



Mini Pentium 4 Barebone

User's Manual

Version 1.1





Mini P4 Barebone Series



FCC Compliance Statement

This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Move the equipment away from the receiver
- Plug the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult an experienced radio/television technician for additional suggestions

This device complies with Part 15 of the FCC Rules. Operation is subjected to the following two conditions 1) this device may not cause harmful interference and 2) this device must accept any interference received, including interference that may cause undesired operation.



Mini P4 Barebone Series

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1: Introduction

The mini P4 barebone is a high-performance personal computer barebones system that supports the Intel® Pentium® 4 processor. The barebone's motherboard has one DIMM memory socket that accommodates 200/266 MHz DDR SDRAM (**without AGP slot version**) or 200/266/333MHz DDR SDRAM (**with AGP slot version**).

The without AGP slot model uses the latest Intel® 845GV chipset or the Intel® 845GE chipset (**with AGP slot version**) to integrate all system control functions.

Features of this system include support for:

- Intel® Pentium® 4 processor
- 533/400 MHz system bus
- Up to 1GB DDR SDRAM
- One 32-bit PCI/33 MHz slot (**without AGP slot version**)
- One onboard AGP slot (**with AGP slot version**)
- Two USB 2.0 external ports on rear panel (stacked)

For a complete list of specifications, see Appendix 2, Specifications.

About This Manual

This manual's five chapters and two appendices cover the following topics:

Chapter 1, **Introduction**, provides a basic introduction to the system and package contents.

Chapter 2, **Installation**, explains basic installation procedures.

Chapter 3, **External Components**, describes external components.

Chapter 4, **BIOS Setup**, describes setting the BIOS.

Chapter 5, **Drivers and Utilities**, explains how to use the bundled software drivers and utilities.

Appendix 1, **Hardware Layout**, describes the motherboard layout, components, and configuration

Appendix 2, **Specifications**, lists the system's technical specifications.

Package Contents

The package contains the following items:

- One Barebone
- IDE connector cables
- Power cord
- Three spare Jumper caps
- Power Installer software & utilities disc
- User's Manual

Inspect the system; if any items are damaged or missing, contact Anyware Solutions Pte Ltd immediately.

2: Installation

This chapter describes installing components and devices on the barebone⁷ motherboard. Please review each of the following procedures before you start. For the location and description of system components, please refer to Appendix 1, Hardware Layout.

Getting Started

The package contains the motherboard/chassis assembly, plus one box containing the Fan/Heatsink, and one box containing accessories.

1. Unpacking the package.
2. Remove the two smaller boxes and place to one side.
3. Remove the motherboard/chassis assembly, and discard the foam and plastic packaging – or save it for recycling.
4. Unscrew the three thumbscrews at the rear of the barebone and remove the aluminum Housing.
5. Locate the CPU socket.

Installing a CPU

The motherboard supports the Intel Pentium 4 processor. Follow the procedures below to avoid damaging the CPU or motherboard.

Selecting a Processor

This motherboard supports all Intel Pentium 4 processors. The motherboard's BIOS automatically detects the required settings and configures the CMOS Setup Utility.

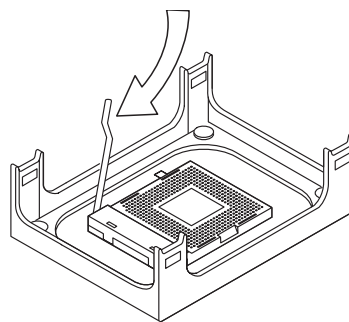
Installing the Processor

It is important to review all of the instructions before beginning the installation procedure. Carefully handle the processor by its edges, and take all precautions against electrostatic discharge. The boxed Intel Pentium 4 processor comes with a Heatsink and Thermal Interface Material applicator. Non-boxed processors follow the same procedures, but the accessories may have a different appearance. The following illustrations are a generic representation and may not show the components' exact appearance.

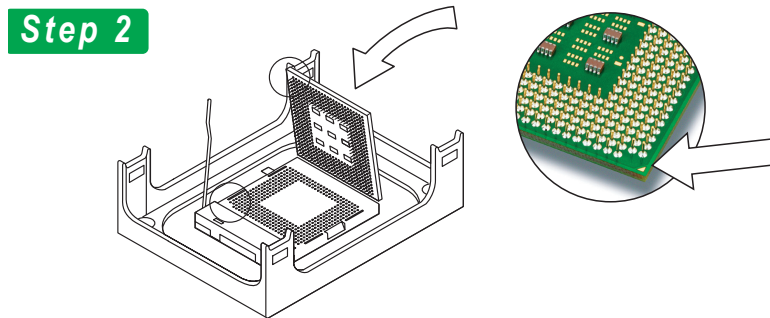
Note that you install the CPU by reaching your hands and fingers through the chassis frame to manipulate the CPU and socket.

1. Unlock the socket by pressing the lever sideways, then lift it up to a vertical angle.

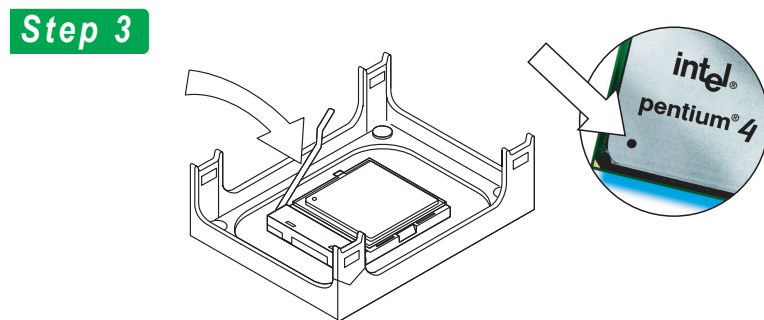
Step 1



2. Position the CPU above the socket such that its marked corner matches the base of the socket lever.



3. Press it firmly on the socket while you push down the socket lever to secure the CPU.

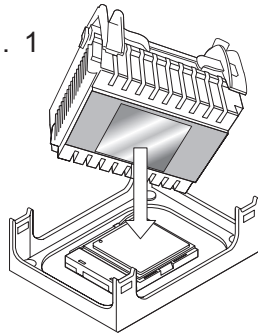


4. After installing the CPU you need to apply the Thermal Interface Material (TIM) to the top of the installed CPU (Fig. 2) and remove the piece of tape from the Heatsink. The TIM is supplied in an applicator with the boxed Pentium 4 processors. The TIM secures the Fan/Heatsink to the CPU. However, if the Fan/Heatsink already has a patch of TIM on its underside, you won't need to apply additional TIM to the CPU (Fig. 1).

Step 4

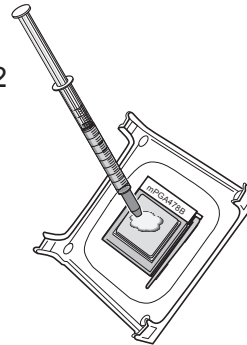
The heatsink may have thermal interface material attached to the bottom as shown in Fig.1, or you may need to apply the thermal interface material using a syringe as shown in Fig.2.

Fig. 1



Be careful not to damage the thermal interface material.

Fig. 2



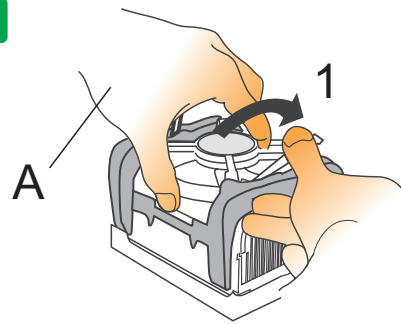
Using the enclosed syringe apply all of the thermal interface material to the top of the processor.

Installing the Fan/ Heatsink

To install the Fan/Heatsink assembly:

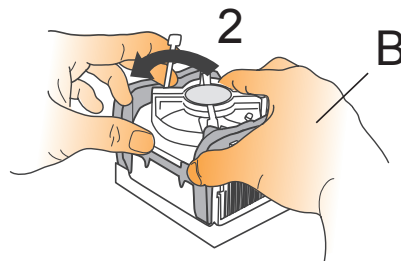
5. When installing the Fan/Heatsink and clip assembly it is important to make sure the Fan/Heatsink *does not* rotate or twist on the processor. Securing the Fan/Heatsink while closing the clip lever will ensure the thermal interface material (TIM) is not damaged and the processor will operate correctly. The TIM is attached to the heatsink.

Step 5

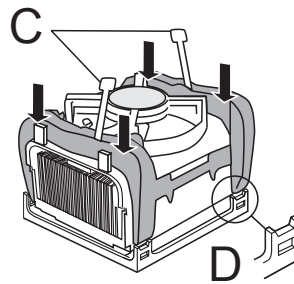


6. Make sure to close the clip levers one at a time. Close the clip lever (1), while holding the top-side of the Fan/Heatsink with your other hand (A). Close the clip lever (2) while holding the top-side of the Fan/Heatsink with your other hand (B).

Step 6

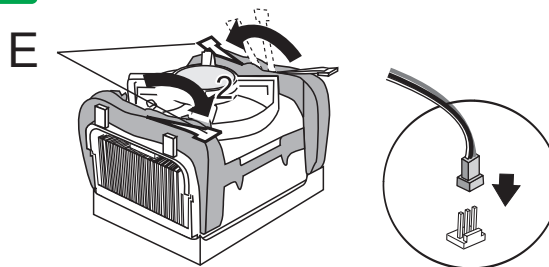


- Align the Heatsink and clip assembly with the Retention Mechanism and place it on the processor. The Heatsink is symmetrical.

Step 7

- With the clip levers in the up position (C), push down on all four clip frame corners to secure to the Retention Mechanism hooks (D). Close the clip levers (E). The levers require force to be completely closed.

Connect the processor fan cable connector to the motherboard connector.

Step 8

Installing System Memory

Review this section before installing memory modules.

Memory Specifications

The motherboard has one DIMM module socket that supports DDR SDRAM. Memory specifications are:

DDR SDRAM*

- PC1600/PC2100 DDR SDRAM (**without AGP slot version**)
- PC1600/PC2100/PC2700 DDR SDRAM (**with AGP slot version**)
- Unbuffered DDR SDRAM modules
- Maximum up to 1GB system memory

Memory configuration options are:

- Supports 64MB, 128MB, 256MB, 512MB, and 1GB modules

***Note:** DDR SDRAM types include:

PC1600 at 200MHz

PC2100 at 266MHz

PC2700 at 333MHz

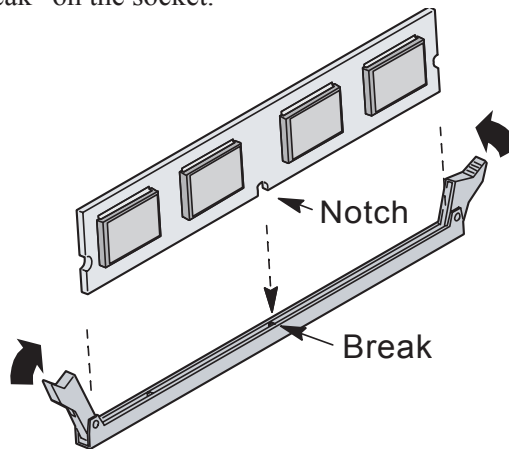
Installing Memory Modules

To install a memory module, you insert a module into its socket and secure it with the socket retaining arms. The modules are notched so that you cannot insert them incorrectly. The BIOS recognizes the installed memory and configures the CMOS Setup Utility automatically.

Installing Memory Modules

To install memory modules:

- 1 Unlock a DIMM socket by pressing the retaining clips outward.
- 2 Align the “notch” on the memory module to the “break” on the socket.



- 3 Firmly insert the module into the socket until the retaining clips snap back into place and the module is properly seated.
- 4 Make sure the memory module is locked on the socket with both retaining clips.

Installing Internal Peripherals

After installing the CPU, Fan/Heatsink, and memory modules, you can install internal peripherals such as a hard disk drive (IDE/HDD), and CD-ROM drive. You may have to set the jumpers of each internal peripheral to either Master or Slave mode depending on whether you install more than one peripheral.

Important: Make sure the 110/220 switch on the back panel is set to the appropriate voltage.

Installing an IDE drive

To install an IDE drive:

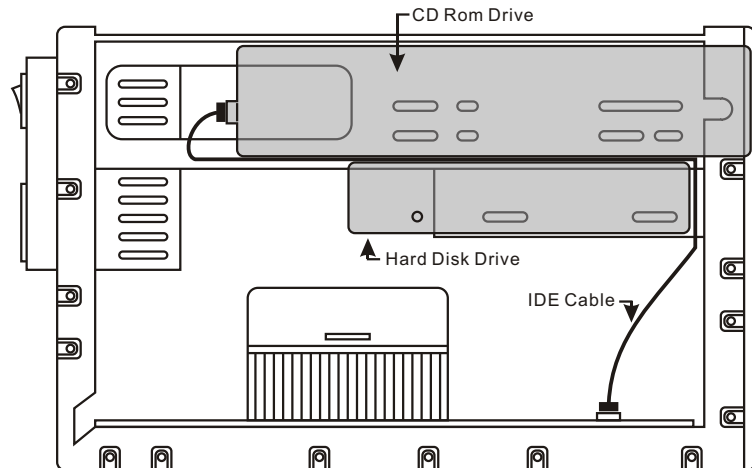
- 1 Set the required jumpers on the IDE drive according to the instructions of the manufacturer.
- 2 Remove the 3-connector peripherals cable from the accessories box and attach it to the blue connector IDE1 on the motherboard.
- 3 Bring the cable up and over the IDE drive and attach the cable's middle connector to the IDE drive. With the cable *wrapped over* the top of the IDE drive, slide the drive into the lower chassis port.

Important: The IDE cable must be *wrapped over* the IDE Drive to keep it from blocking the fan.

4. Secure the IDE drive to the chassis port by inserting mounting screws in all the holes and tightening these screws with a screwdriver.
5. Connect an available power cable from the power supply unit to the back panel of the IDE Drive. Note that the power cable is directional and can only fit one way.

Installing the IDE Cable between CDROM and HDD

In vertical down direction the IDE Hard Disk Drive into lower bay and apply screws on each side of the bay to make sure Hard Disk was secured seated in correct place. Connect the power and IDE cable to the IDE Hard Disk. To ensure air-flow quality issue regarding thermal from CPU, the IDE cable will need to be placed between IDE Hard Disk Drive and CDROM



Installing a CD-ROM

- 1 Set the required jumpers on the CD-ROM drive according to the instructions of the manufacturer.
- 2 Attach the end of the peripherals cable to the CD-ROM. The peripheral cable now connects both the IDE drive and the CD-ROM.
- 3 Slide the CD-ROM drive into the upper chassis port.
4. Secure the CD-ROM drive to the chassis by inserting mounting screws in all the holes and tightening these screws with a screwdriver.
5. Connect an available power cable from the power supply unit to the back panel of the IDE Drive. Note that the power cable is directional and can only fit one way.





Completing System Configuration

To complete the system configuration:

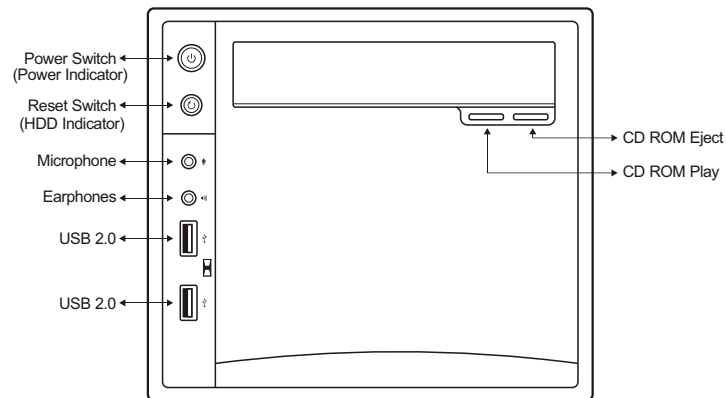
1. Replacing the system housing cover and tighten the three thumbscrews on the rear panel.
2. Connect external peripherals such as a monitor, a keyboard, and a pointing device to the back panel.
3. Once you have completed final hardware installation, you can configure CMOS Setup Utility and Drivers, see the following chapters.
4. Install an operating system and support software—see related documentation.

3: External Components

This chapter describes the external components of the barebone.

Front Panel

The features described below are conveniently located on the front panel for ease of use and accessibility.



Power Switch

The Power Switch lets you Power On and Shut Down the system. Press the switch for Power On. Press and hold the switch for 2 seconds to Shut Down the system.

Reset Switch

The Reset Switch lets you shut down the system if you cannot use the operating system shut down procedure.

USB Ports

Two standard Universal Serial Bus (USB) ports each support several USB compatible devices such as pointers, keyboards, modems, and printers connected in series.

MIC

This mono microphone jack lets you connect an external microphone for use in voice mail recording, general note taking or for use with an internet phone.

Phones

This stereo ear phones jack lets you connect a set of headphones or a set of amplified speakers.

Power LED

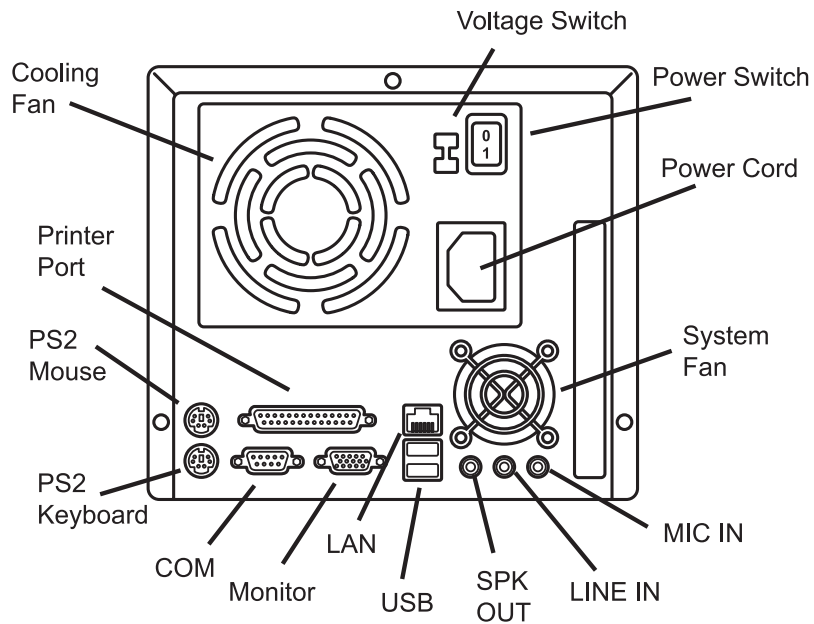
The Power LED glows a steady light when the power is On, and blinks when the system is in Standby mode. There is no light when the power is off.

HDD LED

The HDD LED displays the status of hard disk drive operation.

Rear Panel

The Rear Panel's components and their features are described below.



Cooling Fan

The Cooling Fan switches on when the system's temperature rises above a certain threshold.

Voltage Switch

The Voltage Switch lets you switch the system to operate at either 110V or 220V.

Power Switch

This power switch lets you power on the system from the rear panel.

Power Cord

Attach the power cord to this socket.

System Fan

The system fan begins operation when the system's temperature rises past a certain threshold. Do not block this vent.

Audio Jacks

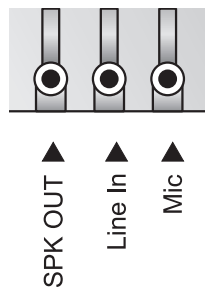
The audio jacks are for connecting external audio devices to the onboard audio subsystem.

The three audio jacks are:

SPK OUT: provides output to two stereo speakers, or the Front Left and Right speakers in a 5.1 speaker system

Line In: provides audio input connector for an external audio source.

Mic: this jack is for plugging in a computer microphone.



USB Ports

There are two high-speed USB 2.0 ports, USB 0 and USB 1, for connecting either USB 1.1 or 2.0 devices to the system. These ports are for “Type A” USB cable connectors. It does not matter if the system is on when you connect or disconnect USB devices. See the graphic below.



▲
USB

LAN Port

The LAN Port is an RJ-45 connector for standard Cat 5 LAN cabling. The connector attaches to the onboard Realtek LAN controller. It does not matter if the system is on when connecting or disconnecting a LAN cable.

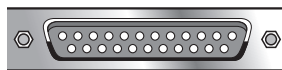


LAN
▼

Printer Port

The Printer port connects the system to devices that have a parallel interface. This port is generally used to connect a printer to the system.

▼ Printer Port



Monitor Port

The monitor port is a 15-pin connector for attaching a VGA monitor.



▲
Monitor

COM Port

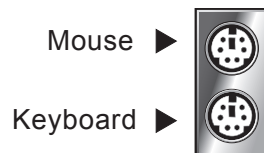
The COM Serial port has a 9-pin connector and can operate at speeds up to 115,200bps. Do not connect or disconnect a serial port when the system is turned on.



▲
COM Port

PS/2 Ports

The PS/2 ports are for a system keyboard and mouse or other tracking device. It is recommended that you do not plug or unplug devices when the system is on.



4: BIOS Setup

After you have installed peripherals, configured the motherboard and assembled the system, you can power up the system.

The system uses the Award BIOS utility. The setup instructions for configuring the system's BIOS (Basic Input Output System) are contained on this chip. The Award BIOS Utility lets you set system parameters, which are stored in nonvolatile CMOS RAM. This information is retained by battery backup when the system is powered off. The values stored in the CMOS configures the system each time the system is powered on.

Running the BIOS Utility

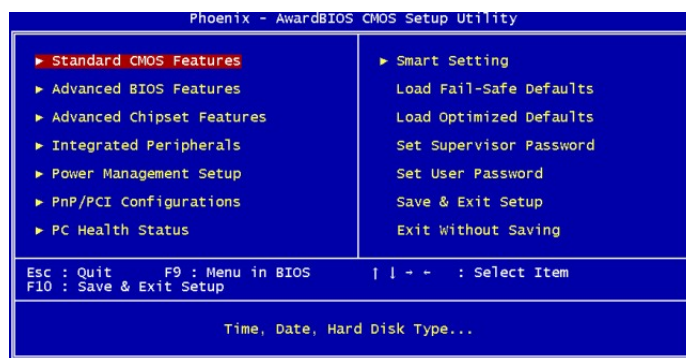
The BIOS Utility does not depend on an operating system to run. You run the utility by typing the or Delete key before the operating system boots up. The BIOS Utility Main Menu appears. You navigate the BIOS Utility using keyboard commands that are listed on the lower right portion of each screen.

Once you have fully configured the BIOS Utility you will rarely need to configure it again.

Entering Setup

Power up the system and press the key to enter the BIOS Setup main menu.

On entering Setup, “Main Menu” is the first screen displayed. Use the UP/DOWN arrow keys to highlight the desired menu item and press ENTER to select this item.



BIOS Setup Main Menu

Use the arrow keys to select items. A description of each selection follows.

System Information

System Information offers general system information, such as: BIOS information, CPU type and speed, parallel and serial port I/O addresses, IDE drive information, cache memory size, total memory size and memory in each slot.

Use this information to verify if these components are installed and configured correctly.

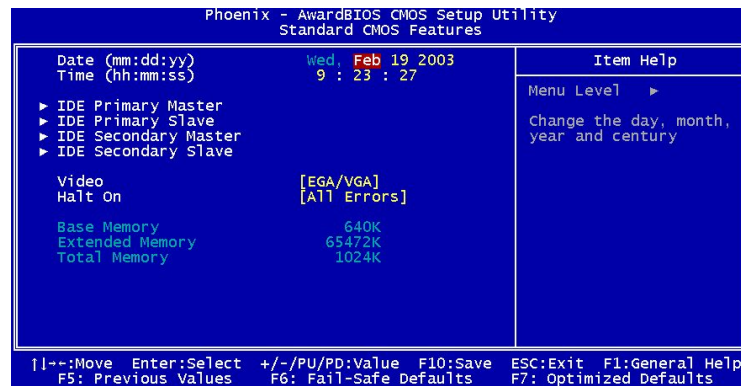
General Configuration

The General Configuration screen lets you set time and date settings to suit your location. Set boot devices in the appropriate sequence. Power up options include Numlock, Primary VGA, and Boot Sector protection.

You can set a User and Supervisor password after enabling the Password Required item.

Forgot the Password?

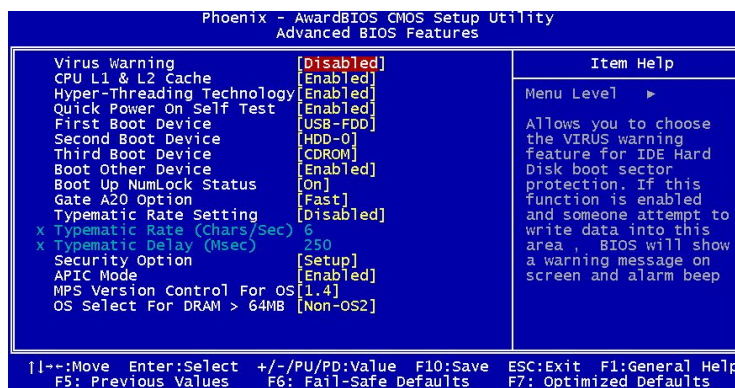
If you forget the password, you can clear the password by erasing the real time clock's CMOS RAM. You can erase the CMOS RAM using the JCMOS1 jumper, see Appendix 1: Hardware Layout. After you have done so, hold down the key during boot up and enter BIOS setup to reenter user preferences.



General Configuration Screen

Advanced BIOS Features

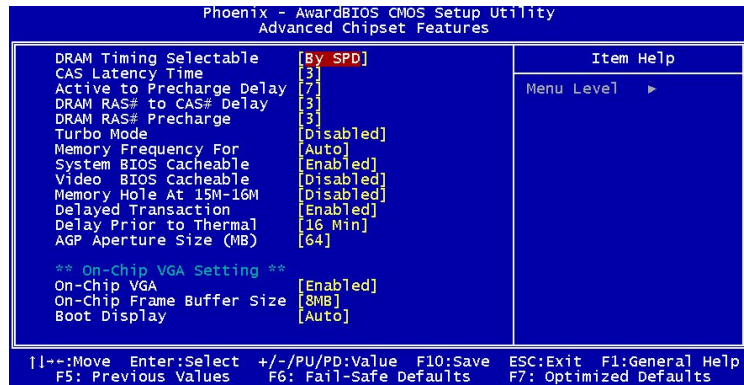
The Advanced BIOS Configuration sets Virus Warning, memory test, CPU L1 and 2 cacheable, booting disk device settings, onboard LAN controller and BIOS write protection. Unless you fully understand the function of these settings, it is better to leave the default settings.



Advanced BIOS Configuration Screen

Advanced Chipset Features

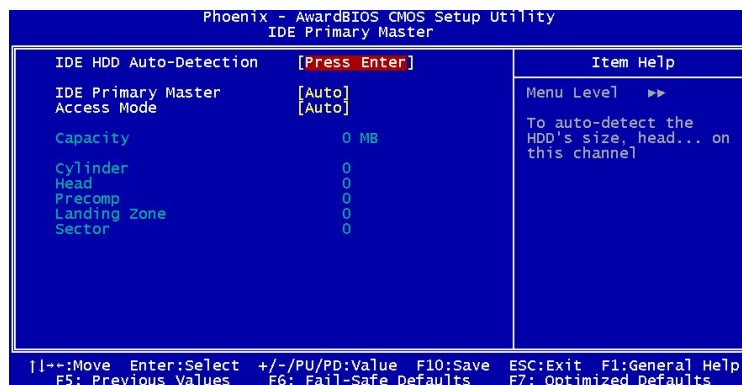
The Advanced Chipset Setup screen configures the DRAM timing clock, the memory CAS latency, system turbo mode... Unless you fully understand the function of these settings, it is recommended that you do not change the default settings.



Advanced Chipset Setup Screen

Primary / Secondary IDE Drives

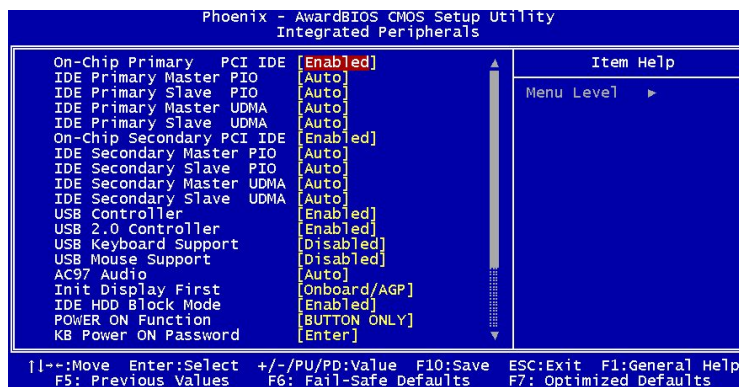
The Primary / Secondary IDE Drives screens let you manually or automatically set up different IDE hard drives on two separate IDE channels – primary and secondary IDE channels.



Primary IDE Drives Screen

Peripherals

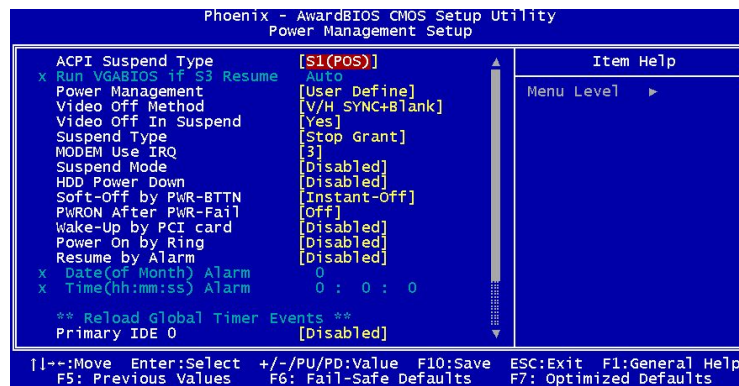
The Peripherals screen lets you enable and disable onboard peripherals controllers.



Peripherals Screen

Power Management

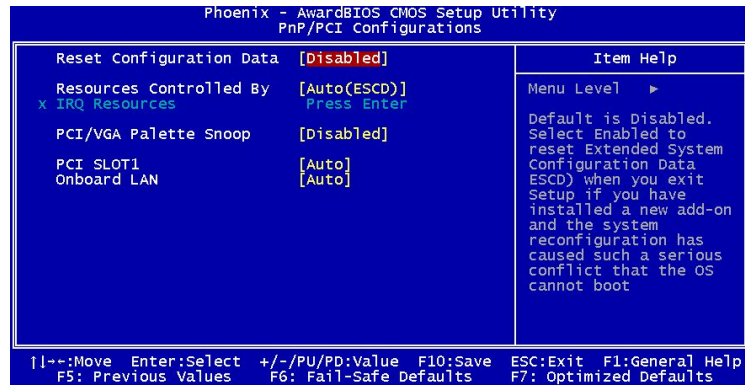
The Power Management screen lets you configure power management settings.



Power Management Screen

PCI & PNP

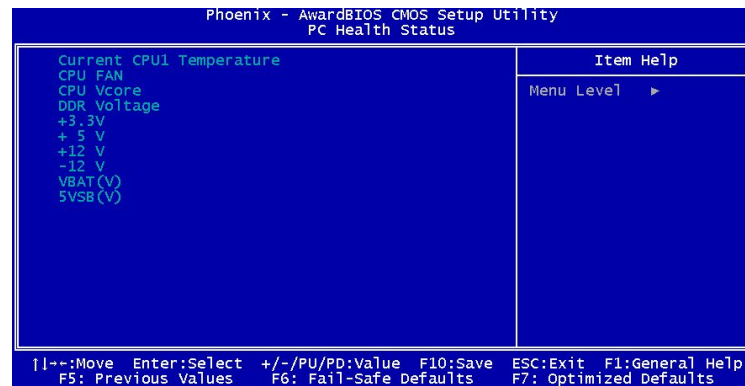
The PCI & PnP screen configures Plug and Play and other PCI bus settings.



PCI & PnP Screen

PC Health Status

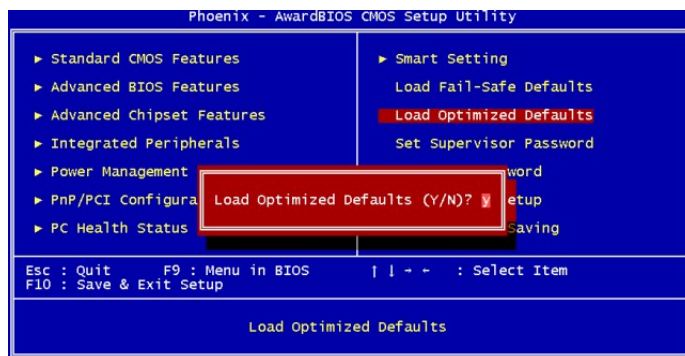
The PC Health Status screen shows information on the system's voltages, fan rotations and temperatures.



Hardware Monitor Screen

Load Optimized Defaults

The Optimized Defaults Settings screen lets you reload the original manufacturer settings. The Restore Optimized Defaults lets the system start using the most reliable settings. Use this option when you can no longer boot the system due to changing, adding or removing hardware parts or peripherals.



Restore Default Settings Screen

Save to CMOS and Exit

After making your selections in the Setup program, save your changes and exit BIOS Setup. Select **Exit** from the main menu and choose the appropriate option.

5: Drivers and Utilities

The barebone comes bundled with a Power Installer CD-ROM disc that includes driver and utility software. This chapter describes installing and using this software.

Running the Power Installer Disc

The Power Installer CD-ROM install interface runs under Microsoft Windows 9X, NT 4.0, 2000, or XP. After inserting the disc into your CD-ROM drive the install interface loads automatically. Choose model from the selections. If it does not load, run the Power Installer directly from the disc by running Setup.

Drivers and Utilities Screen

This screen has five selections. Choose a selection to open its respective screen, which are described below. The **User's Manual** selection opens the motherboard documentation. Choose **Exit** to leave this screen.

Drivers Installation Screen

Click **Driver Installation** in the Drivers and Utilities screen and the Driver Installation screen appears. Choose drivers in sequence to open their respective install programs. Select the installation guides to review installation information. When you are finished click **Exit** to leave this screen.

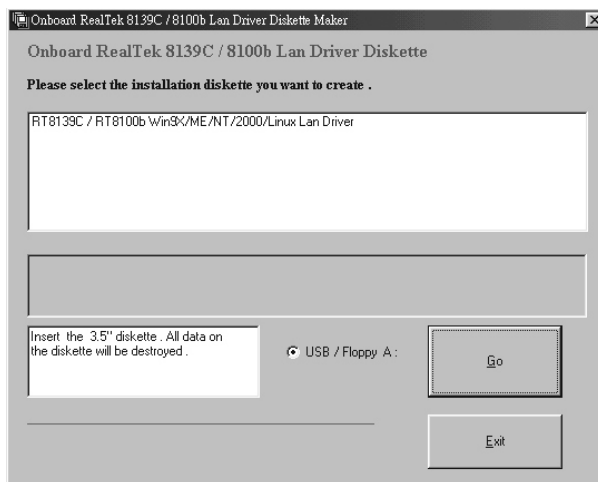
Software Utility Screen

Click **Software Utility** in the Drivers and Utilities screen and the Software Utility screen appears. To install the **Adobe Acrobat Reader** software, click on the item you wish to install and follow the instructions.

Clicking on the **Hardware Monitor Utility** lets you install a program that gives access to information detected by the hardware monitor.

Make Driver Screen

Click **Make Driver** in the Drivers and Utilities screen and the Make Driver utility screen appears. This utility gives you a convenient way to make driver floppy disks. You can use this utility to make driver disks for the LAN driver.



Make Driver Screen

Appendix 1: Hardware Layout

This chapter describes the motherboard layout and shows the location, function, and configuration of key components, including sockets, slots, connectors and jumpers. Before installing this motherboard read the following pages carefully for location and function of these items.

Components

The motherboard provides sockets, slots, and connectors for the installation of the CPU, memory, power supply, and PCI or AGP expansion cards.

Connectors

The motherboard's connectors attach to IDE drives, CPU fan/heatsink, audio devices, and front panel features such as LEDs, speaker, and power switch.

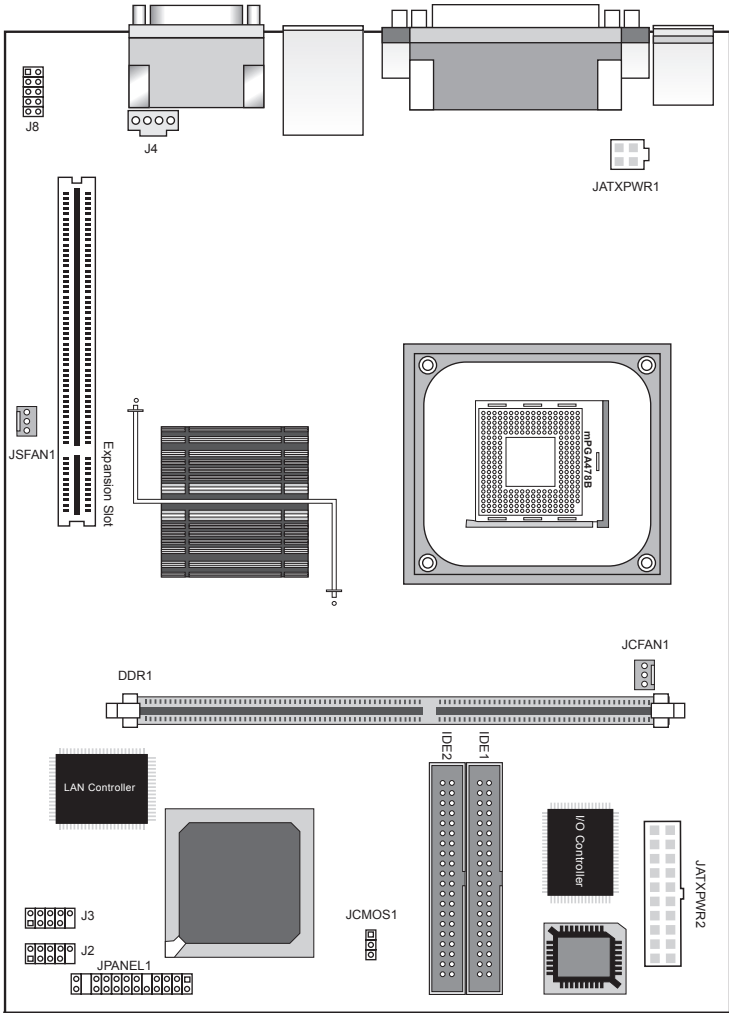
Jumpers

The motherboard's jumpers provide information to the operating system about installed options and system settings.

Motherboard Layout

The motherboard components are shown below.

Layout



Motherboard Layout Key

These components, connectors and jumpers are located in the motherboard layout graphic on the facing page.

Component	Function
CPU	mPGA478 CPU socket
DDR1	DIMM socket for DDR SDRAM
Expansion Slot	PCI expansion slot (Without AGP Slot version) AGP expansion slot (With AGP Slot version)

Connectors	Function
JATX PWR1	Connector for power supply
JATX PWR2	ATX power connector
JPANEL1	Front panel feature connector
J2	Internal USB connector
J3	Internal USB connector
J8	Audio connector
J9	Aux In/CD In
JCFAN1	CPU cooling fan power connector
JSFAN1	Auxiliary Fan connector
IDE1, IDE2	IDE drive connectors

Jumpers	Function
JCMOS1	Clear CMOS

JCMOS1: Clear CMOS Jumper

This jumper switch, JCMOS1, clears the CMOS Setup configuration that is stored in the real-time clock's CMOS memory. If configuration becomes corrupted, or if the CMOS settings are changed to an unsuitable configuration, the motherboard may not work properly. JCMOS1 lets you delete the configuration data stored in CMOS memory and reset the CMOS to the Optimized Defaults.

Follow the procedure below to clear CMOS memory.

- 1 Turn off and unplug the system and remove the system housing cover.
- 2 Set JCMOS to the Clear CMOS position by placing the jumper cap over pins 2 and 3 for one minute.
- 3 Return the jumper cap to Normal setting, pins 1 and 2.
- 4 Replace the system housing cover, plug in the system and power on.
- 5 Run the CMOS Setup Utility and load the Optimized Defaults. Make any custom settings you require.
- 6 Save the settings as you exit the program and restart your computer.



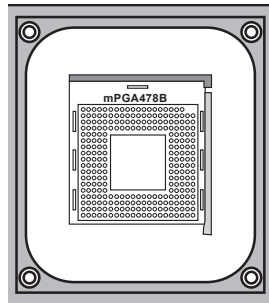
Normal(Default)



Clear CMOS

CPU Socket & Cooling Fan / Heatsink Frame

The mPGA478B CPU socket supports a 478-pin Intel Pentium 4 processor. The Pentium 4 CPU requires a cooling fan/heatsink, which attaches to the board using a retention mechanism mounting frame. See the section on installing the CPU in Chapter 2.



The mPGA478B CPU socket is located within a cooling fan/heatsink frame.

System Memory Socket

This DIMM system memory socket supports 200MHz (PC1600) or 266MHz (PC2100) DDR SDRAM system memory modules. See the section on installing memory in Chapter 2.



DDR SDRAM System Memory Module

Expansion Slot

The motherboard's expansion slot is either a 32-bit PCI (**without AGP slot version**) or an AGP slot.

PCI Expansion slot

The PCI expansion slot on the motherboard lets you install additional system hardware via add-on cards. There is one 32-bit, 33MHz slot that is compliant with PCI 2.1/2.2 on this motherboard.



PCI Expansion Slot

AGP Slot

The AGP slot is for the exclusive use of high speed AGP video display cards. This AGP slot supports AGP4X cards. This slot only supports 1.5V devices. Do not use a 3.3V AGP card with this motherboard.



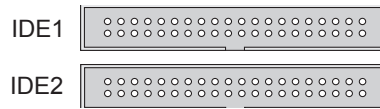
AGP Expansion Slot



There is only one expansion slot on this motherboard. It is either a PCI slot or an AGP slot .

IDE1, IDE2: IDE Drive Connectors

The two IDE drive connectors are marked IDE1, the primary channel, and IDE2, the secondary channel. Each connector supports two drives, a Master and a Slave.

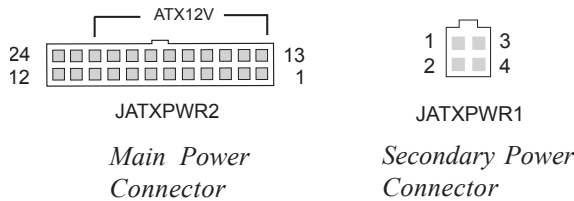


IDE Drive Connectors

ATX12V Power Connectors

The two power connectors let you attach two leads from an ATX12V power supply to the motherboard. The ATX12V standard requires a 20-pin ATX connector plus a 4-pin ATX12V connector.

Insert the 20-pin lead of the ATX12V power supply into the first 20 holes of the JATXPWR2 power connector leaving the last four empty. Insert the 4-pin ATX12V lead into the JATXPWR1 power connector.



Main Power Connector

Secondary Power Connector

J2, J3: Internal USB Connectors

These connectors, J2 and J3, let you attach internal USB devices.

J2	2 4 6 8 10	Pin Assignment	Pin Assignment
	1 3 5 7		
	1: USB_VCC2 2: USB_VCC2 3: USB_D2- 4: USB_D3- 5: USB_D2+ 6: USB_D3+ 7: GND 8: GND 9: NC 10: FUSB_CO-OUT		

J2: Connector Pin Assignments

J3	2 4 6 8 10	Pin Assignment	Pin Assignment
	1 3 5 7		
	1: USB_VCC2 2: USB_VCC2 3: USB_D4- 4: USB_D5- 5: USB_D4+ 6: USB_D5+ 7: GND 8: GND 9: NC 10: FUSB_CO-OUT		

*J3: Connector Pin Assignments***J4: AUX-IN/ CD-IN**

This connector, J4, lets you attach audio-in cables from internal peripherals, such as a CD-ROM or DVD-ROM drive. The connector provides audio input connection between a device and the integrated audio subsystem.

J4	4	Pin Assignment
	3	
	2	
1	1: Left Channel 2-3: GND 4: Right Channel	

J4: AUX-IN/ CD-IN

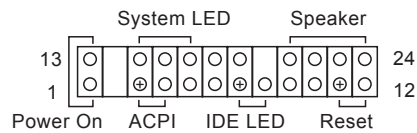
J8: Audio Connector

This connector, J8, lets you attach audio-out connectors to peripherals.

**JANEL1: Front Panel Connector**

This connector, JANEL1, connects the following system housing front panel features:



- Reset Switch (Reset in diagram)
- IDE device LED (IDE LED in diagram)
- ACPI Suspend LED (ACPI in diagram)
- Power Switch (Power On in diagram)
- System Activity LED (System LED in diagram)
- Housing-mounted Speaker (Speaker in diagram)



*JANEL1: Front Panel Connector
Pin Assignments*

JCFAN1, JSFAN1: System Fan Connectors

These 3-pin connectors provide power to the CPU cooling fan (JCFAN1), and to another system cooling fan (JSFAN1). These connectors support fan speed monitoring. A temperature monitor detects the CPU and internal system temperatures. You can set a system shutdown temperature in the PC Health section of the CMOS Setup Utility.

123		123	
JCFAN1		JSFAN1	
Pin	Assignment	Pin	Assignment
1:	GND	1:	GND
2:	+12V	2:	+12V
3:	Sensor	3:	NC

System Cooling Fan Connectors

Appendix 2: Specifications

Technical specifications are listed below.

Processor

Supports Single Intel Pentium 4 processor
System Bus: 100MHz/133MHz
Auto detects CPU type, external clock and multiplier
CPU external clock adjustment at 1MHz/step by BIOS.

CPU Power

Follows VRM 9.0 spec
VRD design

Memory

PC1600/PC2100 DDR SDRAM
Unbuffered DDR SDRAM
Supports single DIMM up to 1GB

Chipset

North Bridge: Intel 845GV/ Intel 845GE
South Bridge: ICH4
Winbond Super I/O : W83627HF

AGP (With AGP version only)

One AGP slot
AGP 4X Compliant

PCI (with PCI version only)

One 32bit PCI/33MHz slot
PCI 2.1/2.2 Compliant

LAN

RealTek LAN 8100 onboard
One RJ-45 connector

USB 2.0

Two USB 2.0 external port on the back panel (stacked)
Two USB 2.0 external ports by pin header for the front panel

Audio

AC'97, RealTek ALC655
One audio connector at rear panel to support LINE IN/
LINE OUT/MIC IN/Game Port
One 4-pin CD-ROM Audio In header
One 4-pin AUX header
Supports audio connectors on front panel (MIC/ Earphone)

General I/O

Two IDE connectors (Bus Master with Enhanced) to support Ultra DMA 33/ATA66/ATA100 IDE drives and ATAPI compliant devices

One UART connector
One 25pin ECP/EPP Parallel Port
One PS/2 Keyboard
One PS/2 Mouse
One internal Smbus connector
One internal WOL connector

BIOS

Award BIOS

Flash write Protection for BIOS
Support ACPI S1, S3
BIOS setup features
Auto configuration for IDE hard disk types
Multiple boot options

Power Supply

200W

System Management

Winbond hardware monitor
One 3-pin CPU Fan header
Three 3-pin Chassis Fan headers
One CPU temperature sensor
Seven Voltage monitoring (Vcore, +1.5V, +2.5V, +3.3V, +5V, +12V, -12V, Battery, 5VSTB)
One 3-pin Chassis intrusion header

Form Factor

Mini System form factor
Stacked PS/2 Mouse/Keyboard ports
Stacked RJ-45 on two USB2.0 ports
Stacked one parallel on serial port and VGA port
Stacked Line-in/ Line-out/ Mic

Other

Support AC power failure

Miscellaneous

1. ACPI 1.1
2. PC2001
3. PCI 2.2
4. APM 1.2
7. WfM 2.0
8. DMI 2.0
9. FCC class B
10. CE mark 89/336/ECC(EMV) and acc. To EU