PDPEA
User's Guide

RIOWORKS™

The Reliable Building Block

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Contents

Overview

Thank you for choosing the RIOWORKS^{TM} PDPEA high performance Workstation motherboard. The PDPEA is a dual Socket-604 motherboard (M/B) based on the ATX form factor. As the latest Intel North Bridge Placer (MCH) with South Bridge ICH4: PCI-X Bridge P64H2 is built in the M/B, PDPEA fully supports Intel® Xeon (Prestonia) socket-604 processor at 533 MHz FSB (Front Side Bus) frequency. In memory support, PDPEA provides four sockets for the system memory. Users just simply choose Unbuffered DDR DRAM Module as the system memory and the total maximum memory size can be up to 8GB (Unbuffered ECC DIMM Support). Flexibility and expandability are always concerned by RIOWORKS^{TM}, PDPEA contains two PCI-X slots、 one PCI-64 slots and two PCI-32 slots for numerous add-on cards and provides Peer PCI transaction support to increase system performance.

Other features such as onboard Promise PDC20271 IDERAID interface、 Broadcom 5702 Ethernet controller、 AGP 8X、 six USB 2.0 connectors、 Hardware Monitor (PC87366) function and Wake-On-LAN function will provides an optimal platform for performance workstation environments.

Unpacking

Remove all items from the box and make sure you have these following items:
If you discover damaged or missing items, please contact your retailer.
Remove all items from the box and make sure you have these following items:
❒　　One RIOWORKS PDPEA motherboard
❒　　One ATA /66 IDE ribbon cable
❒　　One Floppy ribbon cable
❒　　One PDPEA User's Guide
❒　　One CD containing drivers and utilities
❒　　One Promise PDC20271 IDERAID User's Guide
❒　　One Broadcom 5702 Ethernet Controller User's Guide

Features Highlight

Processor	❑ Support dual Intel® Xeon (Prestonia) Socket-604 CPUs at 533 MHz Host Bus Interface
	❑ Integrated VRM complies to spec 9.1
Chipset	❑ Chipset： E7505
	❑ North Bridge： Placer (MCH)
	❑ South Bridge： ICH4
	❑ PCI-X Bridge： P64H2
Memory Support	❑ Four DIMM sockets and support up to 8GB memory size Unbuffered DDR DRAM Module Support Single and Dual Channel (144-bits wide) DDR memory interface
	❑ Unbuffered ECC DIMM support
Onboard IDERAID	❑ Dual Promise PDC20271 IDERAID Channels
	❑ Two Channels and up to four drivers
	❑ ATA100 Compatible
	❑ RAID Level 0, 1, 10
Onboard LAN	❑ Broadcom 5702 Gigabit Ethernet Controller (32bit)
Onboard Multi-I/O	❑ NS super I/O (PC87366)
	❑ Two serial ports with UART 16550
	❑ One parallel port with ECP/EPP support
	❑ Dual onboard USB 2.0 connectors; Four extendable USB 2.0 connectors
	❑ PS/2 mouse and keyboard connectors with Wake-up function

System BIOS	❑ Phoenix BIOS ❑ I2C support ❑ Legacy USB 2.0 support ❑ MP 1.1 & 1.4 compliant ❑ SMBIOS 2.3 compliant ❑ DMI 2.0 compliant ❑ Soft Power-down
System Bus	❑ 533/400 MHz Data Bus Frequency ❑ Dual Channel (144-bits wide) DDR memory interface
System Management	❑ Rioworks^{TM} SmartWatch^{TM} to alert the event of hardware problem ❑ Prevent from abnormal system down/data loss ❑ Alert on LAN ready ❑ Remote system controller ready
Expansion Slots	❑ Two PCI-X slots 、one PCI-32 slots and one PCI-64 slot ❑ One AGP 8X slot
Floppy Drive	❑ Supports 3.5" (1.44MB or 2.88MB) floppy drive and Japanese standard "Floppy 3 mode" (3.5" disk drive: 1.44MB, 1.2MB, 720KB) and LS-120 floppy disk drives (3.5" disk drive: 120 MB). BIOS supports IDE CD-ROM boot-up.
Dimension	❑ ATX form factor with size: 12" * 10"

About This User Guide

This manual explains how to build your system with PDPEA in detail. Please follow the procedures of this User Manual carefully and pay special attention to these icons.

IMPORTANT

This icon informs you for particularly important details regarding the setup or maintenance of your system. While we point out the most vital paragraphs in a chapter, you should always read every word carefully. Failing to do so can cause exasperation.

WARNING

This icon alerted you for potential dangers during setting up your system with PDPEA. These warnings should not be regarded as the whole of your safety regimen. Never forget that computer are electronic devices and are capable of delivering a shock. Prevent damage to yourself and to your board: always ensure that your system is turned off and unplugged the power cords whenever you are working with it, and that you are equipped

NOTE

This icon alerted you for notice during setting up your system. It provides you can useful alert during setting up a new system.

TIP

This icon will show you how to configure your system with PDPEA in an easy and simple ways. This icon always provides some useful description to help you configure your system.

Getting Help

If a problem arises with your system during installation or OS operating, you should ask your dealer for help first as your system has most likely be configured by them. They always have the best idea and quick response for your symptoms. If your dealer is near to your locations, you should bring your system to them to have it quickly serviced instead of attempting to solve the problem by yourself. Besides these, RIOWORKS also provides some helpful resources to help you.

1. Select RIOWORKS ^{TM} 's website at www.rioworks.com and navigate to this product page which contain links to product updates such as Jumper settings or BIOS updates.

2. Any driver issue please visit RIOWORKS ^{TM} 's website ate www.rioworks.com to download the driver you need.

3. FAQ sections on RIOWORKS Website are often helpful since other user's questions are often your own.

4. Email us at: sales@rioworks.com and we will try to answer your questions within 24 hours. Before you email your symptom to sales@rioworks.com, please fill in the symptom report form (page A-5) in order to let our engineers solve your problem quickly.

PDPEA Motherboard (Picture)

Main Power Connector   8 Pin Power Connector   4 DDR DIMM Sockets

CPU 1

CPU 2

AGP 8X

2 PCI-64 Slots

1 PCI-64 slot

2 PCI-32 Slots

Floppy Connector   IDE Connectors   IDERAID Connectors

PDPEA Motherboard (Layout)

Main Power Connector

CPU FAN1

8 pin Power Connector

DDR A1
DDR B1
DDR A2
DDR B2

CPU1

CPU2

SYS FAN2 CPU FAN2

SYS FAN1

SYS FAN2

AGP

PCIX -1

PCIX -2

PCI66 -1

PCI32 -1

PCI32 -2

RAID0

RAID1

IDE1

IDE0

SYS FAN

USB 4 & 5

Clear CMOS

Wake-on-LAN

USB 2 & 3

Chassis intrutio

Chassis intrutio

Power Switch
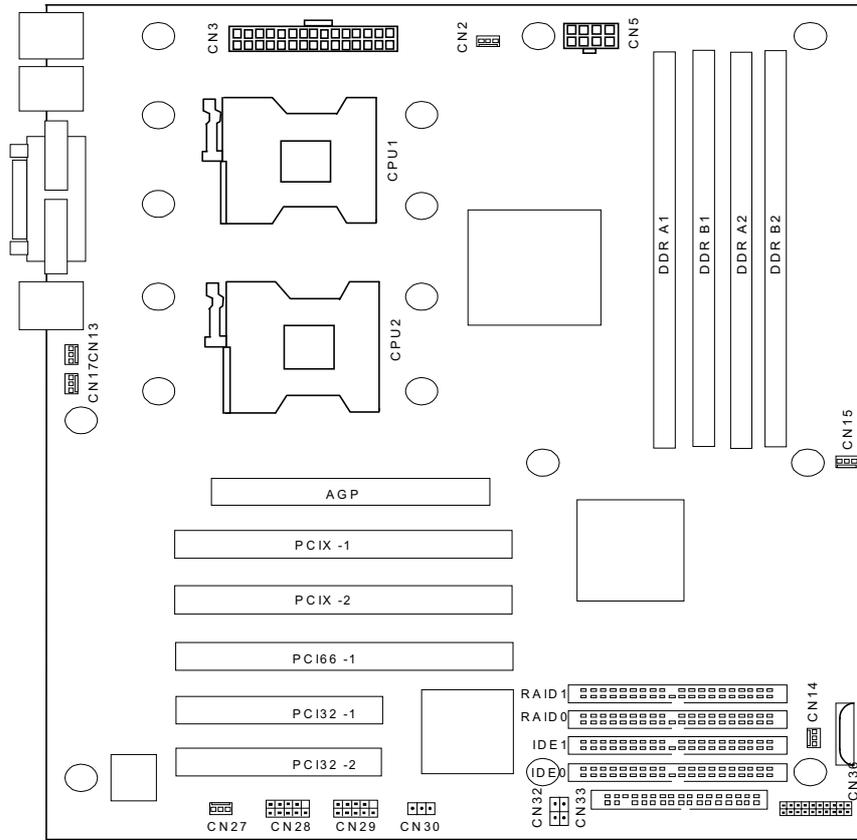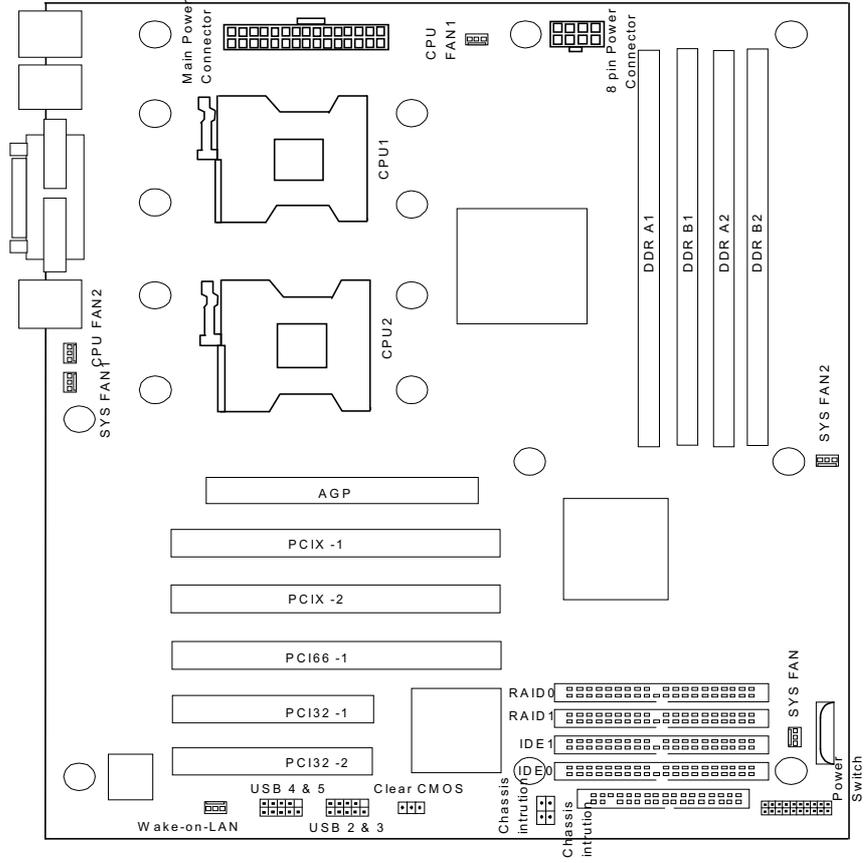
Chapter 1
Hardware Installation

In this chapter, the installation of the PDPEA with the processor and other hardware connected to your system will be explained in detail.

Installation Procedures

Installation procedures will be broken up into six major parts.

Step 1:Jumper setting
Step 2: Install memory (Unbuffered DDR DRAM Module)
Step 3: Install Intel Xeon CPU
Step 4: Attach cables to connectors
Step 5: Install expansion cards
Step 6: Power connection

Warning

This motherboard contains sensitive electronic components that can be easily damaged by static electricity. Follow the instructions carefully to ensure correct installation and to avoid static damage.

Jumper Setting

1. Clear Real Time Clock (RTC) RAM-CN30

The onboard button cell battery powers the CMOS RAM. It contains all the BIOS setup information. Normally, it is necessary to keep the jumper connected to pin2 and pin3 (Default) to retain the RTC data as shown below.

1、2	Clear CMOS
2、3	Normal
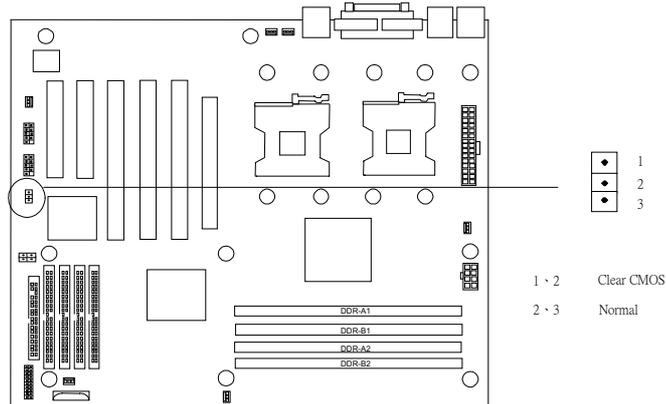
Note

Should you want to clear the RTC data:

(1) Power Down your computer

(2) Short pin1 and pin2 with jumper for few seconds

(3) Connect pin2 and pin3 with jumper again.

(4) Turn on your computer by pressing the power-on button from front-panel.

(5) Hold down <Delete> during boot-up and select <Load Setup Defaults> option in the selection <Exit Saving Changes>. Then re-enter BIOS setup to re-enter user preferences.

Step 2

Install Memory

PDPEA uses 184-pin Double Data Rate (DDR) Inline Memory Modules (DIMM). Four DIMM sockets are available for Unbuffered DDR DRAM Module with 128MB, 256MB, 512MB and 1GB combinations. And the total memory size is between 128MB and 8GB.

IMPORTANT

❑ **Unbuffered DDR DRAM Module support only. Unbuffered ECC support**

❑ **No matter how many memory DIMM you want to plug in, You have to insert one memory DIMM in #DDR-A1 DIMM socket while you install the system at the first time that you want to use it; such as the system will be able to boot up, otherwise, it can not work yet.**
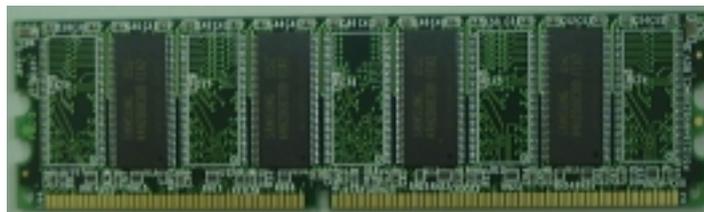
| 80 Pins | | 104 Pins | |

Memory Installation Procedures

1. Locate the DIMM modules on the PDPEA.
2. Make sure the DIMM module's pins face down and match the socket's size as depicted below.
3. Insert the module down to the DIMM socket in with both hands and press down firmly until the DIMM module is securely in place. (The tabs of the socket will close-up to hold the DIMM in place when the DIMM touches the socket's bottom.

You have to insert one memory DIMM in #DDR-A1 DIMM socket while you install the system at the first time that you want to use it.
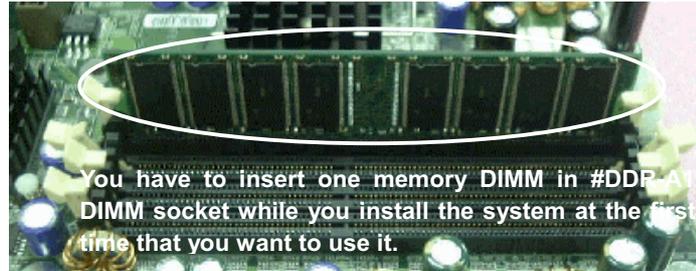
4. Repeat step1 to step 3 to add additional DIMM modules.
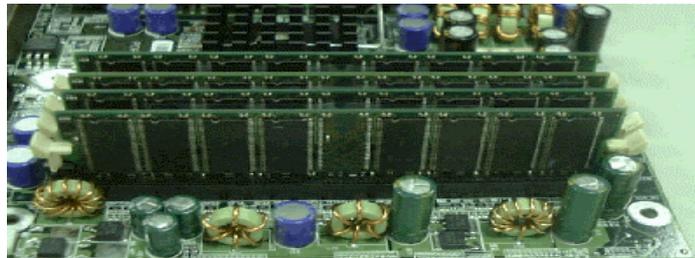
![icon] **IMPORTANT**

You have to insert one memory DIMM in #DDR-A1 DIMM socket while you install the system at the first time that you want to use it; such as the system will be able to boot up, otherwise, it can not work yet.

Step 3

Install CPU

PDPEA uses dual Intel® Xeon (Prestonia) socket-604 processors at 533 MHz FSB and support 2.5 GHz plus.

CPU Installation Procedures

1. Lift up the socket lever and carefully place the Xeon CPU with the correct orientation as the figures are shown below

2. Mount the CPU heatsink with proper exproxy and secure it with the lock as the figures are shown below.

3. Plug the 3-wire fan power core into the connector named CPU1 FAN

4. Repeat to install the other CPU
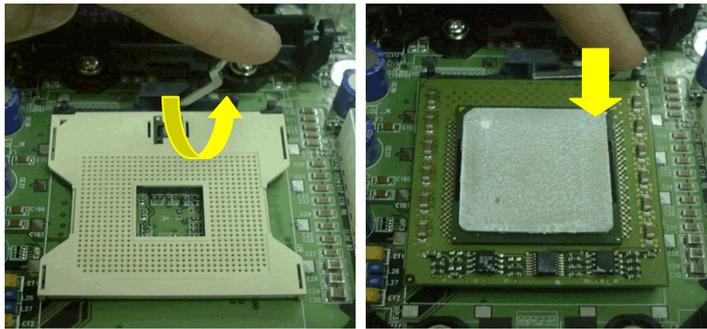
Step 4.
Attach Cable to Connectors

This step explains where each connector is inserted on the PDPEA. There will be a PDPEA layout picture following each explanation indicating where the connector is inserted. The motherboard connectors are:
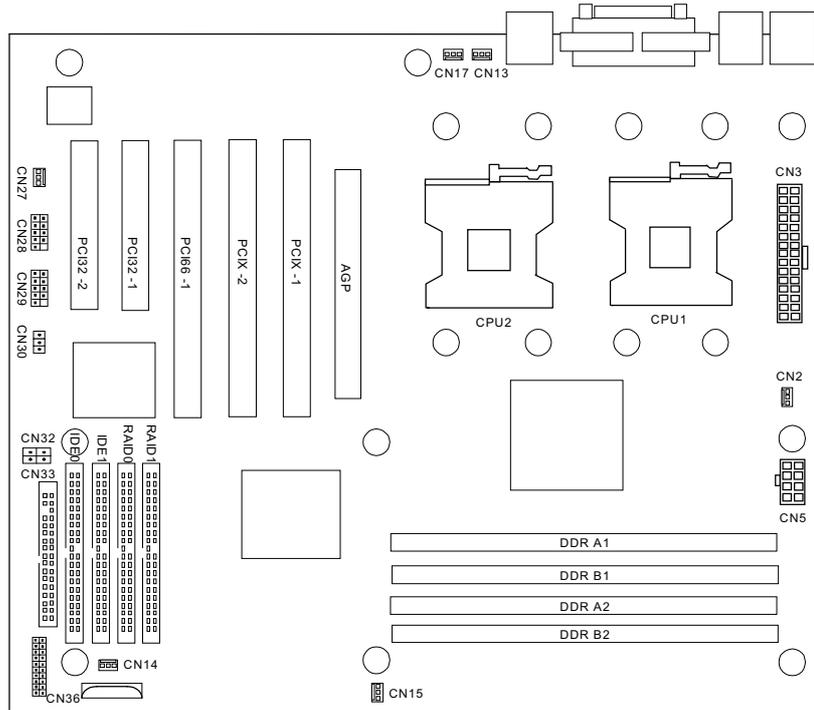
Item	Connectors	Page
1	ATX Power Supply	1-9
2	Floppy Disk Drive Connector	1-9
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1. **ATX Power Supply (20-pin ATX power connectors)-CN3**

    The connector connects to ATX power supply. Find the proper orientation
    and push down firmly to make sure that the pins are aligned. For Wake on
    LAN support, 5-volt Stand-by lead (+5VSB) from ATX power supply must
    supply at least 720mA.

    **Rioworks strongly recommend user to use 400w power supply at
    least.**

    +3.3v   +3.3v
    -12v   +3.3v
    GND   GND
    PS_ON   +5v
    GND   GND
    GND   +5v
    GND   GND
    Reserved   PWR_OK
    +5v   5VSB
    +5v   +12v
    +5v   +12v
    GND   +3.3v

    DDR-A1
    DDR-B1
    DDR-A2
    DDR-B2

    Pin1

    +12v   GND
    +12v   GND
    +12v   GND
    +12v   GND
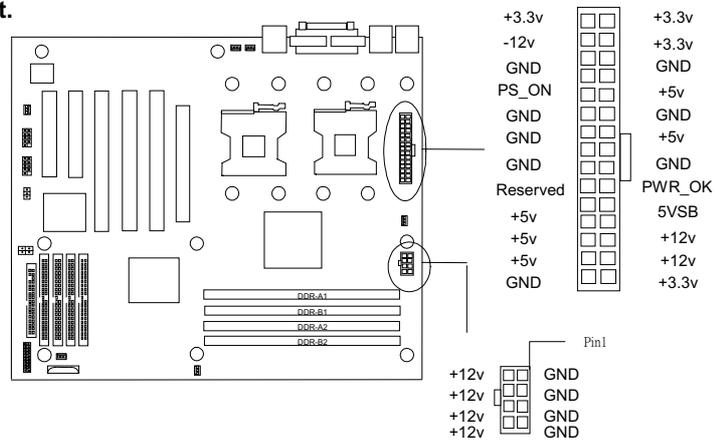
2. **Floppy Disk Drive Connector (34-pin FLOPPY)**

    This connector supports the provided floppy disk drive ribbon cable. After
    connecting the single end to the board, connect the plug on the other end
    to the floppy drive.

    Pin1

    DDR-A1
    DDR-B1
    DDR-A2
    DDR-B2
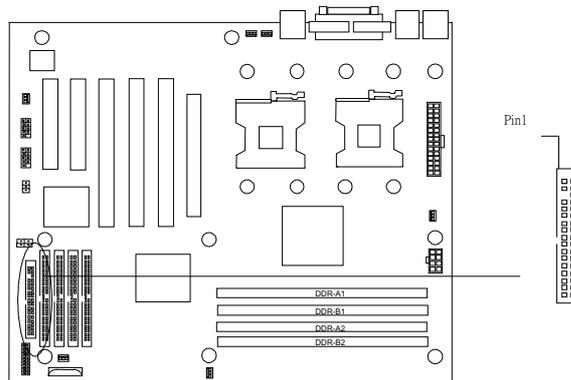
3. Primary/Secondary IDE connectors (ATA-100100 IDE connectors (Two 40-pin IDE)

The connectors support the provided 80-wire 40-pin IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs at the other end to your hard disk(s). If you install two hard disks in the same cable, you must configure the second drive to Slave mode by setting its jumper accordingly. Please refer to the documentation of your hard disk for the jumper settings. BIOS now supports IDE HDD or IDE CD-ROM boot-up (Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged).
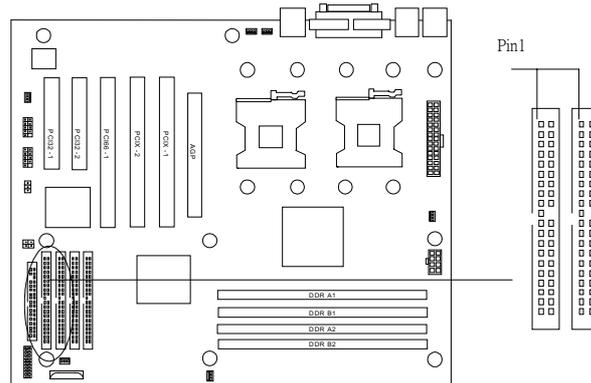
IMPORTANT

❏ **Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. IDE ribbon cable must be less than 46cm (18inches), with the second drive connector no more than 15cm (6 inches) from the first connector.**

❏ **If you want to have ATA100/66 IDE performance, proper ATA100/66 is needed as 80-wire ATA100/66 cable is different from 40-wire ATA33 cable**

4. Promise PDC 20271 IDERAID Controllers

PDPEA uses Promise PDC 20271 IDERAID chipset and provides connectors for IDE devices. Please refer to the "Promise PDC 20271 IDERAID Controller User's Guide" for further information.
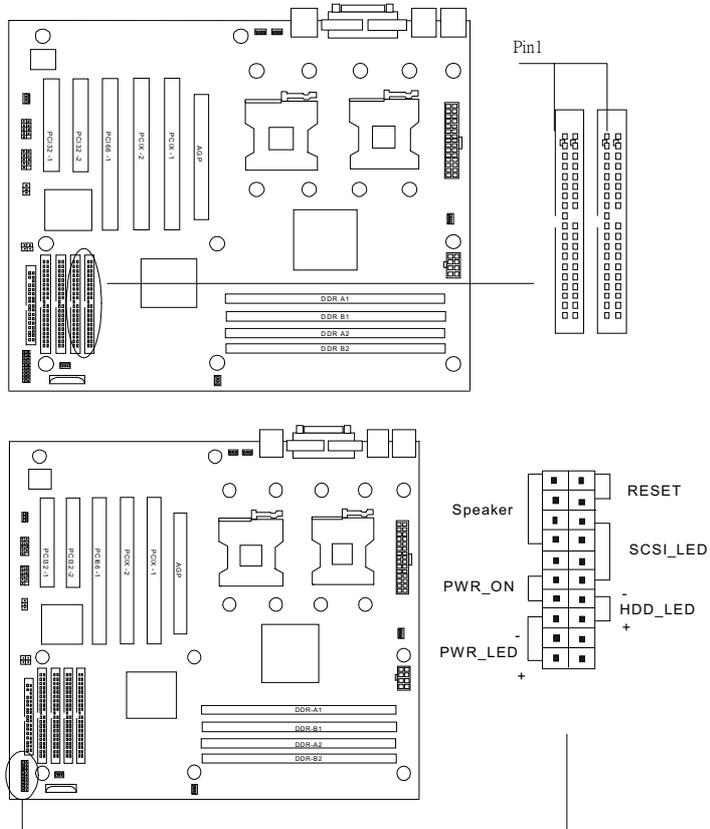
Figure 1-1

Item 5 through 9 are depicted in Figure 1-1 as above.

5. **Reset Switch Header (2-pin PWR-ON)**

This 2-pin header connects to the case-mounted reset switch for rebooting your computer without turning off and on your power switch. This is a preferred method of rebooting to prolong the life of the system's power supply.

6. **Hard Disk Activity LED Header (2-pin HDD_LED)**

This header supplies power to the cabinet's hard disk or IDE activity LED. Read and write activity by devices connected to the Primary or Secondary IDE connectors will cause the LED to light up.

7. **Speaker Header (4-pin SPEAKER)**

There is one jumper cap over pin1 and pin2 (default setting) for internal buzzer. If you want to use external case-mounted speaker instead of internal buzzer, remove jumper cap and connect speaker wire to the 4-pin connector.

8. **System Power LED Header (3-pin PWR_LED)**

This 3-pin connector connects the system power LED, which lights up when the system is powered on and blinks when it is in sleep mode.

9. **SCSI Hard disk LED Card Activity LED Header (4-pin SCSI_HD)**

The 4-pin connector can be connected to the 4-pin activity LED connector of SCSI card. Read and Write activities by devices connected to the SCSI card will cause the front panel LED to light up.

10. **CPU and Aux Fan Connectors (4 3-pin FAN connectors)**

There are five 3-pin fan connectors in the PDPEA M/B. Two fans are used for CPU1 and CPU2 、one is for system fan power and two are for auxiliary power. These connectors support cooling fans of 500mA (6W) or less. Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of this connector.
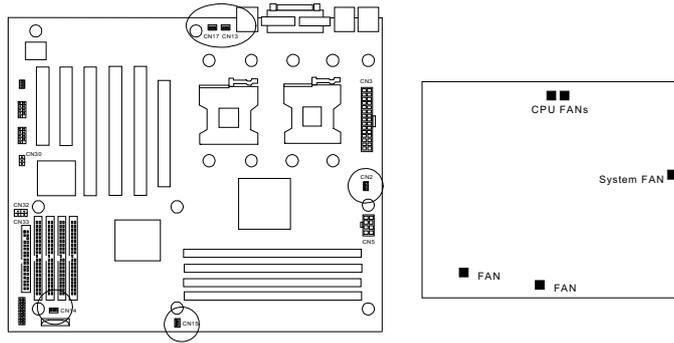
PDPEA FAN Location

11. Onboard Broadcom 5702 Gigabit Ethernet Controllers

PDPEA uses Broadcom 5702 Gigabit Ethernet controller. It consists of both the Media Access controller and 10/100 Mbps Physical Layer (PHY) interface. The RJ45 connector provides both 10Base-T and 100Base-TX connectivity. Please refer to "Broadcom 5702 Ethernet Controller User 's Guide" for further information.

Wake Up
GND
5VSB
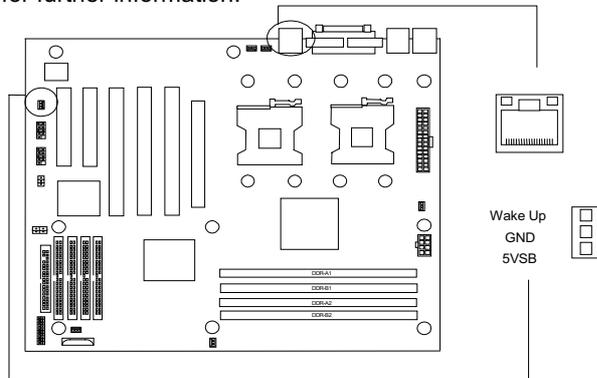
✳IMPORTANT

❑ **This feature requires that your system have an ATX power supply with at least 720mA +5VSB standby power.**
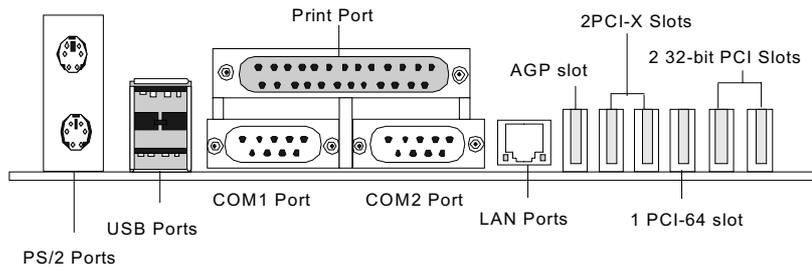
Figure 1-2

Item 12 through 16 are depicted in Figure 1-2 as above.

12. PS/2 Mouse Port (6-pin Female) The upper port

The system will direct IRQ12 to the PS/2 mouse if one is detected. If not detected, expansion cards can use IRQ12.

13. PS/2 Keyboard Connector (6-pin Female) The lower port

This connection is for a standard keyboard using a PS/2 plug (mini DIN). This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.

14. Universal Serial BUS Ports (4-pin Female)

Two external USB ports are available for connecting USB devices. But users can only two of them with proper cabling for connecting USB.
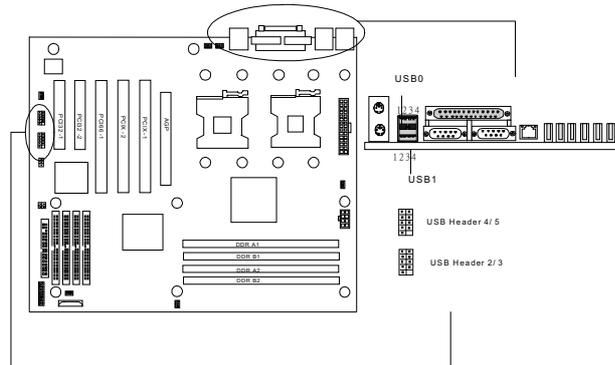
15. Parallel Printer Port (25-pin Female)

You can enable the parallel port and choose the IRQ through the BIOS Setup.

16. Serial Port COM1/2 (9-pin Male)

The serial port COM1 and COM2 can be used for pointing devices or other serial devices. See the BIOS Setup.

17. Wake-On-LAN function

PDPEA uses Broadcom 5702 Gigabit Ethernet controller. User can use Wake-On-LAN function to wake up your computer. Please refer to the "Broadcom 5702 Ethernet Controller User 's Guide" for further information.

Wake Up
GND
5VSB
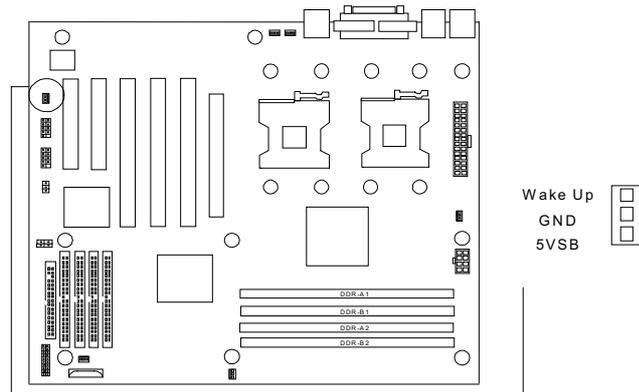
IMPORTANT

LAN function	LAN LED color
10 Mbps	Non
100 Mbps	Green
1000 Mbps	Orange

Install Expansion Cards

Hardware Installation

⚠️WARNING

❑ **Power off your power supply completely when adding removing any expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards**.

1. **Expansion Card Installation Procedure**

    1.1 Read the documentation for your expansion card and makeing any necessary hardware or software setting changes, such as jumpers.

    1.2 Remove the bracket plate on the slot you intend to use. Keep the bracket for possible future use.

    1.3 Carefully align the card's connectors and press firmly.

    1.4 Secure the card on the slot with the screw you removed above.

    1.5 Jump to step 6 to finish installation then set the IRQ and DMA as follows.

2. **Assigning IRQs for PCI Expansion Cards**

    An IRQ number is automatically assigned to PCI expansion cards. In the PCI bus design, the BIOS automatically assigns an IRQ to a PCI slot that contains a card requiring an IRQ. To install a PCI card, you need to set the INT (interrupt) assignment. Since all the PCI slots on this motherboard use an INTA #, set the jumpers on your PCI cards to INTA.

Step 6.

Powering on Your Computer

1. Be sure that all switches are off (in some systems, marked with "O").

2. After finishing all jumper settings and connections, close the system case cover.

3. Connect the power supply cord into the power supply located on the back of your system case.

4. Connect the power cord into a power outlet that is equipped with a surge protector.

5. You may then turn on your devices in the following order:
    - ➢ Your monitor
    - ➢ External IDE devices (starting with the last device on the chain)
    - ➢ Your system power.

    For ATX power supplies, you need to switch on the power supply as well as press the ATX power switch on the front of the case.

6. The power LED on the front panel of the system case will light up. For ATX power supplies, the system LED will light up when the ATX power switch is pressed. The monitor LED may light up after the system's LED if it complies with "green" standards or if it has a power standby feature. The system will then run power-on tests. While the tests are running, additional messages will appear on the screen. **If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test.** Recheck your jumper settings and connections or call your retailer for assistance.

7. During power on, hold down <F2> to enter BIOS setup. Follow the instruction in the next chapter, **BIOS Setup**.

Note

❑ **Powering Off your computer**

You have to first exit or shut down your operating system before switching off the power switch. For ATX power supplies, you can press the ATX power switch after exiting or shutting down your operating system.

❑ **Rioworks strongly recommend user to use 400w power supply at least.**

Chapter 2
BIOS Setup

This chapter discusses the PhoenixBIOS Setup program built into the ROM BIOS. The Setup program allows users modifying the basic system configurations according to their requirements. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The PhoenixBIOS installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

The PhoenixBIOS has been customized by adding important, but non-standard, features such as password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

The rest of this chapter is intended to guide you through the process of configuring your system using Setup.

Starting BIOS Setup

The PhoenixBIOS is immediately activated when you power on the computer every time. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. After finishing configuring the whole system, then BIOS will continue to seek an operating system on one of the disks, launch then turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

    1.   By pressing the <F2> key when the following message appears

briefly at the bottom of the screen during the POST (Power On Self-Test).

Press F2 to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup Program, restart the system from state "On" to state "Off" by pressing the "RESET" button on the system case. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot as well, an error message will be displayed and you will again be asked to...

PRESS F1 TO CONTINUE, F2 TO ENTER SETUP

Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

BIOS Setup

Key	Function
Up Arrow (↑) Key	Move to the previous item
Down Arrow (↓) Key	Move to the next item
Left Arrow (←) Key	Move to the previous item
Right Arrow (→) Key	Move to the next item
Esc key	In the Sub-menu: Exit the sub-menu. In the BIOS main category: Quit Without saving changes.
Enter Key	Select the item. A pop-up selection will display on the screen and allows to set the item value.
PgUp Key	Increase the numeric value or make change
PgDn Key	Decrease the numeric value or make change
+ Key	Increase the numeric value or make change
- Key	Decrease the numeric value or make change
F1 Key	General Help on Setup navigation keys. Press <F1> key to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <ESC> key or <F1> key again.
F9 Key	Setup Defaults
F10 key	Save configuration and exit the BIOS Setup Utility

Table 1 Legend Keys

Navigating through the menu bar
Use the left and right arrow keys to navigate the menu you want to be in.

To display a sub menu
Use the arrow keys to move the cursor to the sub menu you want. Then press
<Enter>. A "➢" pointer marks all sub menus.

In Case of Problems

If after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the *Phoenix*BIOS supports an override to the CMOS setting, which resets your system to its defaults. The other way is clear the present CMOS information. (Refer to the jumper setting.)

The best advice is to only alter settings, which you thoroughly understand. In the end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both *Phoenix*BIOS to provide the maximum performance and reliability of the system. Even a slight change to the chipset setup may also cause potential and unpredictable failure to the system.

Section 1

Main Menu

To start the **Phoenix**BIOS Setup utility:

Step 1: Turn on or reboot your system.PhoenixBIOS displays this message:

Then Press <F2> to enter SETUP

Step 2: Pressing <F2> displays the Main Menu, which looks like this:

```
                        PhoenixBIOS Setup Utility
    Main      Advanced      Security      Power      Boot      Exit
                                                  Item Specific Help

  System Time        [16:19:20]
  System Date:       [03/02/1994]            <Tab>, <Shift-Tab>, or
                                             <Enter> selects field
  Legacy Diskette A:  [1.44/1.25 MB 3½"]
  Legacy Diskette A:  [Disabled]


  ▶ Primary Master       6449 MB
  ▶ Primary Slave        None
  ▶ Secondary Master     CD-ROM
  ▶ Secondary Slave      None

  ▶ Boot Features

  System Memory         640 KB
  Extended Memory       31744 KB

  F1  Help    ↑↓ Select Item   -/+ Change Values    F9  Setup Defaults
  ESC Exit    ↔Select Menu   Enter Select  ▶ Sub-Menu  F10 Save and Exit
```

Step 3: for a description of the fields on this menu.

◆ The Menu Bar

The Menu Bar at the top of the window lists these selections:

Key	Function
<F1> or <Alt-H>	General Help window (See below).
<Esc>	Exit this menu.
arrow keys	Select a different menu.
↑ or ↓ arrow keys	Move cursor up and down.
<Tab> or <Shift-Tab>	Cycle cursor up and down.
<Home> or <End>	Move cursor to top or bottom of window.
<PgUp> or <PgDn>	Move cursor to next or previous page.
<F5> or <->	Select the Previous Value for the field.
<F6> or <+> or <Space>	Select the Next Value for the field.
<F9>	Load the Default Configuration values for this menu.
<F10>	Save and exit.
<Enter>	Execute Command or Select *P* Submenu.
<Alt-R>	Refresh screen.

Use the left and right   arrow keys to make a selection.

See the section below, "Exiting Setup," for a description on exiting the Main Menu.

◆ The Legend Bar

Use the keys listed in the legend bar on the bottom to make your selections or exit the current menu. The chart on the following page describes the legend keys and their alternates:

Key	Function
<F1> or <Alt-H>	General Help window (See below).
<Esc>	Exit this menu.
arrow keys	Select a different menu.
↑ or ↓ arrow keys	Move cursor up and down.
<Tab> or <Shift-Tab>	Cycle cursor up and down.
<Home> or <End>	Move cursor to top or bottom of window.
<PgUp> or <PgDn>	Move cursor to next or previous page.
<F5> or <->	Select the Previous Value for the field.
<F6> or <+> or <Space>	Select the Next Value for the field.
<F9>	Load the Default Configuration values for this menu.
<F10>	Save and exit.
<Enter>	Execute Command or Select *P* Submenu.
<Alt-R>	Refresh screen.

To select an item, use the arrow keys to move the cursor to the field you want. Then use the plus-and-minus value keys to select a value for that field. The Save Values commands in the Exit Menu save the values currently displayed in all the menus.

To display a sub menu, use the arrow keys to move the cursor to the sub menu you want. Then press **<Enter>**. A pointer (▶) marks all sub menus.

BIOS Setup

The Field Help Window

The help window on the right side of each menu displays the help text for the currently selected field. It updates as you move the cursor to each field.

◆ The General Help Window

Pressing **<F1>** or **<Alt-H>** on any menu brings up the General Help window that describes the legend keys and their alternates:

```
                        General Help

 Setup changes system behavior by modifying the BIOS
 Configuration parameters.  Selecting incorrect values
 may cause system boot failure; load Setup Default values
 to recover.

 <Up/Down> arrows select fields in current menu.
 <PgUp/PgDn> moves to previous/next page on scrollable menus.
 <Home/End> moves to top/bottom item of current menu.

 Within a field, <F5> or <-> selects next lower value and
 <F6>, <+>, or <Space> selects next higher value.

 <Left/Right> arrows select menus on menu bar.
 <Enter> displays more options for items marked with a ▶ ,
 <Enter> also displays an option list on some fields.

 <F9> loads factory-installed Setup Default values.
 <F10> restores previous values from CMOS.

 <ESC> or <Alt-X> exits Setup: in sub-menus, pressing these
 keys returns to the previous menu.

 <F1> or <Alt-H> displays General Help (this screen).

                        [Continue]
```

The scroll bar on the right of any window indicates that there is more than one page of information in the window. Use **<PgUp>** and **<PgDn>** to display all the pages. Pressing **<Home>** and **<End>** displays the first and last page. Pressing **<Enter>** displays each page and then exits the window.
Press **<Esc>** to exit the current window.

◆ Main Menu Selections

You can make the following selections on the Main Menu itself. Use the sub menus for other selections.

Feature	Options	Description
System Time	HH:MM:SS	Set the system time.
System Date	MM/DD/YYYY	Set the system date.
Diskette 1	360 kB, 5 ¼" 1.2 MB, 5 ¼" 720 kB, 3 ½" 1.44/1.25 MB, 3 ½" 2.88 MB, 3 ½" Not installed Disabled	Select the type of floppy-disk drive installed in your system. 1.25 MB is a Japanese media format that requires a 3½" 3-Mode Diskette drive.
System Memory	N/A	Displays amount of conventional memory detected during boot up.
Extended Memory	N/A	Displays the amount of extended memory detected during boot up.

You can set the boot sequence of the bootable drives by selecting **Boot Sequence** on the Main Menu or opening the **Boot Menu**.

▪ Master and Slave Sub-Menus

The **Master** and **Slave** sub-menus accessed from the Main Menu control these types of devices:
- Hard-disk drives
- Removable-disk drives such as Zip drives
- CD-ROM drives

*Phoenix*BIOS 4.0 supports up to two **IDE disk adapters**, called **primary** and **secondary** adapters. Each adapter supports one **master drive** and one optional **slave drive** in these possible combinations:

- 1 Master
- 1 Master, 1 Slave
- 2 Masters
- 2 Masters, 1 Slave
- 2 Masters, 2 Slaves

BIOS Setup

There is one IDE connector for each adapter on your machine, usually labeled "Primary IDE" and "Secondary IDE." There are usually two connectors on each ribbon cable attached to each IDE connector. When you have connected two drives to these connectors, the one on the end of the cable is the Master. If you need to change your drive settings, selecting one of the Master or Slave drives on the Main Menu displays a sub-menu like this:

PhoenixBIOS Setup Utility	
Main	
Primary Master	Item Specific Help
Type: [**Auto**] Multi Sector Transfer ; [Disable] LBA Mode Control: [Disable] 32-bit I/O: [Disable] Transfer Mode: [FPIO 4 / DMA 2] Ultra DMA Mode: [Mode 2]	Select the drive type of the fixed disk installed in your system. If type User is selected, Cylinders, Heads, and Sectors can be edited directly. Auto attempts to automatically detect the drive type for drives that comply with ANSI specifications.
F1 Help ↑↓ Select Item -/+ Change Values ESC Exit ↔Select Menu Enter Select ▶ Sub-Menu	F9 Setup Defaults F10 Save and Exit

Use the legend keys listed on the bottom to make your selections and exit to the Main Menu. Use the following chart to configure the hard disk.

BIOS Setup

Feature	Options	Description
Type	None 1 to 39 User Auto IDE Removable CD-ROM ATAPI Removable	None = Autotyping is not able to supply the drive type or end user has selected None, disabling any drive that may be installed. User = You supply the hard-disk drive information in the following fields. Auto = Autotyping, the drive itself supplies the correct drive information. IDE Removable = Removable read-and-write media (e.g., IDE Zip drive). CD-ROM = Readable CD-ROM drive. ATAPI Removable = Read-and-writea media (e.g., LS120, USB Floppy, USB Zip).
Multi-Sector Transfers	Disabled Standard 2 sectors 4 sectors 8 sectors 16 sectors	Any selection except Disabled determines the number of sectors transferred per block. Standard is 1 sector per block.
LBA Mode Control	Enabled Disabled	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads, & Sectors.
32-Bit I/O	Enabled Disabled	Enables 32-bit communication between CPU and IDE card. Requires PCI or local bus.
Transfer Mode	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4	Selects the method for transferring the data between the hard disk and system memory. The Setup menu only lists those options supported by the drive and platform.
Ultra DMA Mode	Enabled Disabled	User can change the mode from Disabled to Enabled to riser the data performance.

* IDE drives do not require setting Landing Zone and Write Precomp.

When you enter Setup, the Main Menu usually displays the results of **Autotyping–** information each drive provides about its own parameters (e.g., cylinders, heads, and sectors)–and how the drives are arranged as Masters or Slaves on your machine.

Some older drives, however, do not use Autotyping and require selecting type User and entering a pre-defined fixed-disk type value or specifying the drive parameters separately with the User type selected. You can find the correct parameters for hard-disk drives in the drive manual or written on the casing of the drive itself.

⚙ Note

Before changing the contents of this menu, **write them down**. Once you have established correct parameters for your drive, **write them down and store them in a safe place** (e.g., tape them to the disk drive) for use in case these values are lost in CMOS or if autotyping fails. If these hard-disk parameters are not correctly entered in CMOS, you cannot access the data on your drive.

⚠ WARNING

Incorrect settings can cause your system to malfunction. To correct mistakes, return to Setup and restore the Setup Defaults with <F9> and re-enter the correct drive parameters.

Section 2

Advanced Menu

Selecting "Advanced" from menu bar on the Main Menu displays a menu like this:

```
                        PhoenixBIOS Setup Utility
     Main      Advanced      Security     Power     Boot     Exit
                                                           Item Specific Help

  ▸ Advanced Chipset Control
  ▸ I/O Device Configuration                           Select options for
  ▸ Advanced Processor Options                         Advanced Chipset
  ▸ DMI Event Logging                                  features.

  Local Bus IDE adapter           [Both]
  Legacy USB Support              [Enabled]
  Enable RAID:                    [Yes]

  Large Disk Access Mode:         [DOS]
  Installed O/S:                  [Win2000]
  NT4 Installation Workaround:    [Disabled]]
  Reset Configuration Data:       [NO]


  F1  Help      ↕  Select Item    -/+ Change Values     F9  Setup Defaults
  ESC Exit      ↔  Select Menu    Enter Select  ▸ Sub-Menu  F10 Save and Exit
```

WARNING

Incorrect settings can cause your system to malfunction. To correct mistakes, return to Setup and restore the Setup Defaults with <F9>.

◆ **Advanced Chipset Control**

In a system ,user can selecting "Advanced Chipset Control" from menu bar on the Advanced menu displays a menu like this:

If you use Unbuffered ECC DIMM, the manual will show "ECC DDR" information.

Note

The contents of this menu depend on the chipset installed on your motherboard, and chipsets vary widely. Consult your dealer or the chipset manual before changing the items on this menu. Incorrect settings can cause your system to malfunction.

To change a device's priority on the list, first select it with the up-or-down arrows, and move it up or down using the <+> and <-> keys. Pressing <n> moves a device between the Removable Devices and Hard Drive. Pressing <Shift+1> enables or disables a device.

◆ Advanced Processor Options

In a system, user can selecting "Advanced Processor Options" from menu bar on the Advanced menu displays a menu like this:

PhoenixBIOS Setup Utility		
Advanced		
Advanced Processor Options		Item Specific Help
Frequency Ratio	[X 8]	
Fast String operations	[Enabled]	Select the internal
Compatible FPU Code	[Disabled]	frequency multiplier
Split Lock operations	[Enabled]	of the CPU.
Hyper-Threading	[Enabled]	
F1 Help ↕ Select Item -/+ Change Values F9 Setup Defaults		
ESC Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		

◆ DMI Event Logging

PhoenixBIOS Setup Utility		
Advanced		
DMI Event Logging		Item Specific Help
Event Log validity	Valid	
Event log capacity	Space Available	View the contents of
		the DMI event log.
View DMI event log	[Enter]	
Event Logging	[Enabled]	
ECC Event Logging	[Enabled]	
Mark DMI events as read	[Enter]	
Clear all DMI event logs	[No]	
F1 Help ↕ Select Item -/+ Change Values F9 Setup Defaults		
ESC Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		

♦ I/O Device Configuration Menu

The CPU communicates with external devices such as printers through devices called **Input/Output (I/O) ports** such as serial and parallel ports. These I/O devices require the use of system resources such as I/O addresses and interrupt lines. If these devices are Plug and Play, either the BIOS can allocate the devices during POST, or the operating system can do it. If the I/O devices are not Plug and Play, they may require manually setting them in Setup.

On some systems, the **chipset** manages the communication devices. Other systems have, instead, a separate **I/O chip** on the motherboard for configuring and managing these devices.

Many systems allow you to control the configuration settings for the I/O ports. Select "I/O Device Configuration" on the Advanced Menu to display this menu and specify how you want to configure these I/O Devices:

PhoenixBIOS Setup Utility		
Advanced		
I/O Device Configuration		Item Specific Help
Serial Port A: [Enabled]		Enable support for
Base I/O address: [3F8]		Legacy Universal
Serial Port B: [Enabled]		Serial
Base I/O address: [2F8]		Bus
Parallel Port: [Enabled]		
Mode: [ECP]		
Base I/O address: [378]		
Interrupt: [IRQ 7]		
DMA channel: [DMA 1]		
Floppy disk Controller [Enabled]		
Base I/O address: [Primary]		
PS/2 Mouse [Auto Detect]		
F1 Help ↕Select Item -/+ Change Values F9 Setup Defaults		
ESC Exit ↔Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		

Use the legend keys to make your selections and exit to the Main Menu.

Feature	Options	Description
Serial port A: Serial port B:	Disabled Enabled Auto	Disabled turns off the port. Enabled requires you to enter the base Input/Output address and the Interrupt number on the next line. Auto makes the BIOS configure the port automatically during POST.
Base I/O	3F8, IRQ 4	If you select Enabled, choose one of these combinations.
Parallel Port:	Disabled Enabled Auto	Disabled turns off the port. Enabled requires you to enter the base Input/Output address and the Interrupt number below. Auto makes the BIOS auto configure the port during POST.
Mode	Output only Bi-directional	Output only is standard one-way protocol for a parallel device. Bi-directional uses two-way protocol of an Extended Capabilities Port (ECP).
Floppy disk Controller	Disabled Enabled	Enables the on-board legacy diskette controller. Disabled turns off all legacy diskette drives.

BIOS Setup

⚠ *Warning*

If you choose the same I/O address or Interrupt for more than one port, the menu displays an asterisk (*) at the conflicting settings. It also displays this message at the bottom of the menu:

*Indicates a DMA, Interrupt, I/O, or memory resource conflict with another device.   Resolve the conflict by selecting another settings for   the devices.

Section 3

Power Menu

Selecting "Power" from the menu bar displays a menu like this:

```
                    PhoenixBIOS Setup Utility
      Main   Advanced   Security   Power   Boot   Exit
                                                          Item Specific Help

   Enable ACPI (debug only):      [Yes]                   En/Disable ACPI BIOS
                                                          (Advance Configuration
                                                          and Power Interface)
   Instant Off:                   [Yes]                   Debug only, remove this
                                                          option for production.

   Intruder interrupt select      [Disable]
   Resume On Modem Ring:          [On]
   Wake On Lan                    [Enabled]


   F1  Help         ↕ Select Item    -/+ Change Values      F9  Setup Defaults
   ESC Exit         ↔ Select Menu      Enter Select  ▶ Sub-Menu    F10 Save and Exit
```

Use this menu to specify your settings for Power Management. Remember that the options available depend upon the hardware installed in your system. Those shown here are from a typical system.

A power-management system reduces the amount of energy used after specified periods of inactivity. The Setup menu pictured here supports a **Full On** state, a **Standby** state with partial power reduction, and a **Suspend** state with full power reduction.

Use the Advanced Options on this menu to specify whether or not the activity of interrupts can terminate a Standby or Suspend state and restore Full On. Do not change these settings without knowing which devices use the interrupts.

Use the legend keys to make your selections and exit to the Main Menu. Use the following chart in making your selections:

Feature	Options	Description
Enable ACPI	YES NO	Enabled/ disable ACPI BIOS (Advanced Configuration and Power Interface) Debug only, remove this option for production.
Instant off	Disabled Enabled	When you press the power button ten seconds, the system will shut down.
Intruder interrupt select	Disable SMI	The system will shut down automatically when you open the case.
Resume On Modem Ring	Off On	Wake On Ring function
Wake On LAN	Disabled Enabled	Wake On LAN function

Section 4

Boot Menu

After you turn on your computer, it will attempt to load the operating system (such as Windows 98) from the device of your choice. If it cannot find the operating system on that device, it will attempt to load it from one or more other devices in the order specified in the Boot Menu. Boot devices (i.e., with access to an operating system) can include: hard drives, floppy drives, CD ROMs, removable devices (e.g., Iomega Zip drives), and network cards.

Note

Specifying any device as a boot device on the Boot Menu requires the availability of an operating system on that device. Most PCs come with an operating system already installed on hard-drive C:\ .

Selecting "Boot" from the Menu Bar displays the Boot menu, which looks like this:

PhoenixBIOS Setup Utility					
Main	Advanced	Security	Power	**Boot**	Exit

	Item Specific Help
CD-ROM Drive +Hard Drive +Removable Devices Network Boot	Keys used to view or configure devices: <Enter> expands or collapses devices with a + or – <Ctrl+Enter> expands all <Shift+1>enables or disables a device. <+>and<-> moves the device up or down. <n>May move removable device between Hard Disk or Removable Disk <d>Remove a device that is not installed.

F1 Help	↕ Select Item	-/+ Change Values	F9 Setup Defaults
ESC Exit	↔ Select Menu	Enter Select ▶ Sub-Menu	F10 Save and Exit

Use this menu to arrange to specify the priority of the devices from which the BIOS will attempt to boot the Operating System. In the example above, the BIOS will attempt first to boot from the CD-ROM drive (the only Removable Device listed). Failing that, it will attempt to boot from the Primary Master hard disk, and so on down the list.

Removable Devices, **Hard Drive**, and **Network Boot** are the generic types of devices on your system from which you can boot an operating system. You may have more than one device of each type. If so, the generic type is marked with a plus or minus sign. Use the <Enter> key to expand or collapse the devices marked with <+> or <->. Press <Ctrl+Enter> to expand all such devices.

Note

Floppy drives are not managed on this menu as part of Removable Devices.

To change a device's priority on the list, first select it with the up-or-down arrows, and move it up or down using the <+> and <-> keys. Pressing <n> moves a device between the Removable Devices and Hard Drive. Pressing <Shift+1> enables or disables a device.

Exit Menu

Selecting "Exit" from the menu bar displays this menu:

```
                    PhoenixBIOS Setup Utility
     Main    Advanced    Security   Power   Boot   Exit
                                                     Item Specific Help

  Exit Saving Changes                              Exit System Setup
  Exit Discarding Changes                          and save your
  Load Setup Defaults                              changes to CMOS.
  Discard Changes
  Save Changes




  F1  Help   ↕ Select Item   -/+ Change Values     F9  Setup Defaults
  ESC Exit   ↔Select Menu   Enter Select   ▶ Sub-Menu  F10 Save and Exit
```

The following sections describe each of the options on this menu. Note that <Esc> does not exit this menu. You must select one of the items from the menu or menu bar to exit.

◆ Saving Values

After making your selections on the Setup menus, always select either "Saving Values" or "Save Changes." Both procedures store the selections displayed in the menus in **CMOS** (short for "battery-backed CMOS RAM") 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 you save your selections, the program displays this message:

```
Values have been saved to CMOS!
Press <space> to continue
```
If you attempt to exit without saving, the program asks if you want to save before exiting.

During boot up, *Phoenix*BIOS attempts to load the values saved in CMOS. If those values cause the system boot to fail, reboot and press **<F2>** to enter Setup. In Setup, you can get the Default Values (as described below) or try to change the selections that caused the boot to fail.

◆ Exit Discarding Changes

Use this option to exit Setup without storing in CMOS any new selections you may have made. The selections previously in effect remain in effect.

◆ Load Setup Defaults

To display the default values for all the Setup menus, select "Load Setup Defaults" from the Main Menu. The program displays this message:

ROM Default values have been loaded!
Press <space> to continue

If, during boot up, the BIOS program detects a problem in the integrity of values stored in CMOS, it displays these messages:

System CMOS checksum bad - run SETUP

Press <F1> to resume, <F2> to Setup

The CMOS values have been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS.

Press **<F1>** to resume the boot or **<F2>** to run Setup with the ROM default values already loaded into the menus. You can make other changes before saving the values to CMOS.

◆ Discard Changes

If, during a Setup Session, you change your mind about changes you have made and have not yet saved the values to CMOS, you can restore the values you previously saved to CMOS.

Selecting "Discard Changes" on the Exit menu updates all the selections and

displays this message:

CMOS values have been loaded!
Press <space> to continue

◆ Save Changes

Selecting "Save Changes" saves all the selections without exiting Setup. You can return to the other menus if you want to review and change your selections.

Chapter 3
BIOS Flash Upgrade Utility

Phoenix Phlash16.exe gives you the ability to update your BIOS from a floppy disk without having to install a new ROM BIOS chip.

Phoenix Phlash16.exe is a utility for "flashing" (copying) the BIOS to the Flash ROM installed on your computer from a floppy disk. A Flash ROM is a Read-Only Memory chip that you can write to use a special method called "flashing." Use Phoenix Phlash16.exe for the following tasks:

Update the current BIOS with a new version.

Restore the BIOS when it has become corrupted.

Installation

Phoenix Phlash16.exe is shipped on a floppy disk with your computer as a compressed file called CRISDISK.ZIP that contains the following files:

CRISDISK.BAT	Executable file for creating the Crisis Recovery Diskette.
PHLASH16.EXE	Performs platform-dependent functions.
BIOS.ROM	Actual BIOS image to be programmed into flash ROM.
MINIDOS.SYS	Allows the system to boot in Crisis Recovery Mode.
MAKEBOOT.EXE	Creates the custom boot sector on the Crisis Recovery Diskette.

Executing Phoenix Phlash16.exe program

You can run Phoenix Phlash16.exe program to upgrade your BIOS version.

1. To put the Phlash16.exe program into A:\
2. To put the BIOS into A:\
3. Typing the command" A:\Phlash16 BIOSNAME.rom"
4. Upgrade your BIOS completely.

Create the Crisis Recovery Diskette

If the OEM or dealer from whom you purchased your system has not provided you with one, then you should create a **Crisis Recovery Diskette** before you use the Phlash utility. If you are unable to boot your system and successfully load the Operating System, the BIOS may have been corrupted, in which case you will have to use the Crisis Recovery Diskette to reboot your system. There are several methods that you can use to create the Crisis Recovery Diskette. Below is one recommended procedure.

1. Be sure you have successfully installed the Phlash Utility onto your hard disk.
2. Insert a clean diskette into drive A: or B:
3. From the local directory, enter the following: CRISDISK [drive]:
   where [*drive*] is the letter of the drive into which you inserted the diskette.For help, type **/?** or **/h**. CRISDISK.BAT formats the diskette, then copies MINIDOS.SYS, VGABIOS.EXE (if available), PHLASH.EXE, PLATFORM.BIN and BIOS.ROM to the diskette, and creates the Required custom boot sector.
4. Write protect and label the Crisis Recovery Diskette.

NOTE

You can only supply a volume label after the Crisis Recovery Diskette has been formatted and the necessary files copied because MINIDOS.SYS must occupy the first directory entry for the diskette to boot properly.

Updating the Crisis Recovery Diskette

If the BIOS image (BIOS.ROM) changes due to an update or bug fix, you can easily update the Crisis Recovery Diskette. Simply copy the new BIOS.ROM image onto the Crisis Recovery Diskette. No further action is necessary.

WARNING

For your own protection, be sure your have a Crisis Recovery Diskette ready to use before excuting Phlash.

Command Line Mode

Use this mode to update or replace your current BIOS. To execute Phlash in this mode, move to the directory into which you have installed Phoenix Phlash and type the following:

Phlash

Phoenix Phlash will automatically update or replace the current BIOS with the one which your OEM or dealer supplies you.

Phlash may fail if your system is using memory managers, in which case the utility displays the following message:

Cannot flash when memory managers are present.

If you see this message after you execute Phlash, you must disable the memory manager on your system. To do so, follow the instructions in the following sections.

Disabling Memory Managers

To avoid failure when flashing, you must disable the memory managers that load from CONFIG.SYS and AUTOEXEC.BAT. There are two recommended procedures for disabling the memory managers. One consists of pressing the <F5> key (only if you are using DOS 5.0 or above), and the other requires the creation of a boot diskette.

DOS 5.0 (or later version)

For DOS 5.0 and later, follow the two steps below to disable any memory managers on your system. If you are not using at least DOS 5.0, then you must create a boot diskette to bypass any memory managers (See Create a Boot Diskette, below).

1. Boot DOS 5.0 or later version. (In Windows 95, at the boot option screen, choose Option 8, "Boot to a previous version of DOS.")
2. When DOS displays the "Starting MS-DOS" message, press <F5>.

After you press <F5>, DOS bypasses the CONFIG.SYS and AUTOEXEC.BAT files, and therefore does not load any memory managers.
You can now execute Phlash.

Create a Boot Diskette

To bypass memory managers in DOS versions previous to 5.0, follow this recommended procedure:

1. Insert a diskette into your A: drive.
2. Enter the following from the command line: Format A: /S
3. Reboot your system from the A: drive.

Your system will now boot without loading the memory managers, and you can then execute Phlash.

Crisis Recovery Mode

You should only have to operate Phoenix Phlash in this mode only if your system does not boot the operating system when you turn on or reset your computer. In these cases, the BIOS on the Flash ROM has probably been corrupted. Boot your system with the Crisis Recovery Diskette taking these steps:

1. Insert the Crisis Recovery diskette (which your dealer supplied or one that you should have created from the instructions above) into drive A:\.
2. Reset your computer, power off-on, or press <Ctrl> <Alt> <Del> to

Flash BIOS Utility

reboot the system.

3. When your system reboots, Phoenix Phlash will restore the BIOS from the diskette and successfully boot the operating system.

Flash BIOS
Utility

Appendix A
Symptom Checking List

Symptom	Check point
No Power (FAN is not rotating)	1. Make sure no short circuit exist between the motherboard and chassis 2. Check if all jumpers are set to the default position. 3. Check if the 115V/230V switch on the power supply is properly set. 4. Check the CPU is inserted properly into CPU socket. 5. Check the power cord of the CPU fan is plugged into the correct position. 6. Turn the power switch on and off to test the system 7. Check the power of the battery on the M/B. In general, the battery voltage is around 3VDC.
Can power on the system (FAN is rotating), but no screen display.	1. Remove all the add-on card exclusive CPU, and VGA add-on card, memory modules. 2. Check if all jumpers are set to the default position. 3. Clear CMOS by using CLRTC jumper. Please refer to the page 1-2 in this manual. 4. Use speaker to determine the symptom.
Memory Error	1. Check if the memory DDR DIMM module is inserted into DDR DIMM socket properly. 2. Check if different speed memory modules are mixed and used in the PDPEA. Verify the BIOS setup is configuration for the fastest speed of DDR RAM used. RIOWORKS

	recommend always use the same speed RAM in the system.
	3. Make sure your memory module(s) is compliant with Unbuffered DDR DRAM Module.
	4. Unbuffered ECC DIMM support

Troubleshooting

Appendix B
Symptom Report Form

M/B	PDPEA	Serial Number		BIOS version	
CPU 1					
CPU 2					
DIMM 0					
	Size	MB	Brand	Component Model	
DIMM 1					
	Size	MB	Brand	Component Model	
DIMM 2					
	Size	MB	Brand	Component Model	
DIMM 3					
	Size	MB	Brand	Component Model	
FDD					
AGP 8X					
PCI-X 1					
PCI-X 2					
PCI-64					
PCI-32 1					
PCI-32 2					
Onboard IDE 0					
Onboard IDE 1					
Onboard RAID 1					
Onboard RAID 2					
Power Supply		Watt	Model Number		

Other Devices	
Operating system	

Symptom Description:

Name:	
Contact email address:	

Troubleshooting