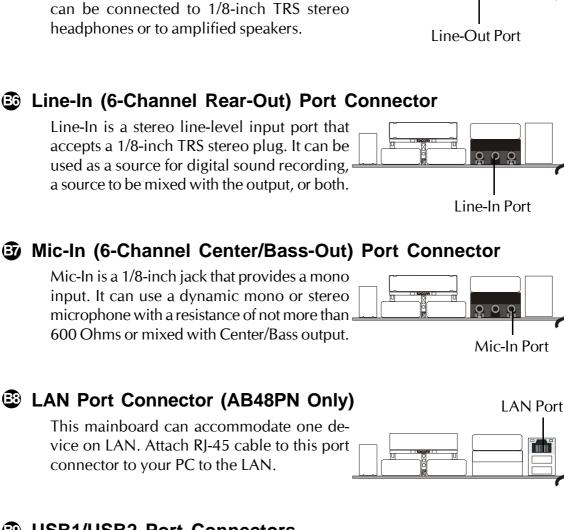
B4 MIDI/Game Port Connector
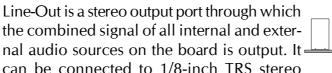
The MIDI/Game port is a 15-pin female connector. This port can be connected to any IBM PC compatible game with a 15-pin D-sub connector.

MIDI/Game Port

MIDI Instrument Connection
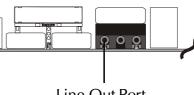
You will need a MIDI adapter to connect a MIDI compatible instrument to the sound card. The MIDI adapter can in turn be connected to the Joystick/MIDI port. You will also need the MIDI sequencing software to run MIDI instruments with your computer into this connector.
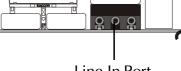
B5 Line-Out (6-Channel Front-Out) Port Connector

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.

Line-Out Port
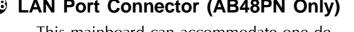
B6 Line-In (6-Channel Rear-Out) Port Connector

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.

Line-In Port

B7 Mic-In (6-Channel Center/Bass-Out) Port Connector
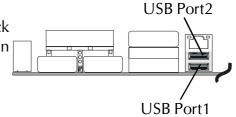
Mic-In is a 1/8-inch jack that provides a mono input. It can use a dynamic mono or stereo microphone with a resistance of not more than 600 Ohms or mixed with Center/Bass output.

Mic-In Port

B8 LAN Port Connector (AB48PN Only)

LAN Port
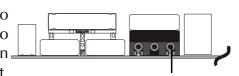
This mainboard can accommodate one device on LAN. Attach RJ-45 cable to this port connector to your PC to the LAN.

B9 USB1/USB2 Port Connectors

USB Port2

This mainboard offers 2 USB ports on back panel. Plug each USB device jack into an available USB1/USB2 connector.

USB Port1
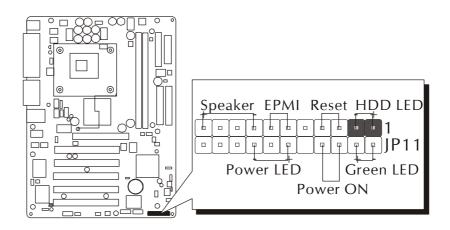
☞ *Front-Panel Connectors*
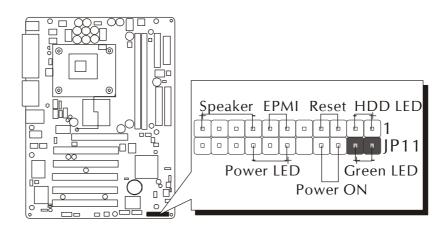
◉ HDD LED Connector (HDD LED)

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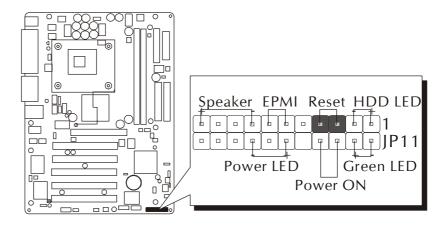
◉ Green LED Connector (Green LED)

The Green LED (Green LED) 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 Green LED header.
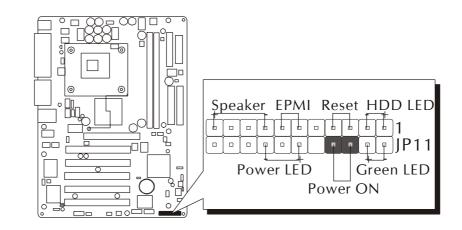
⑬ **Hardware Reset Connector (Reset)**

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

⑭ **ATX Power On/Off Switch Connector (Power ON)**
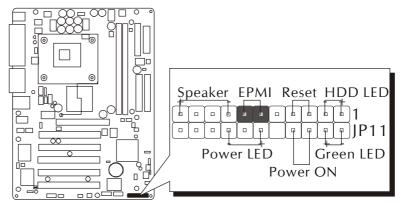
The Power On/Off Switch is a momentary type switch used for turning on or off the ATX power supply. Attach a connector cable to the 2-pin (Power ON) header on the mainboard.

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.
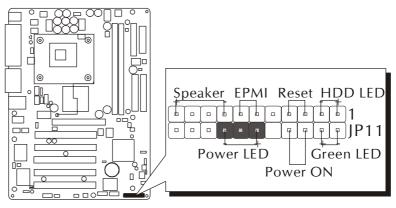
C5 EPMI Connector (EPMI)

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.
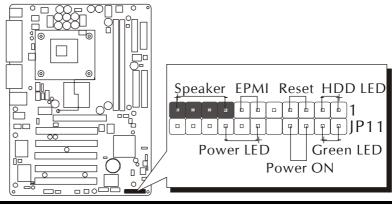
C6 Power LED Connector (Power LED)

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

C7 Speaker Connector (Speaker)

Attach a PC speaker cable to the 4-pin speaker connector (Speaker).
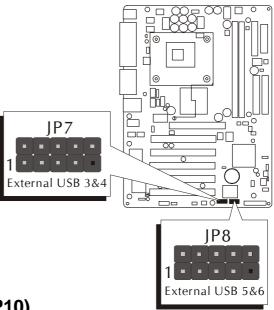
🔘 **Extended USB Headers (JP7/JP8)**

The headers are used to connect the cable attached to USB connectors which are mounted on front panel or back panel. But the USB cable is optional at the time of purchase.

```
 2  4  6  8 10
 •  •  •  •  •
1▪  •  •  •     JP7/JP8
 1  3  5  7  9
```
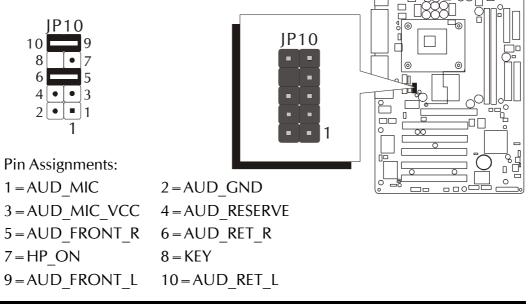
Pin Assignments:

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

JP7

1

External USB 3&4

JP8

1

External USB 5&6

🔘 **Front Panel Audio Header (JP10)**
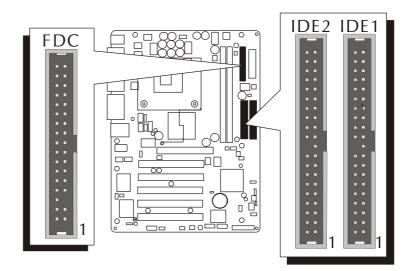
This header allows users to install an auxiliary Front-Oriented Audio port for easier access. Either the Line-Out port connector on back-panel or Front-Panel Audio header is available at the same time. If you would like to use this header on front-panel, please remove all jumpers from the Audio header 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.

```
      JP10
  10 ▭▭▭ 9
   8 |  • | 7
   6 ▭▭▭ 5
   4 | • • | 3
   2 | • ▪ | 1
        1
```

JP10

1

Pin Assignments:

1 = AUD_MIC	2 = AUD_GND
3 = AUD_MIC_VCC	4 = AUD_RESERVE
5 = AUD_FRONT_R	6 = AUD_RET_R
7 = HP_ON	8 = KEY
9 = AUD_FRONT_L	10 = AUD_RET_L

☞ *Internal Peripheral Connectors*

Ⓓ Enhanced IDE and Floppy Connectors (IDE1/IDE2 & FDC)

The 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 ribbon cable to connect IDE HDD, and one 34-pin ribbon cable for FDD connection.
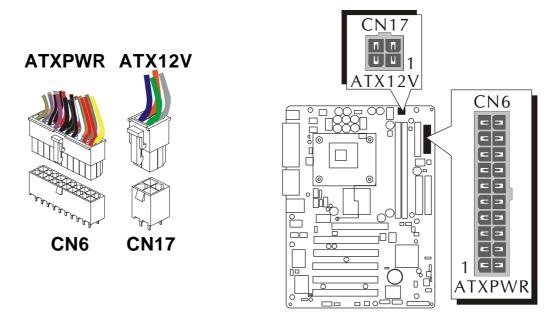
Important:	Ribbon cables are directional; therefore, connect the red cable stripe to the same side.

☞   *Other Connectors*

❸   **ATX Power Supply Connectors (CN6/CN17)**

This motherboard uses 20-pin ATX power header (ATXPWR, CN6), and comes with the other one header (ATX12V, CN17). Please make sure you plug each in the right direction. It is essential to have these two power supply connectors plugged or your system won't boot up.
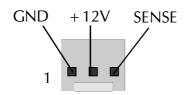
A traditional ATX system remains in the power-off stage when AC power resumes from power failure. However, it is inconvenient for a network server or workstation if there is not an UPS to execute power-on. Thus, this motherboard supports an AC Power Auto Recovery function to solve this problem. You may 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.
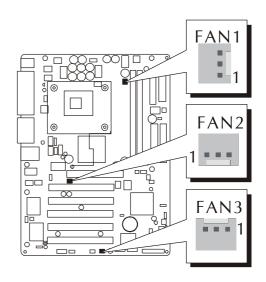
▣ CPU, AGP, and Chassis Fan Connectors (FAN1/2/3)

The mainboard provides three onboard 12V cooling fan power connectors to support CPU (FAN1), AGP (FAN2), and Chassis (FAN3) cooling fans.

GND   +12V   SENSE

1
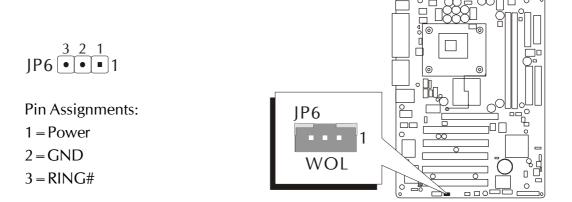
Note:

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.

FAN1

1

FAN2

1

FAN3

1
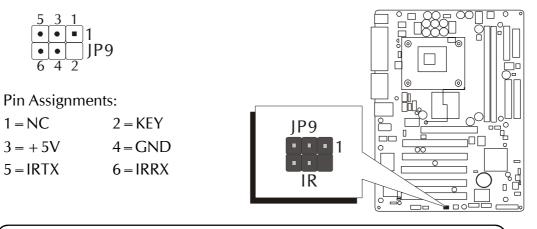
▣ Wake-On-LAN Connector (JP6)

Attach a 3-pin connector through the LAN card which supports the Wake-On-LAN (JP6) function. This function lets users wake up the connected system through the LAN card.

3 2 1

JP6 [• • ▪] 1

Pin Assignments:

1 = Power

2 = GND

3 = RING#

JP6

1

WOL

E4 IR Header (JP9)
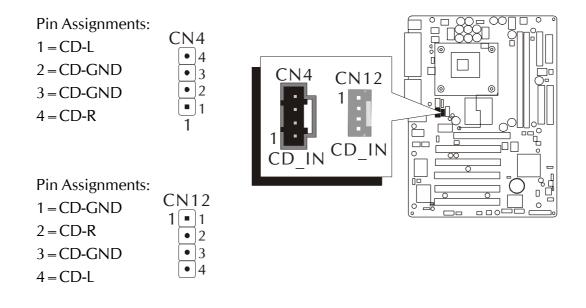
If you have an Infrared device, this mainboard can implement IR transfer function. This mainboard supports Normal, IrDA, ASKIR, or SCR transfer mode. To enable this function, attach a 6-pin infrared device cable to the IR (JP9) header, and refer to the diagram below for the IR pin assignments.

Pin Assignments:

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

Note: Before connect your IR device to the IR (JP9) header, please note that every pin is properly allocated. If not, your IR device may be damaged.
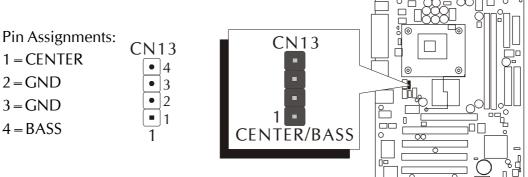
E5 Audio CD_IN Connectors (CN4/CN12)

Ports CN4 (Black)/CN12 (White) are used to attach audio connector cables from the CD-ROM/DVD-ROM drives.

Pin Assignments:
1 = CD-L
2 = CD-GND
3 = CD-GND
4 = CD-R

Pin Assignments:
1 = CD-GND
2 = CD-R
3 = CD-GND
4 = CD-L

36 **Audio Center/Bass_Out Header (CN13)**

CN13 header can be used to connect the cable which attached to center/bass amplified speakers.

Pin Assignments:

CN13
1 = CENTER
2 = GND
3 = GND
4 = BASS

CN13
4
3
2
1

1

CN13
1
CENTER/BASS

37 **Audio AUX_IN Connector (CN11)**

Port CN11 (White) can be used to connect a stereo audio input from CD-ROM, TV-tuner or MPEG card.
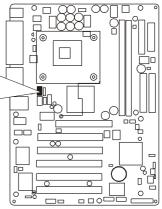
Pin Assignments:

CN11
1 = AUXL
2 = AGND
3 = AGND
4 = AUXR

CN11
4
3
2
1

1

CN11
1
AUX_IN
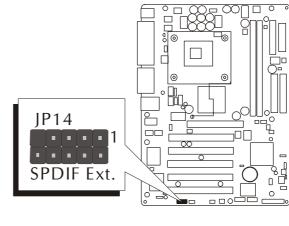
38 **SPDIF Ext. Header (JP14)**

Port JP14 can be used to connect a special device.

9 7 5 3 1
1
JP14
10 8 6 4 2

Pin Assignments:

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

JP14
1
SPDIF Ext.

3.3 System Memory Configuration

The AB48P/AB48PN mainboard has two 184-pin DIMM banks that allow you to install from 64MB up to 2GB of system memory. Each 184-pin DIMM (Dual In-line Memory Module) bank can accommodate 64MB, 128MB, 256MB, 512MB, and 1GB of PC1600/PC2100/PC2700/PC3200 (over-clocked) compliant 2.5V single or double side DDR SDRAM modules. DIMM slots are arranged in two banks, each memory bank made of one bank and providing a 64-bit wide data path.

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	64MB, 128MB, 256MB, 512MB, and 1GB 184-pin 2.5V DDR SDRAM DIMM	x 1
DIMM 2	64MB, 128MB, 256MB, 512MB, and 1GB 184-pin 2.5V DDR SDRAM DIMM	x 1

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

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 up-grade, the new system memory value will automatically be computed and displayed in the field "Standard CMOS Setup" of BIOS setup program.

4 SOFTWARE UTILITY
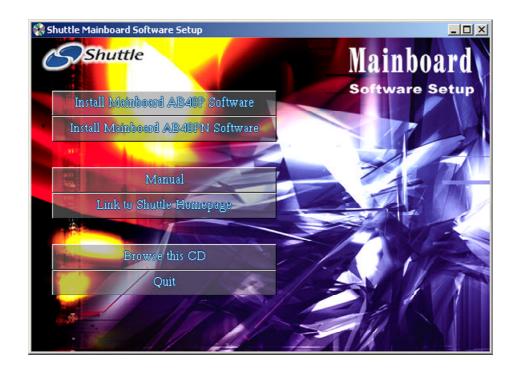
4.1 Mainboard CD Overview

Note: The CD contents attached in AB48P/AB48PN 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 AB48P Software - Installing Intel Chipset, Intel Ultra ATA, USB 2.0, and Audio drivers.

☞ Install Mainboard AB48PN Software - Installing Intel Chipset, Intel Ultra ATA, LAN, USB 2.0, and Audio drivers.

☞ Manual - AB48P/AB48PN 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.
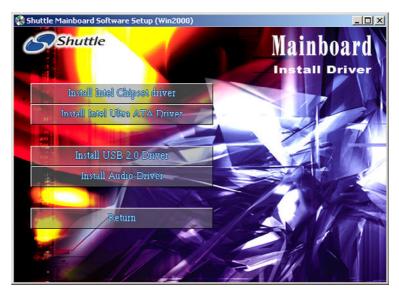
4.2 Install Mainboard Software

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. Use your pointing device (e.g. mouse) on the "Install Mainboard AB48P Software" bar or "Install Mainboard AB48PN Software" bar to run into sub-menu.

The Mainboard AB48P Software include:

[4.2.A] Install Intel Chipset Driver

[4.2.B] Install Intel Ultra ATA Driver

[4.2.C] Install USB 2.0 Driver

[4.2.D] Install Audio Driver

The Mainboard AB48PN Software include:

[4.2.A] Install Intel Chipset Driver

[4.2.B] Install Intel Ultra ATA Driver

[4.2.C] Install USB 2.0 Driver

[4.2.D] Install Audio Driver

[4.2.E] Install LAN 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.

AB48P

AB48PN

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

This driver may do bad effect on some model or brand of IDE HDD devices. Hereby, we won't suggest users to install it cause it might crash your HDD data. However, if you are very sure that the driver matches your IDE HDD, please follow below indication to complete setup. Select using your pointing device (e.g. mouse) on the "Install Intel Ultra ATA Driver" bar to install the ultra ATA IDE driver.

P.S.: Before doing this IDE driver installation, setup chipset system driver is necessary.

AB48P

AB48PN

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 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.

AB48P

AB48PN

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.

AB48P

AB48PN

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 (AB48PN Only)

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

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 "AB48P/AB48PN Manual" bar to view user's manual.

5 BIOS SETUP

AB48P/AB48PN 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 mentioned in step2 (the message disappears before you can respond) and you still wish to en-ter 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 AwardBIOS(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.

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility

  ► Standard CMOS Features          ► Frequency/Voltage Control

  ► Advanced BIOS Features            Load Fail-Safe Defaults

  ► Advanced Chipset Features         Load Optimized Defaults

  ► Integrated Peripherals           Set Supervisor Password

  ► Power Management Setup            Set User Password

  ► PnP/PCI Configurations           Save & Exit Setup

  ► PC Health Status                 Exit Without Saving

  Esc : Quit        F9 : Menu in BIOS     ↑ ↓ → ←    : Select Item
  F10 : Save & Exit Setup

                  Time, Date, Hard Disk Type...
```

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

Use this menu for basic system configuration.

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 entry appears if your system supports PnP/PCI.

PC Health Status

This entry shows the current system temperature, Voltage, and FAN speed.

Frequency/Voltage Control

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

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance of your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory-set for optimal performance system operation. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet users' needs.

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 CMOS value changes in CMOS and exit from setup.

Exit Without Saving

Abandon all CMOS value changes and exit from setup.

✎ *Standard CMOS Features*

The 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.

```
           Phoenix - Award WorkstationBIOS CMOS Setup Utility
                          Standard CMOS Features
 ┌──────────────────────────────────────────────────┬──────────────────┐
 │ Date (mm:dd:yy)          Wed, Feb 26 2003         │    Item Help     │
 │ Time (hh:mm:ss)          22 : 39 : 28             ├──────────────────┤
 │                                                   │ Menu Level    ►  │
 │ ► IDE Primary Master     [ None]                  │                  │
 │ ► IDE Primary Slave                               │ Change the day,  │
 │ ► IDE Secondary Master                            │ month,           │
 │ ► IDE Secondary Slave    [ None]                  │ year and century │
 │                                                   │                  │
 │   Drive A                [1.44M, 3.5 in.]         │                  │
 │   Drive B                [None]                   │                  │
 │                                                   │                  │
 │   Video                  [EGA/VGA]                │                  │
 │   Halt On                [All , But Keyboard]     │                  │
 │                                                   │                  │
 │   Base Memory                 640K                │                  │
 │   Extended Memory             64512K              │                  │
 │   Total Memory                65536K              │                  │
 │                                                   │                  │
 ├───────────────────────────────────────────────────┴─────────────────┤
 │ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │    F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults     │
 └─────────────────────────────────────────────────────────────────────┘
```

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/Secondary Master/Slave

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

Drive A/DriveB

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

This item define the video mode of the system. This mainboard has a built-in VGA graphics system; 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.

* *

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub-menu to configure each hard disk drive.

IDE HDD Auto-Detection

Press <Enter> to auto-detect HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

IDE Primary Master

Selecting 'Manual' lets you set the remaining fields on this screen and select the type of fixed disk.

➢ The choice: None, Auto, or Manual.

Access Mode

Choose the access mode for this hard disk.

➢ The choice: CHS, LBA, Large, or Auto.

Capacity

Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.

The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual', and the 'Access Mode' item is set to 'CHS'.

Cylinder

Set the number of cylinders for this hard disk. ➢Min = 0, Max = 65535

Head

Set the number of read/write heads. ➢Min = 0, Max = 255

Precomp

Warning: Setting a value of 65535 means no hard disk. ➢Min = 0, Max = 65535

Landing Zone

Set the Landing Zone size. ➢Min = 0, Max = 65535

Sector

Number of sector per track. ➢Min = 0, Max =255

* *

✎ *Advanced BIOS Features*

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

```
           Phoenix - Award WorkstationBIOS CMOS Setup Utility
                        Advanced BIOS Features
 ┌──────────────────────────────────────────┬──────────────────────────┐
 │  BIOS Write Protect       [Disabled]    ▲ │      Item Help           │
 │  Virus Warning            [Disabled]      │                          │
 │  CPU Hyper-Threading       [Enabled]      │  Menu Level    ▶         │
 │  Quick Power On Self Test  [Enabled]      │                          │
 │  First Boot Device         [Floppy]       │                          │
 │  Second Boot Device        [HDD-0]        │                          │
 │  Third Boot Device         [CDROM]        │                          │
 │  Boot Other Device         [Enabled]      │                          │
 │  Swap Floppy Drive        [Disabled]      │                          │
 │  Boot Up Floppy Seek       [Enabled]      │                          │
 │  Boot Up NumLock Status    [Off]          │                          │
 │  Gate A20 Option           [Fast]         │                          │
 │  Typematic Rate Setting   [Disabled]      │                          │
 │ x Typematic Rate (Chars/Sec) 6            │                          │
 │ x Typematic Delay (Msec)     250          │                          │
 │  Security Option           [Setup]        │                          │
 │  APIC Mode                 [Enabled]      │                          │
 │  MPS Version Control For OS[1.4]          │                          │
 │  OS Select For DRAM > 64MB [Non-OS2]      │                          │
 │  Report No FDD For WIN 95  [No]           │                          │
 │  Small Logo(EPA) Show      [Enabled]    ▼ │                          │
 ├──────────────────────────────────────────┴──────────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults    │
 └──────────────────────────────────────────────────────────────────────┘
```

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

The latest Intel application defines a high-speed calculating ability to optimize your system by two CPUs supported (one virtual, one physical) in a multi-task environment.
➢ 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-CDROM, 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

Whether report no FDD runs for Win 95 or not.

➢ 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.

```
                    Phoenix - Award WorkstationBIOS CMOS Setup Utility
                               Advanced Chipset Features

    DRAM Timing Selectable      [By SPD]                  Item Help
    CAS Latency Time            [1.5]
    Active to Precharge Delay   [7]              Menu Level    ►
    DRAM RAS# to CAS# Delay      [3]
    DRAM RAS# Precharge          [3]
    Turbo Mode                  [Disabled]
    Memory Frequency For        [DDR266]
    System BIOS Cacheable       [Enabled]
    Video  BIOS Cacheable       [Disabled]
    Memory Hole At 15M-16M      [Disabled]
    Delayed Transaction         [Enabled]
    Delay Prior to Thermal      [16 Min]
    AGP Aperture Size (MB)       [64]




  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

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

This item defines the timing delay in clock cycles before SDRAM starts a read command after receiving it.

➢ The Choice: 1.5, 2, 2.5, or 3.

Active to Precharge Delay

This item defines the numbers of cycles for RAS to be allowed to precharge.

➢ The Choice: 7, 6, or 5.

DRAM RAS# to CAS# Delay

This item defines the timing of the transition from RAS (row address strobe) to CAS (column address strobe) as both rows and columns are separately addressed shortly after DRAM is refreshed.

➢ The Choice: 3 or 2.

DRAM RAS# Precharge

This item defines the timing delay for DRAM precharge.
➢ The Choice: 3 or 2.

Turbo Mode

This item allows you to speed up the system performance. Disable this item if the system is not stable.
➢ The Choice: Enabled or Disabled.

Memory Frequency For

This item is select SDRAM Frequency.
➢ The Choice: DDR266, DDR333, or Auto.

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: Enabled or Disabled.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delayed transactions cycles. Enable this item to support compliance with PCI specification version 2.2.
➢ The Choice: Enabled or Disabled.

Delay Prior to Thermal

This item defines 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.

✎ *Integrated Peripherals*

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility
                      Integrated Peripherals
  ┌──────────────────────────────────────────────┬──────────────────────┐
  │ On-Chip Primary   PCI IDE [Enabled]       ▲  │      Item Help       │
  │ IDE Primary Master PIO    [Auto]             ├──────────────────────┤
  │ IDE Primary Slave  PIO    [Auto]             │ Menu Level    ▶      │
  │ IDE Primary Master UDMA   [Auto]             │                      │
  │ IDE Primary Slave  UDMA   [Auto]             │                      │
  │ On-Chip Secondary PCI IDE [Enabled]          │                      │
  │ IDE Secondary Master PIO   [Auto]            │                      │
  │ IDE Secondary Slave  PIO   [Auto]            │                      │
  │ IDE Secondary Master UDMA [Auto]             │                      │
  │ IDE Secondary Slave  UDMA [Auto]             │                      │
  │ USB Controller            [Enabled]          │                      │
  │ USB SUPPORT 2.0           [Disabled]         │                      │
  │ USB Keyboard Support      [Disabled]         │                      │
  │ USB Mouse Support         [Disabled]         │                      │
  │ AC97 Audio                [Auto]             │                      │
  │ Init Display First        [PCI Slot]         │                      │
  │ IDE HDD Block Mode        [Enabled]          │                      │
  │ Onboard Lan Boot ROM      [Disabled]         │                      │
  │ POWER ON Function         [BUTTON ONLY]      │                      │
  │ Hot Key Power ON          [Ctrl-F1]          │                      │
  │ Onboard FDC Controller    [Enabled]          │                      │
  │ Onboard Serial Port 1     [3F8/IRQ4]         │                      │
  │ Onboard Serial Port 2     [2F8/IRQ3]         │                      │
  │ UART Mode Select          [Normal]           │                      │
  │ UR2 Duplex Mode           [Half]             │                      │
  │ Onboard Parallel Port     [378/IRQ7]         │                      │
  │ Parallel Port Mode        [SPP]              │                      │
  │ ECP Mode Use DMA          [3]                │                      │
  │ PWRON After PWR-Fail      [Off]              │                      │
  │ Game Port Address         [201]              │                      │
  │ Midi Port Address         [330]              │                      │
  │ Midi Port IRQ             [10]            ▼  │                      │
  ├──────────────────────────────────────────────┴──────────────────────┤
  │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
  │     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults    │
  └──────────────────────────────────────────────────────────────────────┘
```

On-Chip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support to two IDE channels. Select Enabled to activate the primary/secondary IDE interface. select Disabled to deactivate the primary/secondary interface.
➢ The Choice: Enabled or Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
➢ The 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 (UDMA) technology, which provides faster access to IDE devices. If you install a device that supports UDMA, change the appropriate item on this list to Auto. You may have to install the UDMA driver supplied with this mainboard in order to use an

UDMA 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 SUPPORT 2.0

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 you plan to use a USB keyboard in a legacy operating system (such as DOS) that doesn't support Plug and Play.

➢ The choice: Enabled or Disabled.

USB Mouse Support

Select Enabled if you plan to use a USB mouse in a legacy operating system (such as DOS) that doesn't support Plug and Play.

➢ The choice: Enabled or Disabled.

AC97 Audio

This item allows you to control the onboard AC97 Audio.

➢ The Choice: Auto or Disabled.

Init Display First

This item is used to determine initial device when system power on.

➢ The choice: PCI Slot or AGP.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. Select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

➢ The Choice: Enabled or Disabled.

Onboard Lan Boot ROM

Decide whether to invoke the boot ROM of the onboard LAN chip.

➢ The choice: Enabled or Disabled.

POWER ON Function

Enable you to set power on paramenters.

➢ The choice: Hot KEY, Mouse Click, Any KEY, BUTTON ONLY, or Keyboard 98.

Hot Key Power ON

When the POWER ON Function is set to Hot KEY, use this item to set the hot key combination that turns on the system.

➢ The choice: Ctrl-F1 ~ Ctrl-F12.

Onboard FDC Controller

This item specifices onboard floppy disk drive controller.
➢ The choice: Enabled or Disabled.

Onboard Serial Port 1/Port 2

This option is used to assign the I/O address and interrupt request(IRQ) for the onboard serial port 1 (COM1)/port 2 (COM2).
➢ The Choice: Disabled, 3F8-IRQ4, 2F8-IRQ3, 3E8-IRQ4, 2E8-IRQ3, or Auto.

UART Mode Select

This item allows you to select IrDA infrared through COM2 port.
➢ The choice: Normal, IrDA, ASKIR, or SCR.

UR2 Duplex Mode

This item allows you to select the IR half or full duplex function.
➢ 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 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.

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility
                        Power Management Setup

   ACPI Function              Enabled        ▲    ┌─── Item Help ───┐
   ACPI Suspend Type          [S1(POS)]           │                 │
   Power Management           [User Define]        │                 │
   Video Off Method           [DPMS]               │ Menu Level   ►  │
   Video Off In Suspend       [Yes]                │                 │
   Suspend Type               [Stop Grant]         │                 │
   MODEM Use IRQ              [3]                   │                 │
   Suspend Mode               [Disabled]           │                 │
   HDD Power Down             [Disabled]           │                 │
   Soft-Off by PWR-BTTN       [Instant-Off]        │                 │
   Wake-Up by PCI card        [Disabled]           │                 │
   Power On by Ring           [Disabled]           │                 │
   Wake Up On LAN             [Disabled]           │                 │
 × USB KB Wake-Up From S3     Disabled             │                 │
   Resume by Alarm            [Disabled]           │                 │
 ×  Date(of Month) Alarm      0                    │                 │
 ×  Time(hh:mm:ss) Alarm      0 :  0 :  0          │                 │
                                                   │                 │
   ** Reload Global Timer Events **                │                 │
   Primary IDE 0              [Disabled]           │                 │
   Primary IDE 1              [Disabled]           │                 │
   Secondary IDE 0            [Disabled]           │                 │
   Secondary IDE 1            [Disabled]           │                 │
   FDD,COM,LPT Port           [Disabled]           │                 │
   PCI PIRQ[A-D]#             [Disabled]        ▼  │                 │

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

ACPI Function
This item defines the ACPI (Advanced Configuration and Power Management) feature that makes hardware status information available to the operating system, enables a PC to turn its peripherals on or off for improving the power management, and allows a PC turned on or off by external devices, so that a mouse or keyboard can wake up it.

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; S3(STR), to the system that shuts down with the exception of a refresh current to the system memory.
➢ The choice: S1(POS), S3(STR), or S1&S3.

Power Management
This category defines the degree of power saving mode settings.
Min Saving Minimum power management. Suspend Mode = 1 hr.
Max Saving Maximum power management. Suspend Mode = 1 min.
User Define Allows you to set each mode individually. Suspend
            Mode = Disabled or 1 min ~ 1 hr.
➢ The choice: Min Saving, Max Saving, or User Define.

Video Off Method

This determines the manner in which the monitor is blanked.

    V/H SYNC + Blank This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

    Blank Screen This option only writes blanks to the video buffer.

    DPMS Initial display power management signaling.

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

Video Off In Suspend

This item determines the manner in which the monitor is blanked.

➢ The choice: Yes or No.

Suspend Type

This item allows you to select the Suspend Type.

➢ The choice: Stop Grant or PwrOn Suspend.

MODEM Use IRQ

This determines the IRQ which the MODEM can use.

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

Suspend Mode

When this item is not disabled and after the setup time of system inactivity, 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, 40 Min, or 1 Hour.

HDD Power Down

When this item is not disabled and after the setup time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

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

Soft-Off by PWR-BTTN

If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec., then you have to hold the power button down for 4 seconds to cause a software power down.

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

Wake-Up by PCI card

This item defines PCI cards to wake up the system from the suspend mode.

➢ The choice: Enabled or Disabled.

Power On by Ring

This item defines the system will resume by activating of modem ring.

➢ The choice: Enabled or Disabled.

Wake Up On LAN

This item defines LAN devices to wake up the system from the suspend mode.

➢ The choice: Enabled or Disabled.

USB KB Wake-Up From S3

If you are using a USB keyboard, and the ACPI Suspend Type is set to S3 or S1&S3, you can enable this item to allow a keystroke to wake up the system from power saving mode.

➢ The choice: Enabled or Disabled.

Resume by Alarm

When set to Enabled, the following two items become available and you can set the date, hour, minute and second to turn on your system.

➢ The choice: Enabled or Disabled.

Date(of Month) Alarm

This item selects the alarm Date (day of the month).

➢ 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 as a mode. In effect, the system remains alert for anything that occurs to a device that is configured as Enabled, even when the system is in a power-down mode.

Primary/Secondary IDE 0/IDE 1

When these items are enabled, the system will restart the power-saving timeout counters when any activity is detected on any of the drives or devices on the primary or secondary IDE channels.

➢ The choice: Disabled or Enabled.

FDD,COM,LPT Port

When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the floppy disk drive, the serial ports, or the parallel port.

➢ The choice: Disabled or Enabled.

PCI PIRQ[A-D]#

When this item is disabled, any PCI device set as the 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.

```
            Phoenix - Award WorkstationBIOS CMOS Setup Utility
                          PnP/PCI Configurations

    Reset Configuration Data   [Disabled]              Item Help

    Resources Controlled By    [Auto(ESCD)]      Menu Level   ►
  x IRQ Resources               Press Enter
                                                 Default is Disabled.
    PCI/VGA Palette Snoop      [Disabled]        Select Enabled to
    INT Pin 1 Assignment       [Auto]            reset Extended System
    INT Pin 2 Assignment       [Auto]            Configuration Data
    INT Pin 3 Assignment       [Auto]            ESCD) when you exit
    INT Pin 4 Assignment       [Auto]            Setup if you have
    INT Pin 5 Assignment       [Auto]            installed a new add-on
    INT Pin 6 Assignment       [Auto]            and the system
    INT Pin 7 Assignment       [Auto]            reconfiguration has
    INT Pin 8 Assignment       [Auto]            caused such a serious
                                                 conflict that the OS
                                                 cannot boot


 ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5: Previous Values     F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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.

Resources 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

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 ~ 8 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, or 15.

✎ *PC Health Status*

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility
                          PC Health Status
┌─────────────────────────────────────────────┬──────────────────────────┐
│ Shutdown Temperature        [75°C/167°F]      │       Item Help          │
│  CPU VCore                                    │                          │
│   VDDQ                                        │  Menu Level    ►         │
│  +3.3V                                        │                          │
│    +5V                                        │                          │
│   +12V                                        │                          │
│   -12V                                        │                          │
│   2.5V                                        │                          │
│  +5VSB                                        │                          │
│ Voltage Battery                               │                          │
│ System Temperature                            │                          │
│ CPU Temperature                               │                          │
│ PWM Temperature                               │                          │
│ Fan 1 Speed                                   │                          │
│ Fan 2 Speed                                   │                          │
│ Fan 3 Speed                                   │                          │
│                                               │                          │
├─────────────────────────────────────────────┴──────────────────────────┤
│ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│   F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults │
└──────────────────────────────────────────────────────────────────────────┘
```

Shutdown Temperature

    Enable you to set the maximum temperature that 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 system's
current operating status. You cannot make changes to one of them,
including:

CPU VCore

VDDQ

+3.3V

+5V

+12V

-12V

2.5V

+5VSB

Voltage Battery

System Temperature

CPU Temperature

PWM Temperature

Fan 1 Speed

Fan 2 Speed

Fan 3 Speed

✎ *Frequency/Voltage Control*

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility
                       Frequency/Voltage Control

    CPU Clock Ratio          [ 8 X]              ┌───────────────┐
    Auto Detect PCI Clk      [Disabled]          │   Item Help   │
    Spread Spectrum          [Enabled]           │               │
    Async AGP/PCI CLK        [Disabled]          │ Menu Level  ► │
    CPU Clock By SW          [Auto]              │               │
  x CPU Clock                100MHz              │               │
                                                 │               │
                                                 │               │
                                                 │               │
                                                 │               │
                                                 │               │
                                                 │               │

  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

CPU Clock Ratio
    This item allows you to adjust CPU Ratio. The item becomes unavail-
    able if your CPU clock ratio is locked.
    Min: 8
    Max: 24
    ➤ Key in a DEC number: (Between Min and Max).

Auto Detect PCI Clk
    This item allows you to enable/disable auto detection PCI Clock.
    ➤ The choice: Enabled or Disabled.

Spread Spectrum
    This item defines the spread spectrum modulation.
    ➤ The choice: Enabled or Disabled.

Async AGP/PCI CLK
    This item allows the user to adjust AGP/PCI Clock.
    ➤ The choice: Disabled, 66/33 MHz, 73/36 MHz, or 80/40 MHz.

CPU Clock By SW
    This item defines the CPU host clock. As it is set to Manual, the follow-
    ing item becomes available.
    ➤ The choice: Auto or Manual.

CPU Clock
    This item allows the user to adjust CPU Host Clock.
    Min: 100
    Max: 233
    ➤ Key in a DEC number: (Between Min and Max).

✍ **Load Fail-Safe Defaults**

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

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

Pressing 'Y' loads the BIOS default values for the most stable, minimal performance system operations.
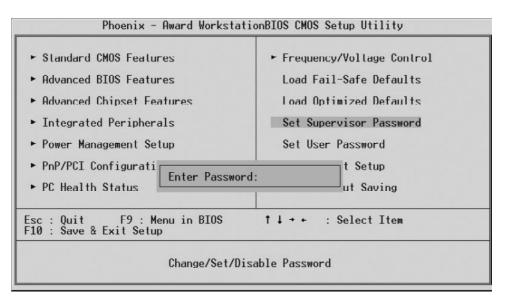
✍ **Load Optimized Defaults**

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

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory-set for optimal performance system operation.

✎ *Set Supervisor/User Password*

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
┌─────────────────────────────────────┬──────────────────────────────┐
│ ► Standard CMOS Features             │ ► Frequency/Voltage Control   │
│ ► Advanced BIOS Features             │   Load Fail-Safe Defaults     │
│ ► Advanced Chipset Features          │   Load Optimized Defaults     │
│ ► Integrated Peripherals             │   Set Supervisor Password     │
│ ► Power Management Setup             │   Set User Password           │
│ ► PnP/PCI Configurati┌─────────────────────┐  t Setup              │
│ ► PC Health Status   │ Enter Password:     │  ut Saving            │
│                      └─────────────────────┘                       │
├────────────────────────────────────────────────────────────────────┤
│ Esc : Quit      F9 : Menu in BIOS     ↑ ↓ → ←   : Select Item      │
│ F10 : Save & Exit Setup                                            │
├────────────────────────────────────────────────────────────────────┤
│             Change/Set/Disable 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

Pressing < Enter > on this item asks for confirmation:

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

Pressing "Y" stores the selections made in the menus of CMOS - a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

✎ Exit Without Saving

Pressing < Enter > on this item asks for confirmation:

Quit Without Saving (Y/N)? N

This allows you to exit from Setup without storing in CMOS any change. The previous selections remain in effect. This exits from the Setup utility and restarts your computer.