FB54

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

User's Manual

Shuttle® FB54

Intel Pentium 4/Celeron
478-pin Processor
with 400/533 MHz FSB
Based DDR Mainboard
Manual Version 1.0

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Statement of Shuttle Mainboard via the EMI Test

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

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

(B) Tested Product Information:
      Product Name: PC Mainboard
      Status: Sample
      Model Name: FB54
      S/N: N/A
      CPU:
          External Frequency: 100 MHz
              Intel Pentium IV 1.5/1.6/1.7/1.8/1.9/2.0/2.2/2.4 GHz
          External Frequency: 133 MHz
              Intel Pentium IV 1.6/1.7/2.2/2.4/2.53/2.8/3.06 GHz
      Composite Video Port: one port with 2 pins
      S-Video Port: one port with 4 pins
      IEEE1394a Port: one port with 6 pins
      Serial Port: one port with 9 pins
      VGA Port: one port with 15 pins
      Mouse Port: one port with 6 pins
      Keyboard Port: one port with 6 pins
      LAN Port: one port with 8 pins (10Mbps/100Mbps)
      USB Port: two ports with 4 pins respectively
      Center/Bass-Out & Line-In & Line-Out Ports: one port for each
      DDR Memory: 256 MB*2

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

Test Mode	External Frequency	CPU	Power Supply	Case Open/Closed
1	133 MHz	P4 3.06 GHz	ENP-0730(ATX12V)	Open
2	133 MHz	P4 3.06 GHz	ENP-0730(ATX12V)	Closed
3	133 MHz	P4 1.6 GHz	ENP-0730(ATX12V)	Open
4	133 MHz	P4 1.6 GHz	ENP-0730(ATX12V)	Closed
5	100 MHz	P4 2.4 GHz	ENP-0730(ATX12V)	Open
6	100 MHz	P4 2.4 GHz	ENP-0730(ATX12V)	Closed
7	100 MHz	P4 1.5 GHz	ENP-0730(ATX12V)	Open
8	100 MHz	P4 1.5 GHz	ENP-0730(ATX12V)	Closed

(C) Remedy for the Tested Product & Its EMI Interference:
      Remedy: N/A
      EMI Interference:
          Crystal: 14.318 MHz(X1)/14.318 MHz(Y1)/32.768 KHz(X4)/24.576 MHz(X2)/
              25.0 MHz(X3)/24.576 MHz(X5)
          Clock Generator: 205

(D) Supported Host Peripherals:

Host Peripheral	Product Name	Model Name	S/N	FCC ID
#1	Case	KF45A	N/A	
#2	Power Supply (300W)	ENP-0730 (ATX12V)	1000002885	
#3	IBM HDD (30.7GB)	91024UB	YKFY7981	3892I168
#4	MITSUMI FDD	D353M		
#5	SONY VCD Player	CDV4811		3892A291
#6	AGP Card	Winfast Geforce 2 MX		3892C520
#7	Power Cable	Detachable and Shielded		

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

TABLE OF CONTENTS

WHAT'S IN THE MANUAL

Quick Reference

About This Manual

1 INTRODUCTION

1.1 To Different Users

First-Time DIY System Builder

Welcome to the DIY world! Building your own computer system is not as difficult as you may think. To make your first computer DIY experience successful, right from the start, we have designed Chapter 3 Hardware Installation in a step-by-step fashion for all the first-time DIY system builders. Prior to installation, we suggest you read the whole manual to gain a complete understanding of your new FB54 mainboard.

Experienced DIY User

Congratulate on your purchase of the FB54 mainboard. You will find installing your new FB54 mainboard is quite easy. Bundled with an array of onboard functions, the highly-integrated FB54 mainboard provides you with a total solution to build the stablest and most reliable system. Referring to section 3.2 Jumper Settings and Chapter 4 Software Utility, you will find how to work out your new mainboard. Chapter 5 BIOS Setup also contains the relevant information on how to tune up your system to achieve higher performance.

System Integrator

You have wisely chosen FB54 to construct your system. FB54 incorporates all the state-of-the-art technology of the 82845GE (MCH) chipset from Intel. It integrates the most advanced functions you've ever found in a compact small form factor ATX board.

1.2 Item Checklist:

Check all items with your FB54 mainboard to make sure nothing is missing.
A complete package should include:

✳ One Shuttle FB54 Mainboard
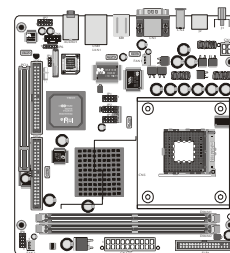
✳ One ATA 100/66 Ribbon Cable
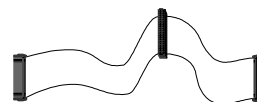
✳ One Floppy Ribbon Cable
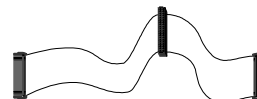
✳ One Twin-Port USB Cable (optional)
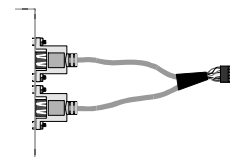
✳ One S-Video to Composite/AV-Output Cable (optional)

✳ FB54 User's Manual
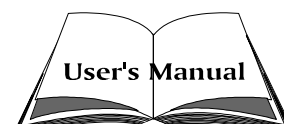
✳ One Bundled CD-ROM, including:
   ➢ FB54 user's manual in PDF format
   ➢ Intel Chipset Driver
   ➢ Intel Ultra ATA Driver
   ➢ VGA Device Driver
   ➢ Audio Driver
   ➢ USB 2.0 Driver (only for Win2000 or WinXP)
   ➢ LAN Driver
   ➢ Award Flashing Utility
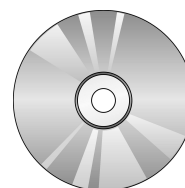
2 FEATURES

FB54 mainboard is dedicatedly designed for demanding PC users who desire high performance and maximum intelligent features in a compact package.

2.1 Specifications

✸ CPU Support

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

✸ Chipset

Features Intel 82845GE (MCH) N.B. and Intel 82801DB (ICH4) S.B..

✸ Onboard 10/100Mb/s LAN

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

✸ Onboard 1394a

VIA VT6306 supports 400Mb/s, 200Mb/s, or100Mbits/s data transfer rate.

✸ Onboard TV-Out

Chrontel CH7011A supports S-Video and Composite Video Output Signals.

✸ AC'97 Audio CODEC

Realtek ALC650 compliant with AC'97 2.2 involves SPDIF In/Out function. 5.1 channel slot selectable DAC Output for multi-channel applications.

✸ Hyper-Threading Technology

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

✸ Jumperless CPU Configuration

Soft-configuration FSB (The FSB speed is software configurable from 100MHz to 165MHz in the Frequency/Voltage Control of BIOS setup program.)

✸ Versatile Memory Support

Two 184-pin DDR SDRAM DIMM slots maximumly accommodate 2GB of PC1600/2100/2700.

✴ PCI Expansion Slot

Provides one 32-bit PCI slot.

✴ USB 2.0 Interface Onboard

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

✴ I/O Interface

Provides a variety of I/O interfaces:

➢ 1 x composite video port

➢ 1 x S-Video port

➢ 1 x IEEE1394a port

➢ 1 x DB9 serial port 16C550 UART compatible

➢ 1 x VGA port

➢ 1 x PS/2 mouse port

➢ 1 x PS/2 keyboard port

➢ 1 x LAN port

➢ 2 x USB ports

➢ 1 x Center/Bass-Out port

➢ 1 x Line-In port

➢ 1 x Line-Out port

✴ PCI Bus Master IDE Controller Onboard

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

The IDE bus implements data transfer speeds to 100/66/33MB/sec and supports enhanced PIO modes.

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

✴ ATX Power Supply Connector

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

✸ Advanced Configuration and Power Interface

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

✸ System BIOS

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

✸ Form Factor

System board conforms to the small form factor ATX specification.
Board dimension: 190mm x 170mm.

✸ Advanced Features

➢ Low EMI - Built in spread spectrum. Unused PCI/SDRAM slots are shut off by the automatic clock for reducing EMI.

➢ Dual Function Power Button - The system can be in any of the two states: one is Suspend mode and the other is Soft-Off mode. Pushing the power button for less than 4 seconds places the system into Suspend mode. When the power button is pressed for longer than 4 seconds, the system will enter Soft-Off mode.

➢ Modem Ring Power-On - The system can be powered on automatically by the activation of modem ringing.

➢ CPU Host/PCI Clock Setting - This item allows users to adjust CPU Host Clock and PCI Clock in BIOS.

➢ CPU Multiplier Setting - This item allows users to adjust CPU Multiplier in BIOS.

✸ Intelligent Features

➢ Voltage Monitoring - Monitors various voltages of key elements, such as the CPU, and other critical system voltage levels to ensure a stable current passing through mainboard components.

➢ Fan Status Monitoring - To prevent the CPU from overheating, the CPU fan is monitored by RPM, with which the cooling fan is required.

➢ Temperature Monitoring - This item allows users to make sure whether the CPU or system runs under a suitable temperature.

➢ CPU Fan AutoGuardian - This SMART BIOS enables 3-phase variable fan speed and CPU temperature control feature.

3 HARDWARE INSTALLATION

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

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

3.1 Step-by-Step Installation

Accessories Of FB54

PS/2 Keyboard & PS/2 Mouse Port Connectors

USB & LAN Port Connectors

Line-Out & Line-In & Center/Bass-Out Port Connectors

Front Panel Audio Header - JP7

Realtek ALC650

Audio AUX_IN Connector - CN6

SPDIF In/Out Header - JP6

Clear CMOS Jumper - JP4

Realtek 8100B

Extended 1394a Header - JP1

Extended USB Headers - JP2 & JP3

Two IDE Connectors

One PCI Slot

Chrontel CH7011A

Intel 82801DB Chipset

Intel 82845GE Chipset

Two DIMM Slots

Front Panel Header - JP8

FAN2

VGA & COM1 Port Connectors

IEEE1394a Port Connector

S-Video Port Connector

Composite Video Port Connector

ATX12V - CN1

FAN1

VIA VT6306 (on the backside)

Socket 478

ATXPWR Connector - CN2

Floppy Connector

Step 1

CPU Installation:

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

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

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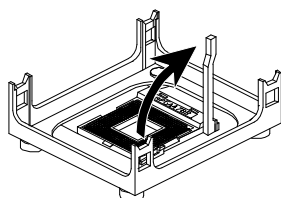
CPU socket lever up to 90-degree angle

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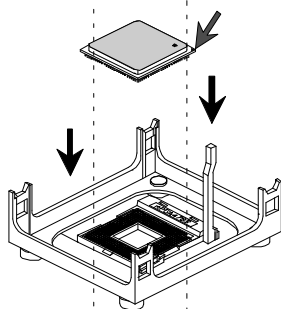
CPU Pin 1 and cut edge

3. Press down the CPU socket lever and finish CPU installation.
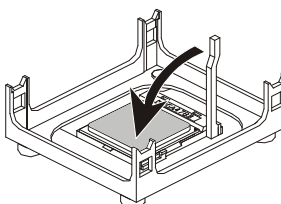
Note: The CPU might be damaged if you do not match the CPU socket Pin 1 and cut edge well.

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

Step 2.

Set Jumpers

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

Clear CMOS Setting

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

Step 3

Install DDR SDRAM System Memory

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

DDR SDRAM
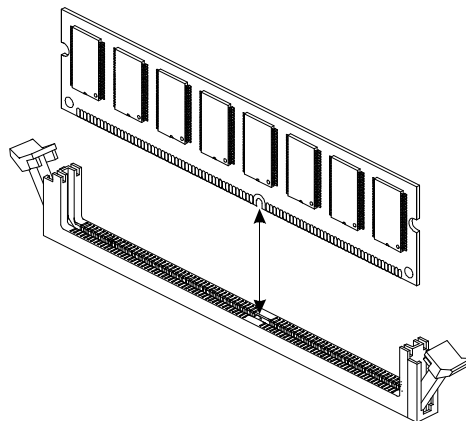
Step 4

Install Internal Peripherals in System Case

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

To install IDE & FDD drives, follow these procedures:

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

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

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

Step 5

Mount the Mainboard on the Computer Chassis

1. You may find there are a lot of mounting holes on your computer chassis and mainboard. To match the holes on both properly, the key point is to make the back-panel of the mainboard in a close fit with your system case, as shown below.
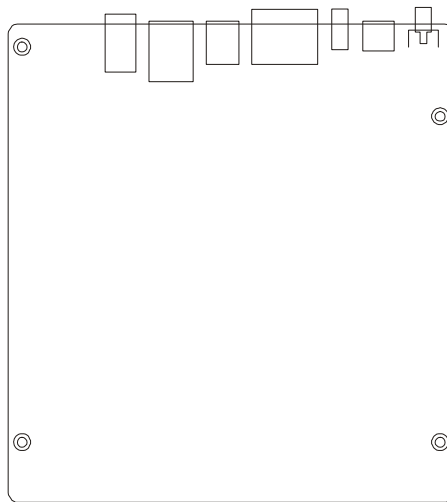
2. Position the studs between the chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the them, for avoiding any electrical shorts in-between.

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

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

Step 6

Connect Front-Panel Switches/LEDs/USBs

You can find there are several different cables already existing in the system case and originating from the computer's front-panel devices (Power On/Off Switch, Reset Switch, Green LED/Power LED, HDD LED, or USB devices etc.) These cables serve to connect the front-panel switches, LEDs, and USB connectors to the mainboard's front-panel connectors group (JP8 and JP2/ JP3), as shown below.
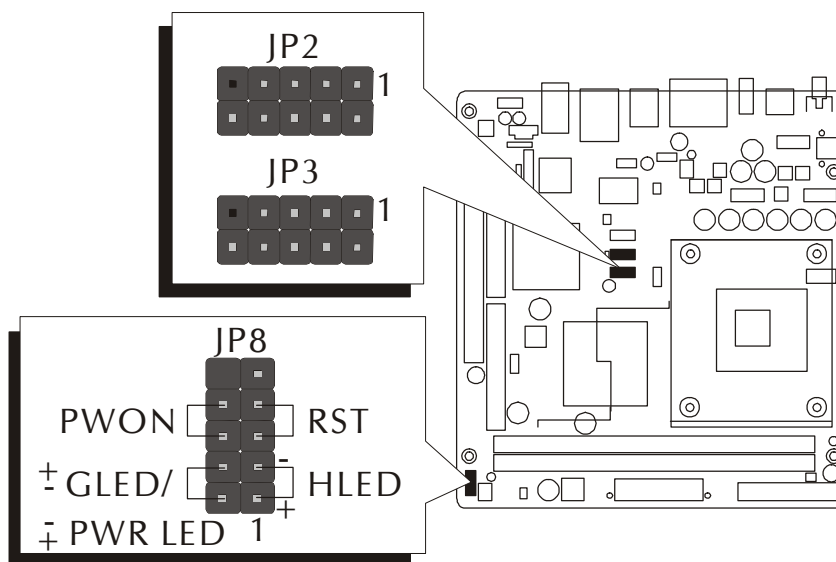
1. ATX Soft Power On/Off (PWON)
2. Green LED and Power LED (GLED/PWR LED)
3. Hardware Reset Switch Button (RST)
4. HDD LED (HLED)
5. Extended USB Headers (JP2/JP3)
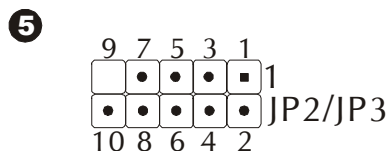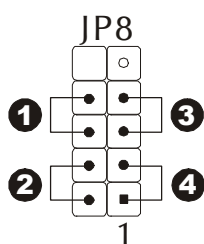
1 = VCC   2 = VCC
3 = Data0-   4 = Data1-
5 = Data0 +   6 = Data1 +
7 = Ground   8 = Ground
9 = Key   10 = N/C

Step 7

Connect IDE and Floppy Disk Drives

1. IDE cable connectors
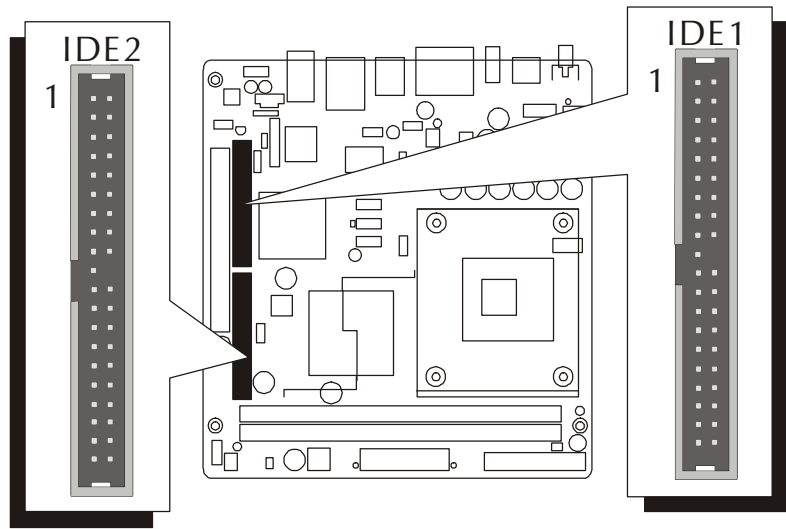
2. Floppy cable connector
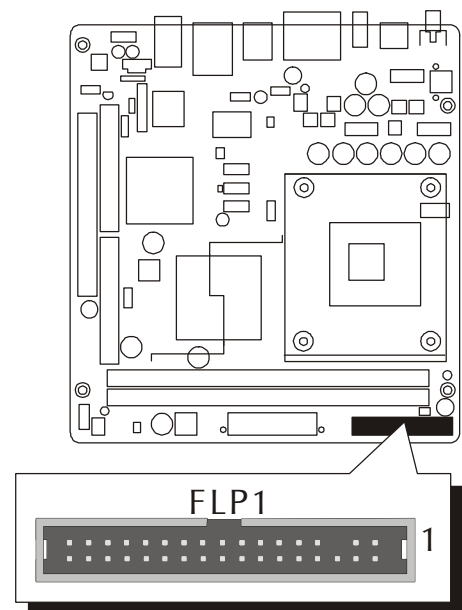
Step 8

Connect Other Internal Peripherals

1. Front panel audio header (JP7) and AUX_IN connector (CN6)

JP7

1

CN6

1
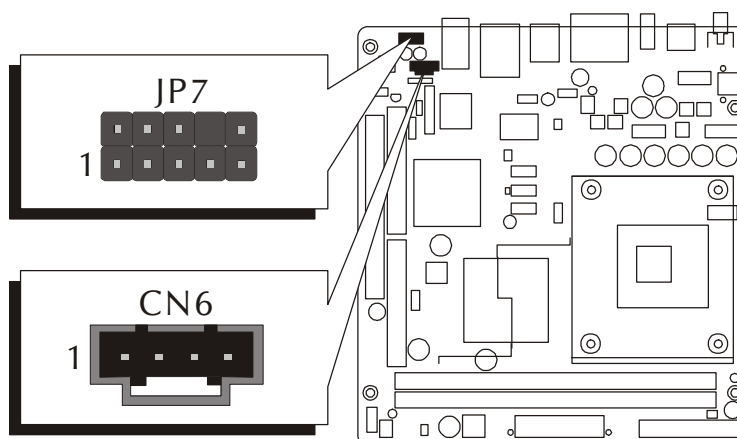
2. SPDIF In/Out header (JP6)

JP6

1
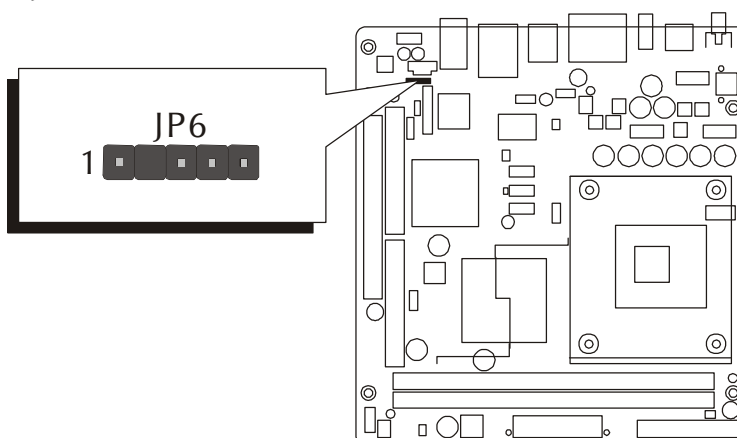
3. IEEE1394a header (JP1)

JP1

1
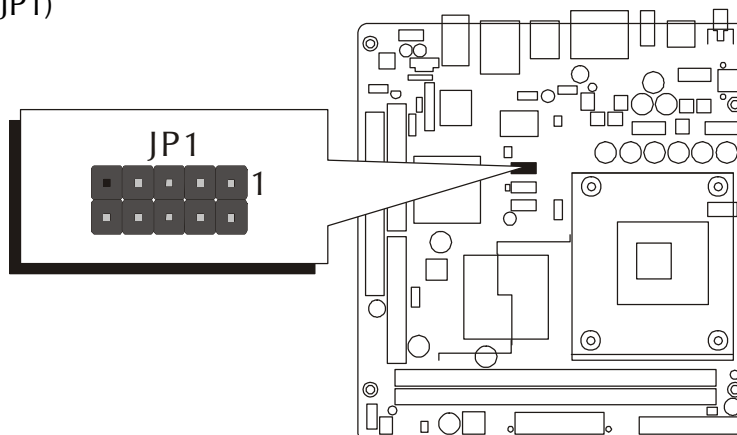
Step 9

Connect the Power Supplies

1. System power connectors (CN1/CN2)
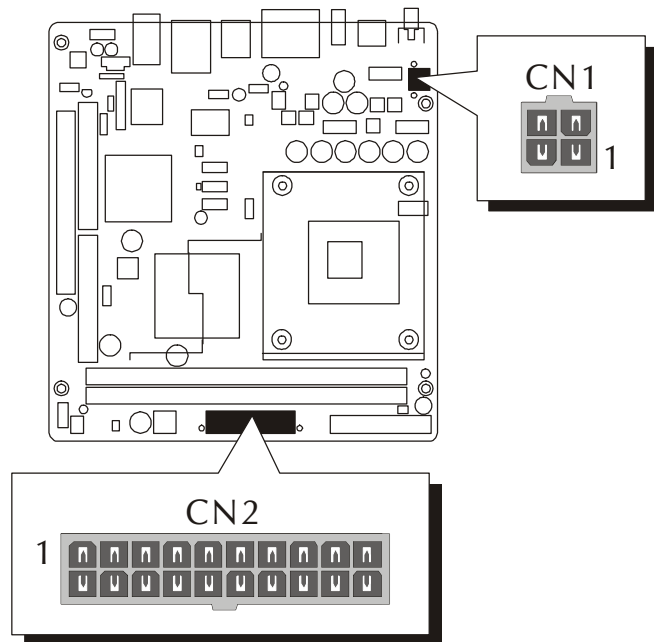
Step 10

Install an Add-On Card in the Expansion Slot

1. PCI Card
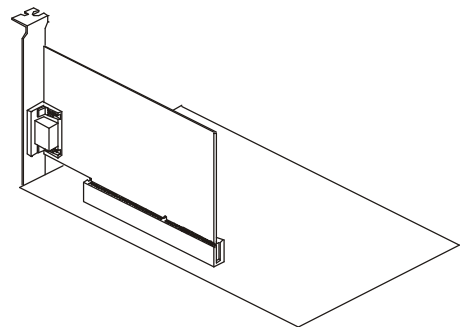
Step 11

Connect External Peripherals to Back-Panel

You are now ready to connect the external peripherals to your system's back-panel.
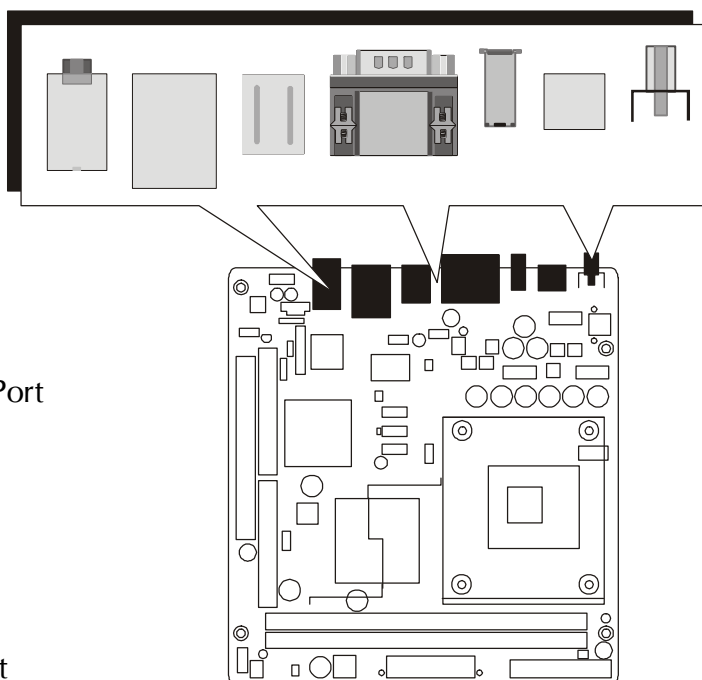
1. Composite Video Port
2. S-Video Port
3. IEEE1394a Port
4. COM1 Port
5. VGA Port
6. PS/2 Mouse Port
7. PS/2 Keyboard Port
8. LAN Port
9. USB Ports 1/2
10. Audio Center/Bass-Out Port
11. Audio Line-In Port
12. Audio Line-Out Port
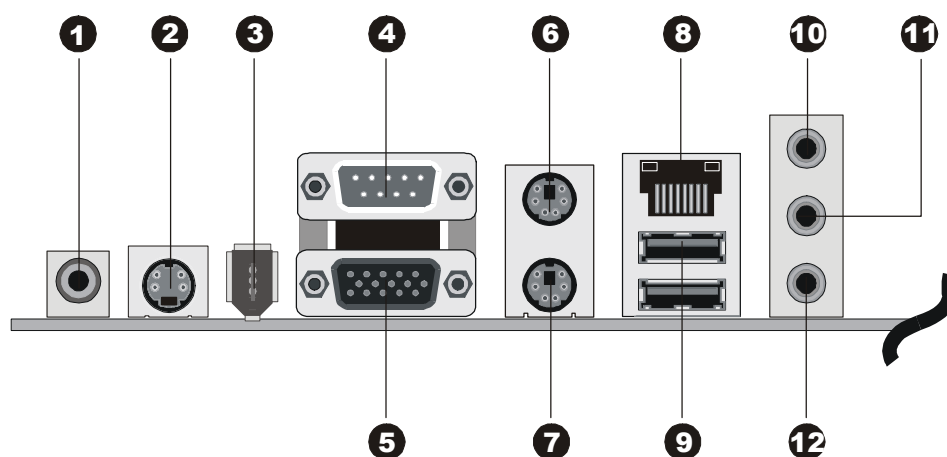
Step 12

System Boot Up For the First-Time

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

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

2. Turn on the system power.

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

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

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

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

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

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

Step 13

Install Drivers & Software Components

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

1. Insert the FB54 bundled CD-ROM into your CD-ROM drive. The auto-run program will display the main installation window on screen.
2. Choose "Install FB54 Mainboard Driver."
3. Choose "Install Intel Chipset driver" and complete it.
4. Choose "Install Intel Ultra ATA Driver" and complete it.
5. Choose "Install VGA Device Driver" and complete it.
6. Choose "Install Audio Driver" and complete it.
7. Choose "Install USB 2.0 Driver" and complete it. (only for Win2000 or WinXP)
8. Choose "Install LAN Driver" and complete it.
9. Quit (from the auto-run installation program).

3.2 Jumper Settings

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

3-pin and multi-pin (> 3) jumpers shown as follows:
Pin #1 to the left:

Pin #1 on the top:

Pin #1 to the right:

Pin #1 on the bottom:

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

Caution!

1. Do not remove the mainboard from its antistatic protective packaging until you are ready to install it.

2. Carefully hold the mainboard by its edges and avoid touching its components. When putting the mainboard down, place it on top of its original packaging film, with the component side up.

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

Jumpers & Connectors Guide

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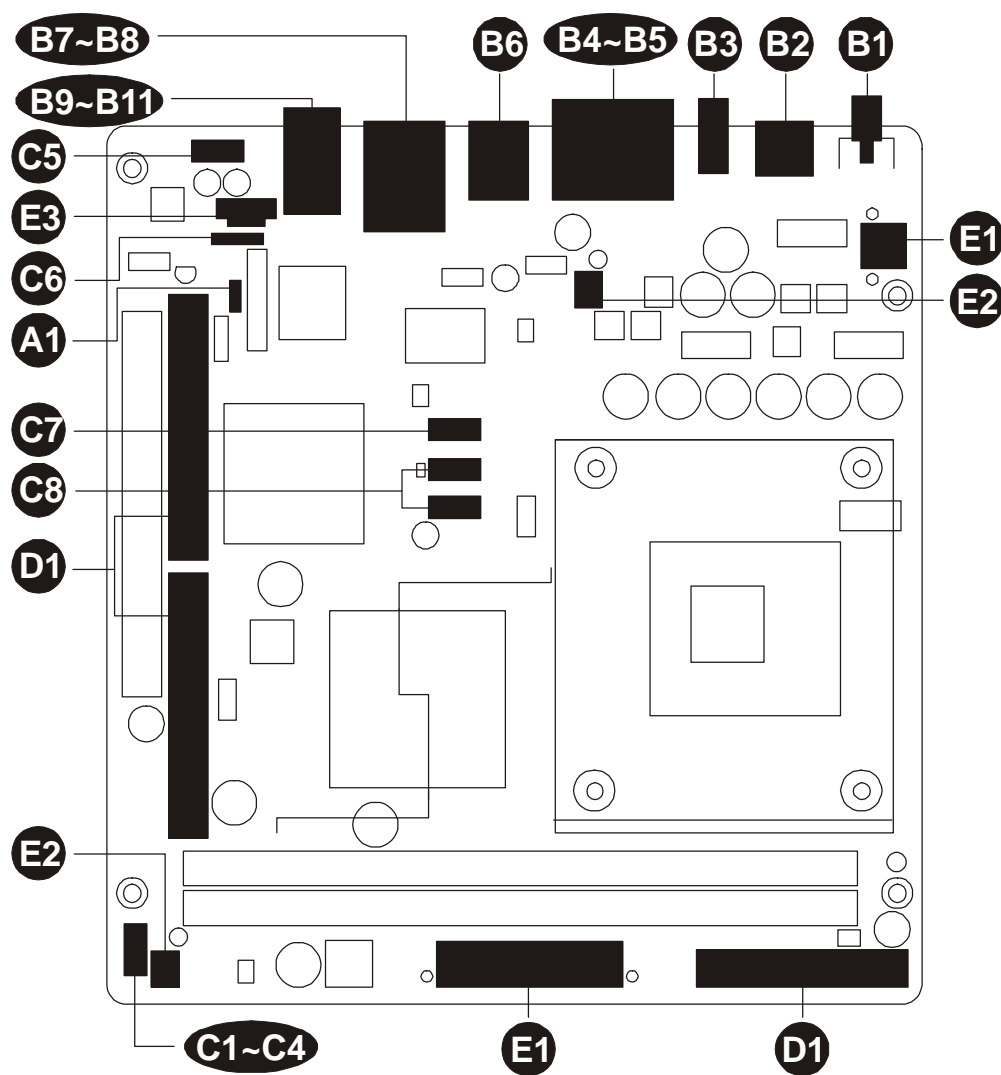
CPU/Memory/Expansion Slots

Socket 478   : CPU socket for Intel Pentium 4/Celeron, 478-pin processors

DIMM1/2   : Two DIMM slots for 64, 128, 256, 512 MB, and 1GB of 2.5V DDR SDRAM

                 (The total installed memory does not exceed 2GB.)

PCI   : One 32-bit PCI expansion slot

Jumpers

(A1)   JP4   : Clear CMOS setting

Back-Panel Connectors

(B1)	J1	: Composite video port
(B2)	J2	: S-Video port
(B3)	1394a	: IEEE1394a port
(B4)	COM1	: Serial port
(B5)	VGA	: VGA port
(B6)	MS	: PS/2 mouse port
(B6)	KB	: PS/2 keyboard port
(B7)	LAN	: LAN port
(B8)	USB	: USB1/USB2 ports
(B9)	CENTER/BASS-OUT	: Center/Bass-Out port
(B10)	LINE-IN	: Line-In port
(B11)	LINE-OUT	: Line-Out port

Front-Panel Connectors

(C1)	PWON	: ATX power on/off switch
(C2)	GLED/PWR LED	: Green LED (ON when system stays in power saving mode)/System power LED
(C3)	RST	: Hardware reset switch
(C4)	HLED	: IDE drive active LED
(C5)	JP7	: Front panel audio header
(C6)	JP6	: SPDIF In/Out header
(C7)	JP1	: Front Panel IEEE1394a header
(C8)	JP2/ JP3	: Extended USB headers

Internal-Peripheral Connectors

(D1)	IDE1	: IDE primary interface (dual-channel)
(D1)	IDE2	: IDE secondary interface (dual-channel)
(D1)	FLP1	: Floppy disk drive interface

Other Connectors

(E1)	CN1/CN2	: ATX power supply connectors
(E2)	FAN1	: CPU fan connector
(E2)	FAN2	: Chipset fan connector
(E3)	CN6	: Audio AUX_IN connector

☞ *Jumpers*

Ⓐ **Clear CMOS Setting (JP4)**

JP4 is used to clear CMOS data. Clearing CMOS will result in permanently erasing previous system configuration settings and the original factory-set system settings.

Pin 1-2 (Normal)(Default)

Pin 2-3 (Clear CMOS)

JP4
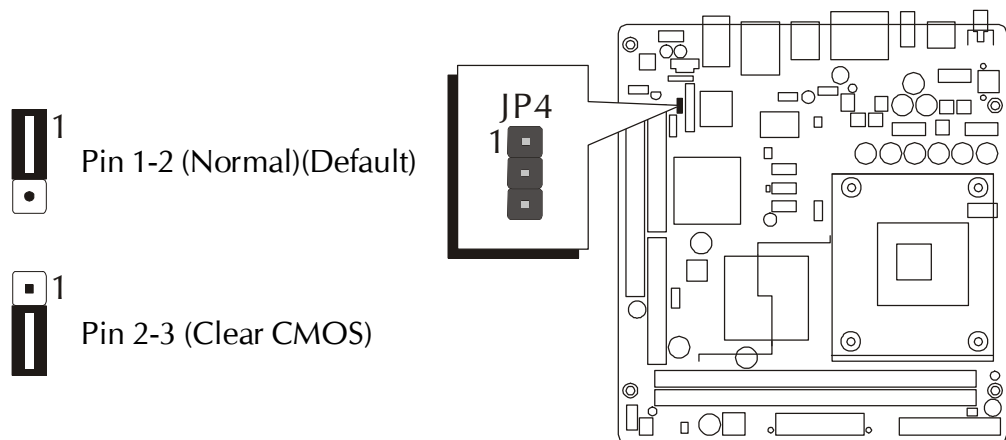
Step 1. Turn off the system power (PC-->Off).

Step 2. Remove the ATX power cable from the ATX power connector.

Step 3. Remove the jumper cap from pins 1-2.

Step 4. Place the jumper cap on pins 2-3 for a few seconds.

Step 5. Restore the jumper cap to pins 1-2.

Step 6. Plug the ATX power cable into the ATX power connector.

Step 7. Turn on the system power (PC-->On).

☞ *Back-Panel Connectors*

B1 **Composite Video Port Connector**

One composite (audio-visual) video connector is located on the rear panel of the mainboard.

Composite Video Port
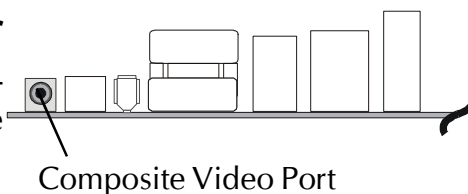
B2 **S-Video Port Connector**

One 4-pin S-Video connector is located on the rear panel of the mainboard.

S-Video Port
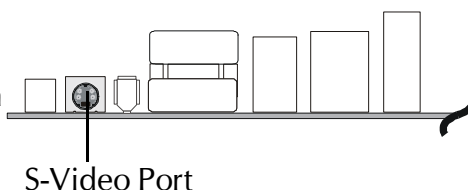
B3 **IEEE 1394a Port Connector**

This mainboard offers one 1394a port on back-panel. Plug a device jack into the 1394a connector.

IEEE1394a Port

B4 **COM1 Port Connector**

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

COM1 Port
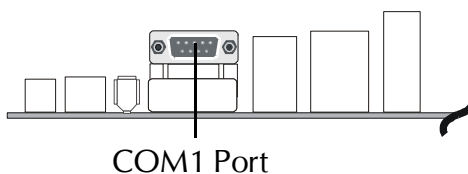
B5 **VGA Port Connector**

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

VGA Port
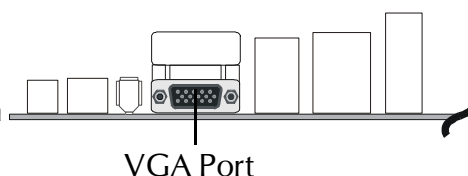
B6 **PS/2 Mouse & PS/2 Keyboard Port Connectors**

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

PS/2 Mouse Port

PS/2 Keyboard Port
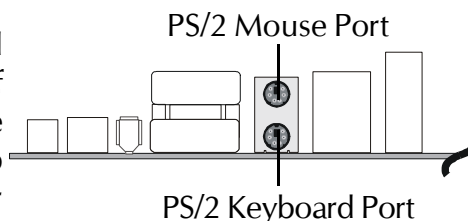
B7 LAN Port Connector

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

LAN Port
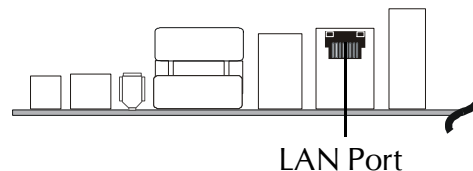
B8 USB1/USB2 Port Connectors

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

USB Port 2

USB Port 1
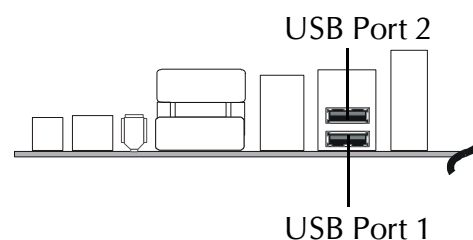
B9 Center/Bass-Out Port Connector

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

Center/Bass-Out Port
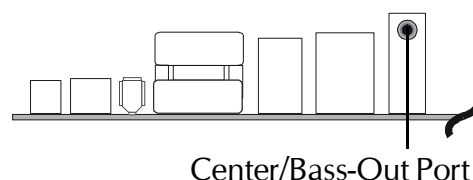
B10 Line-In (Rear-Out) Port Connector

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

Line-In Port
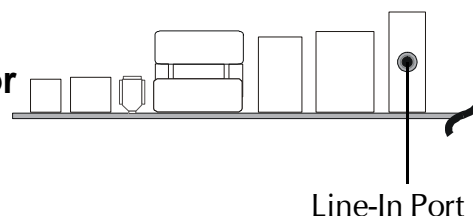
B11 Line-Out (Front-Out) Port Connector

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

Line-Out Port
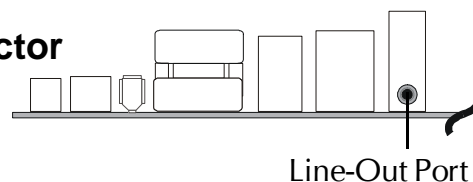
☞ *Front-Panel Connectors*

ⓒ1 ATX Power On/Off Switch Connector (PWON)

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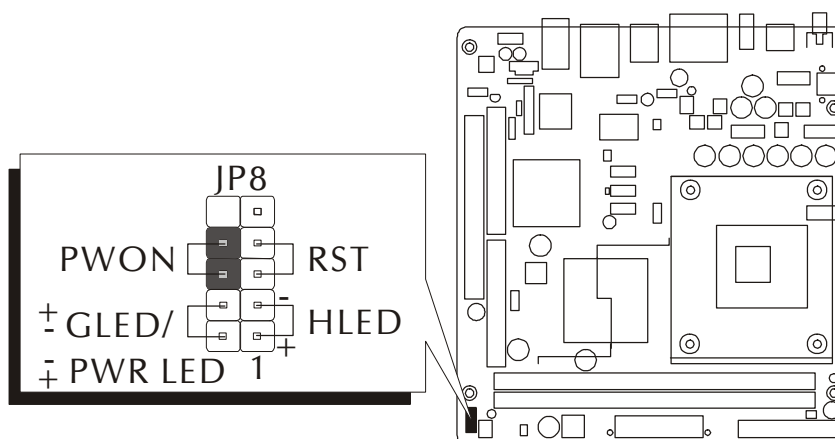
ⓒ2 Green LED/Power LED Connector (GLED/PWR LED)

This header is dual color LED function. Dual color LED function is defined by either Green LED or Power LED, the header can be in these states. The Green LED indicates that the system is currently in one of the power saving mode (Doze/Standby/Suspend). When the system resumes to normal operation mode, the Green LED will go off, the Power LED on. The Power LED will go off during power saving mode. Attach a 2-pin Green LED/Power LED cable to (GLED/PWR LED) header.
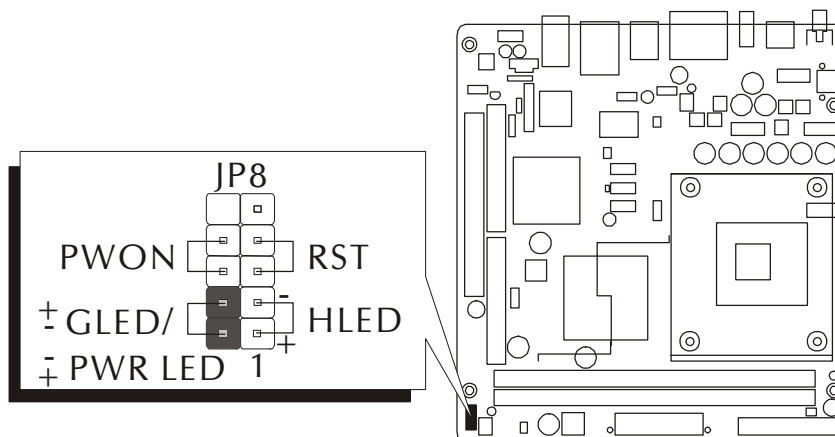
⊗ **Hardware Reset Connector (RST)**

Attach a cable to the 2-pin (RST) header. Pressing the reset switch causes the system to restart.
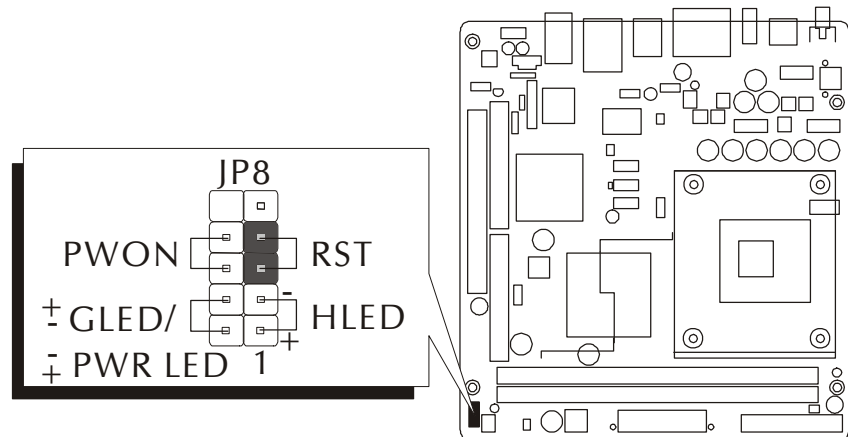
⊗ **HDD LED Connector (HLED)**

Attach a connector cable from the IDE device LED to the 2-pin (HLED) header. The HDD LED lights up whenever an IDE device is active.
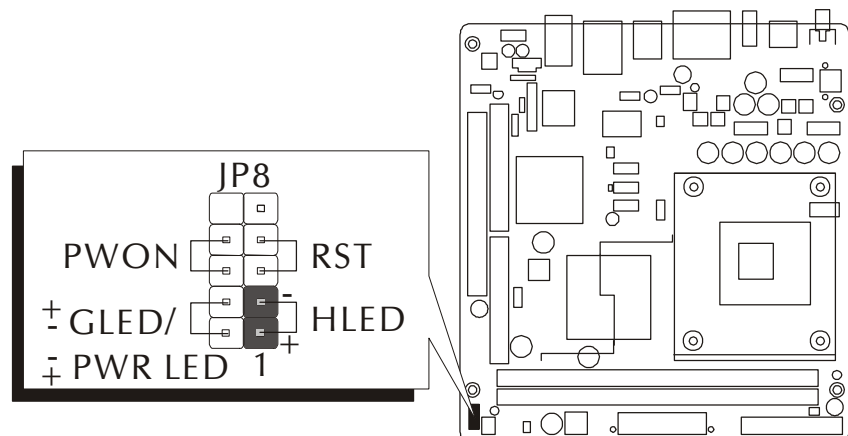
Note : Please notice all the LED connectors are directional. If your chassis's LED does not light up during running, please change it to the opposite direction.

☉ Front Panel Audio Header (JP7)

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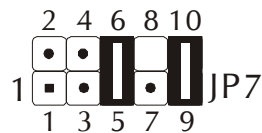
Pin Assignments:

1 = AUD_MIC	2 = AUD_GND
3 = AUD_MIC_VCC	4 = RESERVE
5 = AUD_FRONT_R	6 = AUD_RET_R
7 = HP_ON	8 = KEY
9 = AUD_FRONT_L	10 = AUD_RET_L
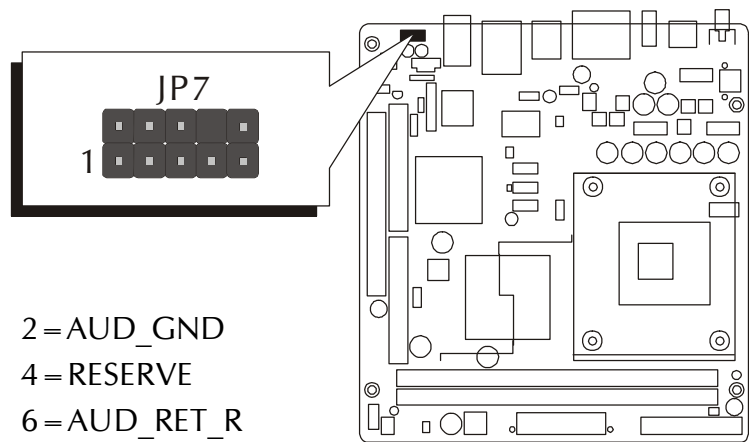
☉ SPDIF In/Out Header (JP6)

Port JP6 can be used to connect a special device.
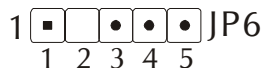
Pin Assignments:

1 = AVDD (+ 5V)	2 = N/C
3 = GND	4 = SPDIF_IN
5 = SPDIF_OUT	
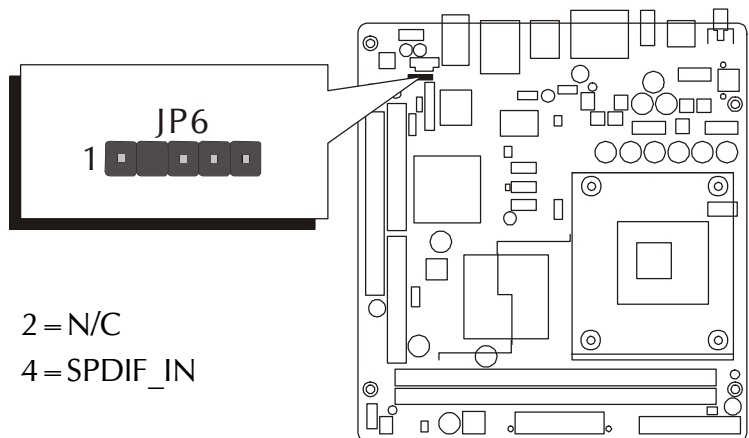
C7 Front Panel IEEE1394a Header (JP1)

The header is used to connect the cable attached to a 1394a connector which is mounted on front panel or back panel. But the 1394a cable is optional at the time of purchase.
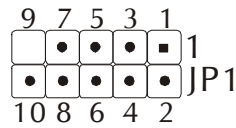
Pin Assignments:

1 = TPA +	2 = TPA2-
3 = Gnd	4 = Gnd
5 = TPB +	6 = TPB-
7 = +12V (fused)	8 = +12V (fused)
9 = Key	10 = Gnd
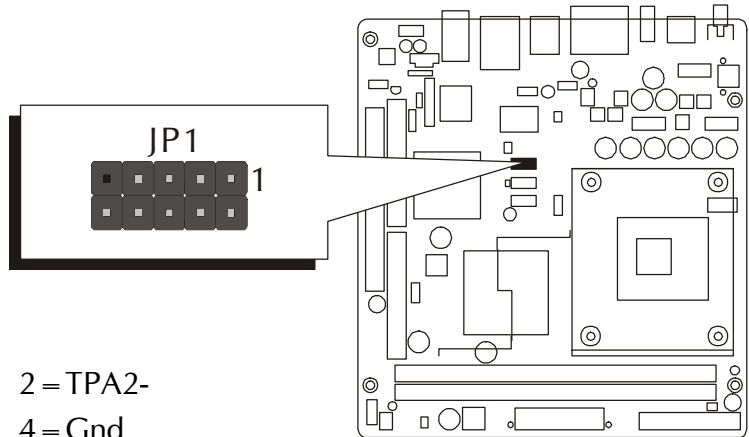
C8 Extended USB Headers (JP2/JP3)

Headers JP2 and JP3 are used to connect cables to USB connectors mounted on front-panel or back-panel. The USB cable is optional at the time of purchase.
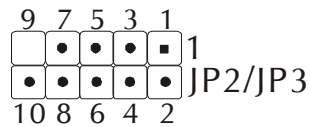
Pin Assignments:

1 = VCC	2 = VCC
3 = Data0-	4 = Data1-
5 = Data0 +	6 = Data1 +
7 = Ground	8 = Ground
9 = Key	10 = N/C
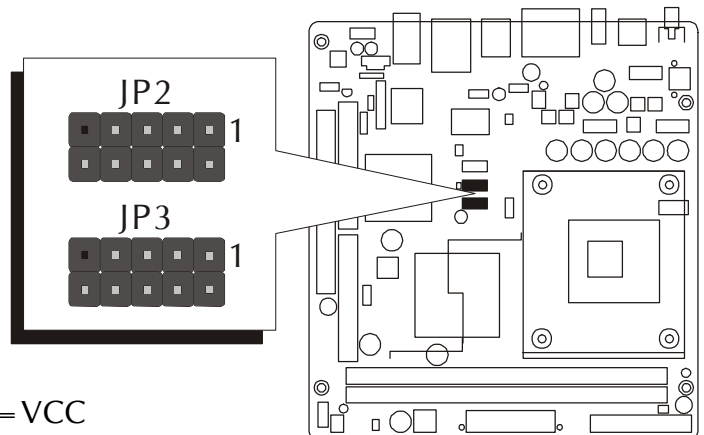
☞ *Internal Peripheral Connectors*

ⓓ Enhanced IDE and Floppy Connectors (IDE1/IDE2 & FLP1)

FB54 mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2), providing support for up to four IDE devices, such as CD-ROM and Hard Disk Drive (HDD). This mainboard also includes one 34-pin floppy disk controller (FDC) to accommodate the Floppy Disk Drive (FDD). Moreover, this mainboard comes with one 80-pin ATA 100/66 ribbon cable to connect IDE HDD, and one 34-pin ribbon cable for FDD connection.
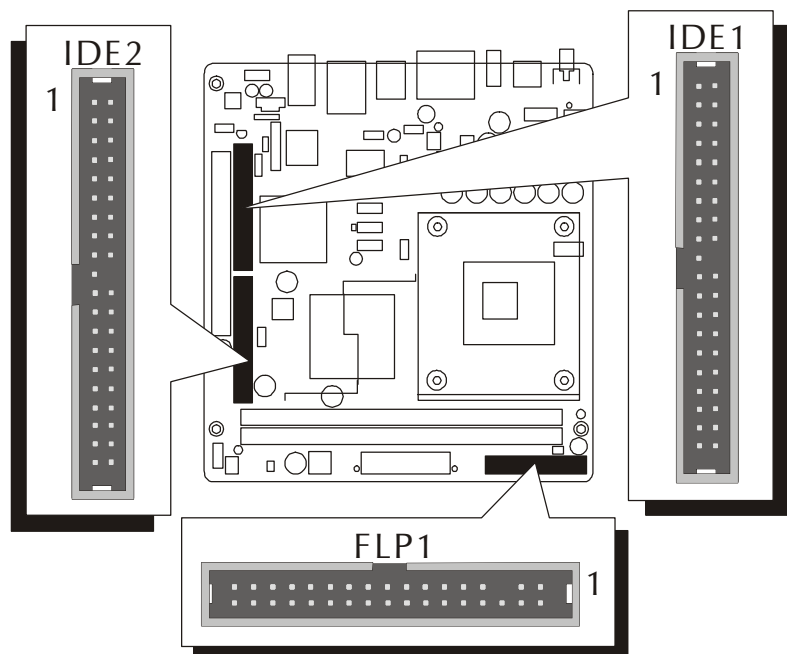
Important:	Ribbon cables are directional; therefore, connect the red cable stripe to the same side.

☞ *Other Connectors*

㉛ **ATX Power Supply Connectors (CN1/CN2)**

This motherboard uses 20-pin ATX power header (CN2), and comes with the other one header (CN1). Please make sure you plug each in the right direction. It is essential to have these two power supply connectors plugged or your system won't boot up.

ATXPWR **ATX12V**

CN2   **CN1**

CN1

1

CN2

1
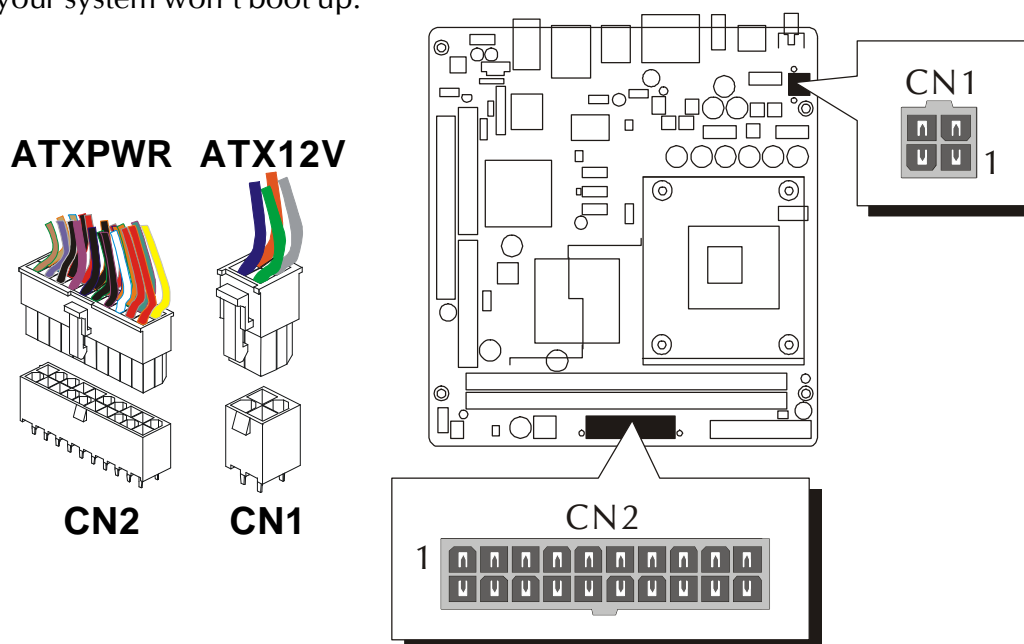
A traditional ATX system remains in the power-off stage when AC power resumes from power failure. However, it is inconvenient for a network server or workstation if there is not an UPS to execute power-on. Thus, this motherboard supports an AC Power Auto Recovery function to solve this problem. You may enable the function, "PWRON After PWR-Fail," in the sub-menu of "Power Management Setup" within the BIOS setup program.

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

㉜ **CPU and System Fan Connectors (FAN1/FAN2)**

The mainboard provides two onboard 12V cooling fan power connectors to support CPU (FAN1) & the chipset (FAN2).

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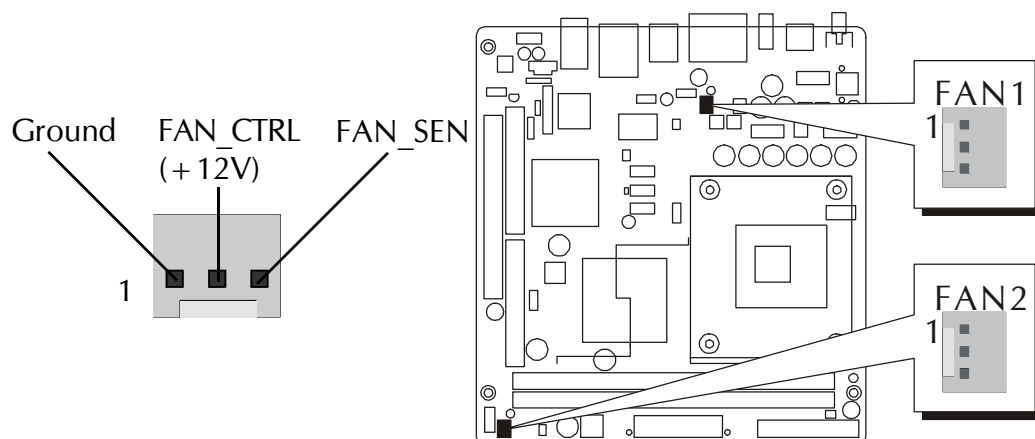
Note: Both cable wiring and type of plug may vary, which depend on the fan maker. Keep in mind that the red wire should always be connected to the +12V header and the black wire to the ground header.

㉝ **Audio AUX_IN Connector (CN6-Black)**

Port AUX_IN (CN6-Black) can be used to connect stereo audio inputs from CD-ROM, TV-tuner or MPEG card.

Pin Assignments:
1 = AUXL
2 = Ground
3 = Cround
4 = AUXR
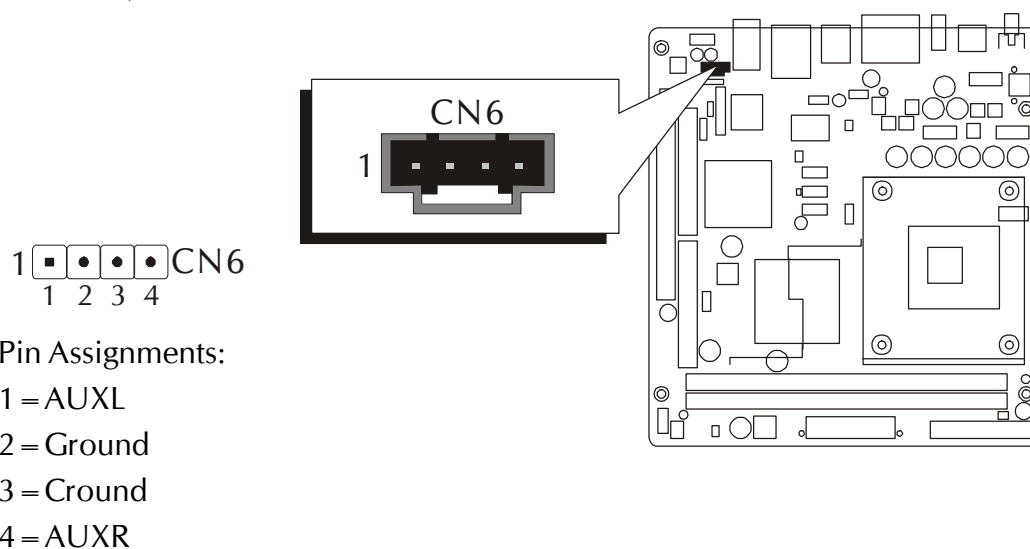
3.3 System Memory Configuration

The FB54 mainboard has two 184-pin DIMM slots that allow you to install from 64MB up to 2GB of system memory. Each 184-pin DIMM (Dual In-line Memory Module) slot can accommdate 64MB, 128MB, 256MB, 512MB, and 1GB of PC1600/PC2100/PC2700 compliant 2.5V single or double side 64-bit wide data path DDR SDRAM modules.

1. Install Memory:

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

DIMM Socket	Memory Modules	Module Quantity
DIMM 1	64MB, 128MB, 256MB, 512MB and 1GB184-pin 2.5V DDR SDRAM DIMM	x 1
DIMM 2	64MB, 128MB, 256MB, 512MB and 1GB184-pin 2.5V DDR SDRAM DIMM	x 1

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

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

Don't support double-sided X16 DDR DIMMs.

2. Upgrade Memory:

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

4 SOFTWARE UTILITY

4.1 Mainboard CD Overview

Note: The CD contents attached in FB54 mainboard are subject to change without notice.

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

Navigation Bar Description:

☞ Install FB51 Mainboard Driver - Installing Intel Chipset, Intel Ultra ATA, VGA Device, Audio, USB 2.0 (Win2000/WinXP only), and LAN drivers.

☞ Install FB54 Mainboard Driver - Installing Intel Chipset, Intel Ultra ATA, VGA Device, Audio, USB 2.0 (Win2000/WinXP only), and LAN drivers. (Here we shall choose this item.)

☞ Manual - FB51 or FB54 user's manual in PDF format.

☞ Link to Shuttle Homepage - Link to shuttle website homepage.

☞ Browse this CD - Allows you to see contents of this CD.

☞ Quit - Close this CD.
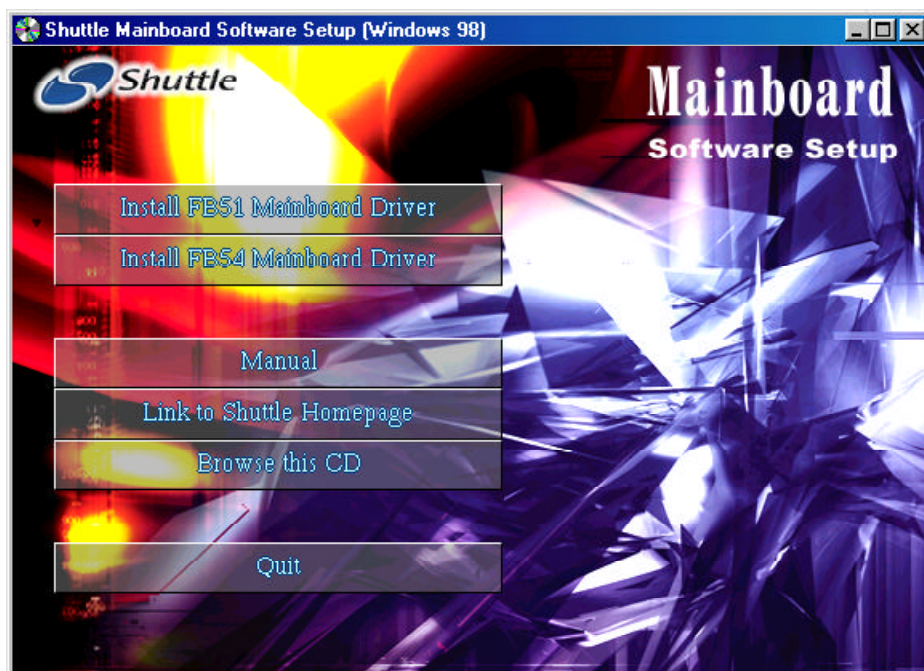
4.2 Install Mainboard Software

Insert the attached CD into your CD-ROM drive and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in My Computer to bring up Shuttle Mainboard Software Setup screen. Select using your pointing device (e.g. mouse) on the"Install FB54 Mainboard Driver" bar to install the mainboard software.

The Mainboard FB54 Driver includes:

[4.2.A]   Install Intel Chipset Driver
[4.2.B]   Install Intel Ultra ATA Driver
[4.2.C]   Install VGA Device Driver
[4.2.D]   Install Audio Driver
[4.2.E]   Install USB 2.0 Driver (for Win2000/WinXP only)
[4.2.F]   Install LAN Driver
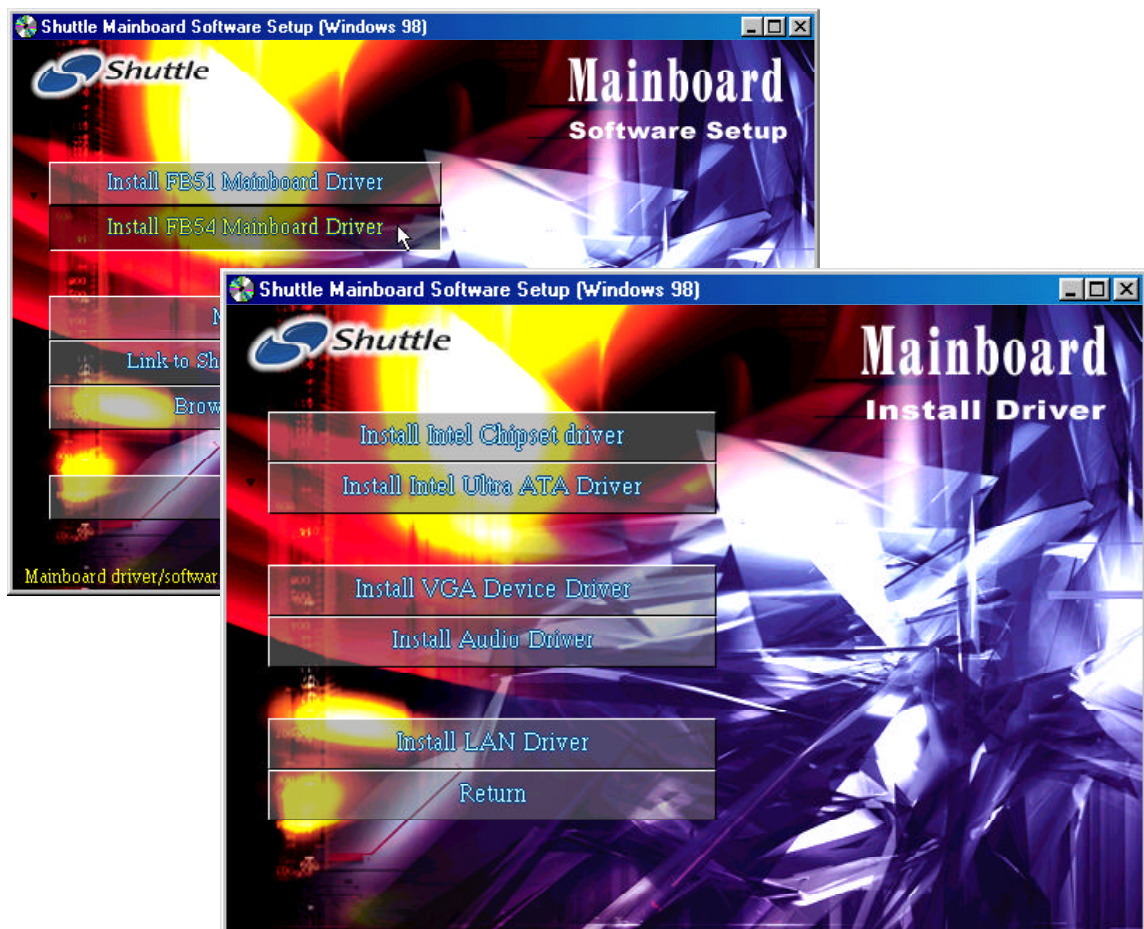
4.2.A Install Intel Chipset Driver

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

Once you made your selection, a Setup window run the installation automatically. When the copying files is done, make sure you reboot the system to take the installation effect.
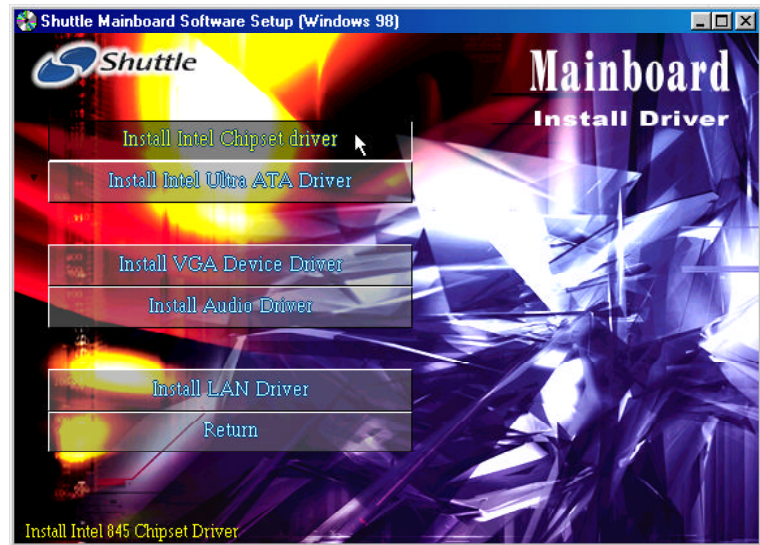
4.2.B Install Intel Ultra ATA Driver

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

Once you made your selection, a Setup window run the installation automatically. When the copying files is done, make sure you reboot the system to take the installation effect.

4.2.C Install VGA Device Driver

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

Once you made your selection, a Setup window run the installation automatically. When the copying files is done, make sure you reboot the system to take the installation effect.

4.2.D Install Audio Driver

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

Once you made your selection, a Setup window run the installation automatically. When the copying files is done, make sure you reboot the system to take the installation effect.

4.2.E Install USB 2.0 Driver (for Win2000/WinXP only)

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

Once you made your selection, a Setup window run the installation automatically. When the copying files is done, make sure you reboot the system to take the installation effect.

4.2.F Install LAN Driver

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

Once you made your selection, a Setup window run the installation automatically. When the copying files is done, make sure you reboot the system to take the installation effect.

4.3 View the User's Manual

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

Click on the "Install Acrobat Reader" bar if you need to install it, or click on the "FB54 Manual" bar to view FB54 user's manual.
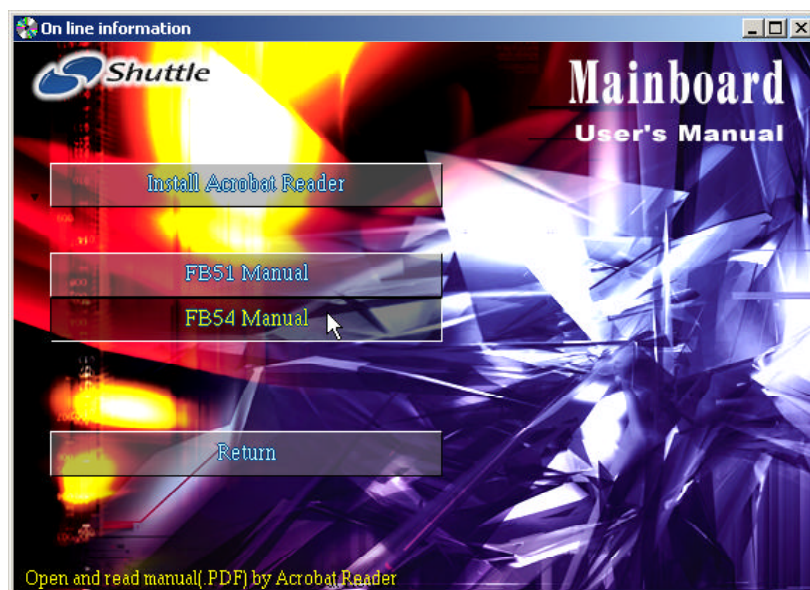
5 BIOS SETUP

FB54 BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed RAM so that it retains the Setup information even if the system power is turned off.

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

System date and time

Hardware execution sequence

Power management functions

Allocation of system resources

5.1 Enter BIOS

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

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

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

> Note1.   If you miss trains of words mentioned in step2 (the message disappears before you can respond) and you still wish to enter BIOS Setup, restart the system and try again by turning the computer OFF and ON again or by pressing the <RESET> switch located at the computer Front-panel. You may also reboot by simultaneously pressing the <Ctrl>, <Alt>, <Del> keys.
>
> Note2.   If you do not press the keys in time and system does not boot, the screen will prompt an error message, and you will be given the following options:
>
>   "Press F1 to Continue, DEL to Enter Setup"

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

5.2 The Main Menu

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

```
         Phoenix - Award WorkstationBIOS CMOS Setup Utility
┌──────────────────────────────────────────────────────────────────┐
│  ► Standard CMOS Features          ► Frequency/Voltage Control     │
│                                                                    │
│  ► Advanced BIOS Features             Load Fail-Safe Defaults      │
│                                                                    │
│  ► Advanced Chipset Features          Load Optimized Defaults      │
│                                                                    │
│  ► Integrated Peripherals             Set Supervisor Password      │
│                                                                    │
│  ► Power Management Setup              Set User Password            │
│                                                                    │
│  ► PnP/PCI Configurations             Save & Exit Setup            │
│                                                                    │
│  ► PC Health Status                   Exit Without Saving          │
├──────────────────────────────────────────────────────────────────┤
│  Esc : Quit       F9 : Menu in BIOS      ↑ ↓ ←  : Select Item      │
│  F10 : Save & Exit Setup                                           │
├──────────────────────────────────────────────────────────────────┤
│                   Time, Date, Hard Disk Type...                    │
└──────────────────────────────────────────────────────────────────┘
```

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

Setup Items

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

Standard CMOS Features

This menu displays the basic information about your system.

Advanced BIOS Features

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

Advanced Chipset Features

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

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI Configurations

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

PC Health Status

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

Frequency/Voltage Control

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

Load Fail-Safe Defaults

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

Load Optimized Defaults

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

Set Supervisor/User Password

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

Save & Exit Setup

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

Exit Without Saving

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

✍ *Standard CMOS Features*

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
            Phoenix - Award WorkstationBIOS CMOS Setup Utility
                         Standard CMOS Features
 ┌─────────────────────────────────────────────┬──────────────────────┐
 │  Date (mm:dd:yy)         Fri, Feb 21 2003    │     Item Help        │
 │  Time (hh:mm:ss)          1 : 40 : 48        ├──────────────────────┤
 │ ► IDE Primary Master     [ None]             │ Menu Level    ►      │
 │ ► IDE Primary Slave                          │                      │
 │ ► IDE Secondary Master                       │ Change the day, month,│
 │ ► IDE Secondary Slave    [ None]             │ year and century     │
 │                                              │                      │
 │  Drive A                 [1.44M, 3.5 in.]    │                      │
 │  Drive B                 [None]              │                      │
 │                                              │                      │
 │  Video                   [EGA/VGA]           │                      │
 │  Halt On                 [All , But Keyboard]│                      │
 │                                              │                      │
 │  Base Memory                 640K            │                      │
 │  Extended Memory            64512K           │                      │
 │  Total Memory               65536K           │                      │
 │                                              │                      │
 └─────────────────────────────────────────────┴──────────────────────┘
 ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults
```

Date (mm : dd : yy)

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

Time (hh : mm : ss)

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

IDE Primary/Secondary Master/Slave

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

Drive A/DriveB

Select the type of floppy disk drive and installed in your system.
➢ The choice: None, 360K, 5.25 in, 1.2M, 5.25 in, 720K, 3.5 in, 1.44M, 3.5 in, or 2.88M, 3.5 in.

Video

This item define the video mode of the system. This mainboard has a built-in VGA graphics system; leave this item at the default value.
➢ The choice: EGA / VGA, CGA 40, CGA 80, or MONO.

Halt On

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

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

Base Memory/Extended Memory/Total Memory

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

****

IDE Adapters

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

IDE HDD Auto-Detection

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

IDE Primary Master

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

➤ The choice: None, Auto, or Manual.

Access Mode

Choose the access mode for this hard disk.

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

Capacity

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

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

Cylinder

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

Head

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

Precomp

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

Landing Zone

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

Sector

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

****

✐ *Advanced BIOS Features*

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

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                      Advanced BIOS Features
┌─────────────────────────────────────────────┬──────────────────────┐
│  Bios Write Protect        [Disabled]      ▲ │     Item Help        │
│  Virus Warning             [Disabled]        │                      │
│  CPU L1 & L2 Cache         [Enabled]         │  Menu Level    ▶     │
│  CPU Hyper-Threading       [Enabled]         │                      │
│  Quick Power On Self Test  [Enabled]         │                      │
│  First Boot Device         [Floppy]          │                      │
│  Second Boot Device        [HDD-0]           │                      │
│  Third Boot Device         [CDROM]           │                      │
│  Boot Other Device         [Enabled]         │                      │
│  Swap Floppy Drive         [Disabled]        │                      │
│  Boot Up Floppy Seek       [Enabled]         │                      │
│  Boot Up NumLock Status    [Off]             │                      │
│  Gate A20 Option           [Fast]            │                      │
│  Typematic Rate Setting    [Disabled]        │                      │
│ x Typematic Rate (Chars/Sec) 6              │                      │
│ x Typematic Delay (Msec)     250            │                      │
│  Security Option           [Setup]           │                      │
│  APIC Mode                 [Enabled]         │                      │
│  MPS Version Control For OS[1.4]             │                      │
│  OS Select For DRAM > 64MB [Non-OS2]         │                      │
│  Report No FDD For WIN 95  [No]              │                      │
│  Small Logo(EPA) Show      [Enabled]       ▼ │                      │
├─────────────────────────────────────────────┴──────────────────────┤
│ ↑↓←:Move  Enter:Select  ·/ /PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
│    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults   │
└─────────────────────────────────────────────────────────────────────┘
```

Bios Write Protect
> This item let you enable or disable the Bios Write Protect.
> ➢ The choice: Enabled or Disabled.

Virus Warning
> Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enables and someone attempts to write data into this area, BIOS will show a warning message on screen, and an alarm beep.
>> Enabled   Activates automatically when the system boots up, causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
>> Disabled No warning message will appear when anything attempts to access the boot sector or hard disk partition table.
> ➢ The choice: Enabled or Disabled.

CPU L1 & L2 Cache
> This item enables CPU L1 internal and CPU L2 cache to speed up memory access.
> ➢ The choice: Enabled or Disabled.

CPU Hyper-Threading
> The latest Intel application defines a high-speed calculating ability to optimize your system by two CPUs supported (one virtual, one physical) in a multi-task environment.
> ➢ The choice: Enabled or Disabled.

Quick Power On Self Test

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

➢ The choice: Enabled or Disabled.

First/Second/Third Boot Device

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

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

Boot Other Device

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

➢ The choice: Enabled or Disabled.

Swap Floppy Drive

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

➢ The choice: Enabled or Disabled.

Boot Up Floppy Seek

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

➢ The choice: Enabled or Disabled.

Boot Up NumLock Status

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

➢ The choice: Off or On.

Gate A20 Option

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

➢ The choice: Normal or Fast.

Typematic Rate Setting

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

➢ The choice: Enabled or Disabled.

Typematic Rate (Chars/Sec)

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

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

Typematic Delay (Msec)

Sets the delay time after a key is held down.

➢ The choice: 250, 500, 750, or 1000.

Security Option

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

➢ The choice: Setup or System.

APIC Mode

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

➢ The choice: Enabled or Disabled.

MPS Version Control For OS

Selects the operating system multiprocessor support version.

➢ The choice: 1.1 or 1.4

OS Select For DRAM > 64MB

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

➢ The choice: Non-OS2 or OS2.

Report No FDD For WIN 95

Whether report no FDD runs for Win 95 or not.

➢ The choice: Yes or No.

Small Logo(EPA) Show

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

➢ The choice: Enabled or Disabled.

✎ *Advanced Chipset Features*

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

```
           Phoenix - Award WorkstationBIOS CMOS Setup Utility
                        Advanced Chipset Features
┌──────────────────────────────────────────────┬─────────────────────────┐
│  DRAM Timing Selectable    [By SPD]       ▲   │       Item Help         │
│  CAS Latency Time          [1.5]              │                         │
│  Active to Precharge Delay [7]                │  Menu Level      ▶      │
│  DRAM RAS# to CAS# Delay    [3]                │                         │
│  DRAM RAS# Precharge        [3]                │                         │
│  Turbo Mode                [Disabled]         │                         │
│  Memory Frequency For      [DDR266]           │                         │
│  System BIOS Cacheable     [Enabled]          │                         │
│  Video  BIOS Cacheable     [Disabled]         │                         │
│  Memory Hole At 15M-16M    [Disabled]         │                         │
│  Delayed Transaction       [Enabled]          │                         │
│  Delay Prior to Thermal    [16 Min]           │                         │
│  AGP Aperture Size (MB)    [64]               │                         │
│                                               │                         │
│  ** On-Chip VGA Setting **                    │                         │
│  On Chip VGA               [Enabled]          │                         │
│  On-Chip Frame Buffer Size [8MB]              │                         │
│  Boot Display              [Auto]             │                         │
│  IV Standard for Windows   [NISC]             │                         │
│  TV Format for DOS         [NTSC_M]       ▼   │                         │
├──────────────────────────────────────────────┴─────────────────────────┤
│ ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
│    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults │
└─────────────────────────────────────────────────────────────────────────┘
```

DRAM Timing Selectable

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

➢ The Choice: Manual or By SPD.

CAS Latency Time

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

➢ The Choice: 1.5, 2, 2.5, or 3.

Active to Precharge Delay

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

➢ The Choice: 7, 6, or 5.

DRAM RAS# to CAS# Delay

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

➢ The Choice: 3 or 2.

DRAM RAS# Precharge

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

➢ The Choice: 3 or 2.

Turbo Mode

This item allows you to speed up the system performance. Disable this item if the system is not stable.

➢ The Choice: Enabled or Disabled.

Memory Frequency For

This item is select SDRAM Frequency.

➢ The Choice: DDR266, DDR333, or Auto.

System BIOS Cacheable

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

➢ The Choice: Enabled or Disabled.

Video BIOS Cacheable

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

➢ The Choice: Enabled or Disabled.

Memory Hole At 15M-16M

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

➢ The Choice: Enabled or Disabled.

Delayed Transaction

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

Delay Prior to Thermal

This item defines the delay time before the CPU enters auto thermal mode.
➢ The Choice: 4 Min, 8 Min, 16 Min, or 32 Min.

AGP Aperture Size (MB)

This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to section of the PCI memory address range used for graphics memory. We recommend that you leave this item at the default value.
➢ The Choice: 4, 8, 16, 32, 64, 128, or 256.

** On-Chip VGA Setting **

On-Chip VGA

This item allows you to enable or disable the onboard VGA.
➢ The Choice: Enabled or Disabled.

On-Chip Frame Buffer Size

This item allows you to set the onboard VGA share memory size.
➢ The Choice: 1MB or 8MB.

Boot Display

This item allows you to set the VGA display device as the system boots up.
➢ The Choice: Auto, CRT, or TV.

TV Standard for Windows

This item allows you to set the TV mode for Windows.
➢ The Choice: NTSC or PAL.

TV Format for DOS

This item allows you to set the TV format for DOS.
➢ The Choice: NTSC_M, NTSC_M_J, NTSC_N, PAL_B, PAL_G, PAL_D, PAL_H, PAL_I, PAL_M, or PAL_N.

✍ *Integrated Peripherals*

```
           Phoenix - Award WorkstationBIOS CMOS Setup Utility
                        Integrated Peripherals
┌────────────────────────────────────────────────┬──────────────────────┐
│  On-Chip Primary   PCI IDE  [Enabled]       ▲   │      Item Help       │
│  IDE Primary Master PIO     [Auto]          │   ├──────────────────────┤
│  IDE Primary Slave  PIO     [Auto]          │   │ Menu Level    ►      │
│  IDE Primary Master UDMA    [Auto]          │   │                      │
│  IDE Primary Slave  UDMA    [Auto]          │   │                      │
│  On-Chip Secondary PCI IDE  [Enabled]       │   │                      │
│  IDE Secondary Master PIO   [Auto]          │   │                      │
│  IDE Secondary Slave  PIO   [Auto]          │   │                      │
│  IDE Secondary Master UDMA  [Auto]          │   │                      │
│  IDE Secondary Slave  UDMA  [Auto]          │   │                      │
│  USB Controller             [Enabled]       │   │                      │
│  USB 2.0 Controller         [Enabled]       │   │                      │
│  USB Keyboard Support       [Disabled]      │   │                      │
│  AC97 Audio                 [Auto]          │   │                      │
│  Init Display First         [PCI Slot]      │   │                      │
│  IDE HDD Block Mode         [Enabled]       │   │                      │
│  Onboard Lan Boot ROM       [Disabled]      │   │                      │
│  POWER ON Function          [Hot KEY]       │   │                      │
│  KB Power ON Password       [Enter]         │   │                      │
│  Hot Key Power ON           [Ctrl-F1]       │   │                      │
│  Onboard FDC Controller     [Enabled]       │   │                      │
│  Onboard Serial Port 1      [3F8/IRQ4]      │   │                      │
│  PWRON After PWR-Fail       [Off]           ▼   │                      │
├────────────────────────────────────────────────┴──────────────────────┤
│ ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│     F5: Previous Values      F6: Fail-Safe Defaults    F7: Optimized Defaults │
└────────────────────────────────────────────────────────────────────────┘
```

On-Chip Primary/Secondary PCI IDE

    The chipset contains a PCI IDE interface with support to two IDE chan-
nels. Select Enabled to activate the primary/secondary IDE interface.
select Disabled to deactivate the primary/secondary interface.

    ➢ The Choice: Enabled or Disabled.

IDE Primary/Secondary Master/Slave PIO

    The four IDE PIO (Programmed Input/Output) fields let you set a PIO
mode (0-4) for each of the four IDE devices that the onboard IDE inter-
face supports. Modes 0 through 4 provide successively increased
performance. In Auto mode, the system automatically determines the
best mode for each device.

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

IDE Primary/Secondary Master/Slave UDMA

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

    ➢ The choice: Auto or Disabled.

USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) port on this mainboard.
➢ The choice: Enabled or Disabled.

USB 2.0 Controller

Select Enabled if your system contains a Universal Serial Bus (USB) 2.0 controller and you have USB peripherals.
➢ The choice: Enabled or Disabled.

USB Keyboard Support

Select Enabled if you plan to use a USB keyboard in a legacy operating system (such as DOS) that doesn't support Plug and Play.
➢ The choice: Enabled or Disabled.

AC97 Audio

This item allows you to control the onboard AC97 Audio.
➢ The Choice: Auto or Disabled.

Init Display First

This item is used to determine initial device when system power on.
➢ The choice: Onboard or PCI Slot.

IDE HDD Block Mode

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

Onboard Lan Boot ROM

Decide whether to invoke the boot ROM of the onboard LAN chip.
➢ The choice: Enabled or Disabled.

POWER ON Function

Enable you to set power on paramenters. The default setting enables you to use a hot key to turn on the system.
➢ The choice: Password, Hot KEY, Mouse Move, Mouse Click, Any KEY, BUTTON ONLY, or Keyboard 98.

KB Power ON Password

You can select this item and press "Enter" to input password if POWER ON Function select Password.

<u>Hot Key Power ON</u>

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

➢ The choice: Ctrl-F1 ～ Ctrl-F12.

<u>Onboard FDC Controller</u>

This item specifices onboard floppy disk drive controller.

➢ The choice: Enabled or Disabled.

<u>Onboard Serial Port 1</u>

This option is used to assign the I/O address and interrupt request(IRQ) for the onboard serial port 1 (COM1).

➢ The Choice: Disabled, 3F8-IRQ4, 2F8-IRQ3, 3E8-IRQ4, 2E8-IRQ3, or Auto.

<u>PWRON After PWR-Fail</u>

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

➢ The choice: Off, On, or Former-Sts.

✎ *Power Management Setup*

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

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

   ACPI Function            Enabled          ▲        Item Help
   ACPI Suspend Type        [S1(POS)]
   Power Management         [User Define]
   Video Off Method         [DPMS]
   Video Off In Suspend     [Yes]
   Suspend Type             [Stop Grant]
   MODEM Use IRQ            [3]
   Suspend Mode             [Disabled]
   HDD Power Down           [Disabled]
   Soft-Off by PWR-BTTN     [Instant-Off]
   Wake-Up by PCI card      [Disabled]
   Power On by Ring         [Disabled]
 x USB Wake-Up From S3       Disabled
   Resume by Alarm          [Disabled]
 x Date(of Month) Alarm       0
 x Time(hh:mm:ss) Alarm       0 :  0 :  0

   ** Reload Global Timer Events **
   Primary IDE 0            [Disabled]
   Primary IDE 1            [Disabled]
   Secondary IDE 0          [Disabled]
   Secondary IDE 1          [Disabled]
   FDD,COM,LPT Port         [Disabled]
   PCI PIRQ[A-D]#           [Disabled]      ▼

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

ACPI Function

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

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

ACPI Suspend Type

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

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

Power Management

This category allows you to select the type (or degree) of power saving mode settings.

Min Saving	Minimum power management. Suspend Mode = 1 hr.
Max Saving	Maximum power management. Suspend Mode = 1 min.
User Define	Allows you to set each mode individually. Suspend Mode = Disabled or 1 min ~ 1 hr.

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

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

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

Video Off In Suspend

This item determines the manner in which the monitor is blanked.
➤ The choice: Yes or No.

Suspend Type

This item allows you to select the Suspend Type.
➤ The choice: Stop Grant or PwrOn Suspend.

MODEM Use IRQ

This determines the IRQ which the MODEM can use.
➤ The choice: 3, 4, 5, 7, 9, 10, 11, or NA.

Suspend Mode

When this item is enabled and after the setup time of system inactivity, all devices except the CPU will be shut off.
➤ The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, or 1 Hour.

HDD Power Down

When this item is enabled and after the setup time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
➤ The choice: Disabled or 1 Min ~ 15 Min.

Soft-Off by PWR-BTTN

Under ACPI you can create a software power down. In a software power down, the system can be resumed by Wake UP Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec., then you have to hold the power button down for 4 seconds to cause a software power down.
➢ The choice: Delay 4 Sec. or Instant-Off.

Wake-Up by PCI card

This item defines PCI cards to wake up the system from the suspend mode.
➢ The choice: Enabled or Disabled.

Power On by Ring

This item defines the system will resume by activating of modem ring.
➢ The choice: Enabled or Disabled.

USB Wake-Up From S3

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

Resume by Alarm

When set to Enabled, the following two items become available and you can set the date, hour, minute and second to turn on your system.
➢ The choice: Enabled or Disabled.

Date(of Month) Alarm
This item selects the alarm Date (day of the month).
➢ Key in a DEC number: Min = 0, Max = 31.

Time(hh : mm : ss) Alarm
This item selects the alarm Time.
[hh]　　➢ Key in a DEC number: Min = 0, Max = 23.
[mm/ss] ➢ Key in a DEC number: Min = 0, Max = 59.

** Reload Global Timer Events **
Global Timer (power management) events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such as a mode. In effect, the system remains alert for anything that occurs to a device that is configured as Enabled, even when the system is in a power-down mode.

Primary/Secondary IDE 0/IDE 1

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

➢ The choice: Disabled or Enabled.

FDD,COM,LPT Port

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

➢ The choice: Disabled or Enabled.

PCI PIRQ[A-D]#

When this item is disabled, any PCI device set as the Master will not power on the system.

➢ The choice: Disabled or Enabled.

✍ *PnP/PCI Configurations*

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

```
               Phoenix - Award WorkstationBIOS CMOS Setup Utility
                           PnP/PCI Configurations
┌────────────────────────────────────────────┬──────────────────────────┐
│   Reset Configuration Data  [Disabled]      │       Item Help          │
│                                             ├──────────────────────────┤
│   Resources Controlled By   [Auto(ESCD)]    │ Menu Level    ►          │
│ x IRQ Resources                Press Enter  │                          │
│                                             │ Default is Disabled.     │
│   PCI/VGA Palette Snoop     [Disabled]      │ Select Enabled to        │
│   INT Pin 1 Assignment      [Auto]          │ reset Extended System    │
│   INT Pin 2 Assignment      [Auto]          │ Configuration Data       │
│   INT Pin 3 Assignment      [Auto]          │ ESCD) when you exit      │
│   INT Pin 4 Assignment      [Auto]          │ Setup if you have        │
│   INT Pin 5 Assignment      [Auto]          │ installed a new add-on   │
│   INT Pin 6 Assignment      [Auto]          │ and the system           │
│   INT Pin 7 Assignment      [Auto]          │ reconfiguration has      │
│   INT Pin 8 Assignment      [Auto]          │ caused such a serious    │
│                                             │ conflict that the OS     │
│                                             │ cannot boot              │
│                                             │                          │
│                                             │                          │
├────────────────────────────────────────────┴──────────────────────────┤
│ ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults   │
└─────────────────────────────────────────────────────────────────────────────┘
```

Reset Configuration Data

When enabled, any PnP configuration data stored in the BIOS will be cleared from memory, with new data created.
➢ The choice: Enabled or Disabled.

Resources Controlled By

As stays auto(ESCD), the system will dynamically allocate resources to PnP devices as they are required. As set to manual, the following item become available.
➢ The choice: Auto(ESCD) or Manual.

IRQ Resources

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

PCI/VGA Palette Snoop

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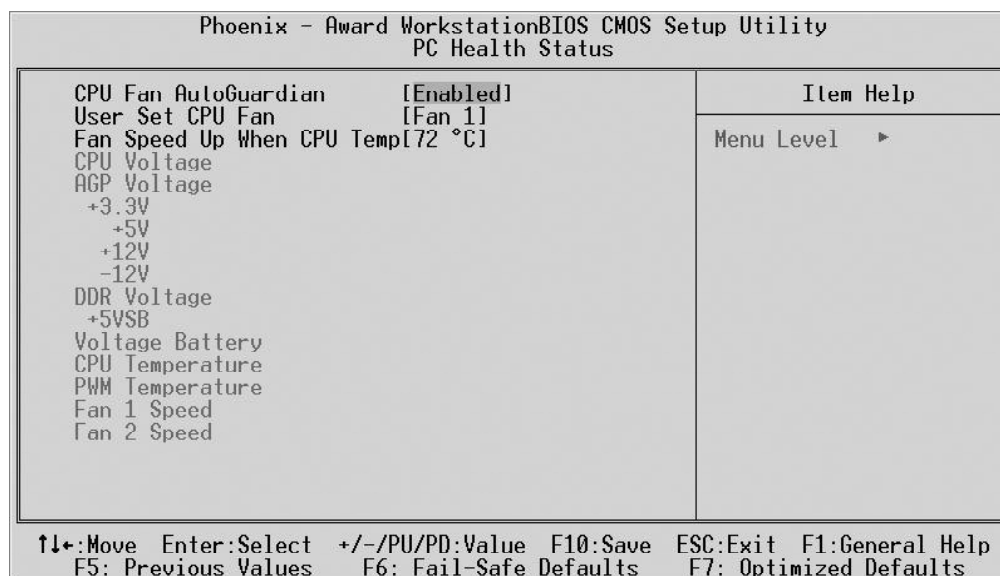➢ The choice: Enabled or Disabled.

INT Pin 1 ~ 8 Assignment

Names the interrupt request(IRQ) line assigned to a device connected to the PCI interface on your system.
➢ The Choice: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14, or 15.

✎ *PC Health Status*

```
         Phoenix - Award WorkstationBIOS CMOS Setup Utility
                           PC Health Status

     CPU Fan AutoGuardian      [Enabled]          ┌──────────────────┐
     User Set CPU Fan          [Fan 1]            │     Item Help     │
     Fan Speed Up When CPU Temp[72 °C]            ├──────────────────┤
     CPU Voltage                                  │  Menu Level   ►   │
     AGP Voltage                                  │                  │
      +3.3V                                       │                  │
        +5V                                       │                  │
       +12V                                       │                  │
       -12V                                       │                  │
     DDR Voltage                                  │                  │
      +5VSB                                       │                  │
     Voltage Battery                              │                  │
     CPU Temperature                              │                  │
     PWM Temperature                              │                  │
     Fan 1 Speed                                  │                  │
     Fan 2 Speed                                  │                  │
                                                  │                  │
                                                  └──────────────────┘

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

CPU Fan AutoGuardian

This SMART BIOS enabled 3 phase Variable Fan Speed and CPU temperature Control feature.

➢ The choice: Enabled or Disabled.

This feature is controlled via BIOS, in which the CPU fan rotational speed sensing/control is governed by CPU temperature setting pre-selected in BIOS. By default, "CPU Fan AutoGuardian" feature under PC Health Status is enabled.

> Note: Before manually modifying the CPU fan setting, please make sure both fan connectors are plug into the correct fan connector designations on the mainboard.
> Our default for fan cooler is set to Fan 1.
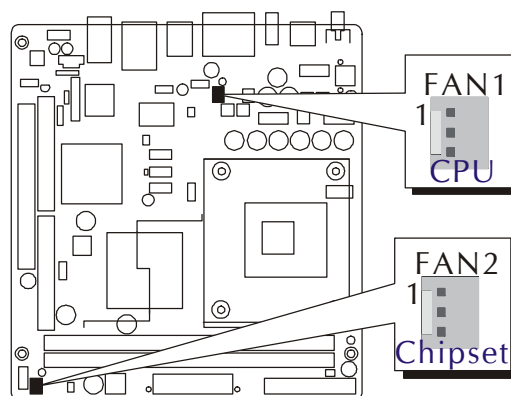
User Set CPU Fan

Enabled you to choose one specific fan for further setting.

➢ The choice: Fan 1 or Fan 2.

Fan Speed Up When CPU Temp

Enabled 3 phase smart control to the Selected fan. This feature ranges from 48 °C to 80 °C, in an increment of 4 °C. The default temperature is at 72 °C.

➢ The choice: 48 °C, 52 °C, 56 °C, 60 °C, 64 °C, 68 °C, 72 °C, 76 °C, or 80 °C.

Take our default Setting for example, 1st and 2nd phase Variable Fan Speed and CPU temperature Control is as defined by "Fan Speed Up When CPU Temp." If actual CPU temp (reported by BIOS) stays below 72 °C then CPU fan speed will run at a quiet mode (1st phase) of approximately 2000 RPM.

But when the actual CPU temp goes above the preselected 72 °C temperature threshold, then CPU fan speed will automatically engage into normal mode (2nd phase) of about 3000 RPM. Automatically by the Smart Bios feature, this increase of fan rotation speed will effectively cool down the CPU temperature. And when the CPU temperature drops back below the 72 °C temperature threshold, CPU fan speed will again automatically shift back to the quiet mode (1st phase) of about 2000 RPM in order to reduce fan noise level.

Fail-safe mode (3rd phase) Variable Fan Speed and CPU temperature Control is as predefined at 80 °C. Where in the event of system and CPU operating under extreme working conditions, and if CPU temperature is raised above 80 °C then the Smart Bios will engage the CPU fan in Fail-safe mode to rotate at about 3500 RPM. Please note that the higher fan speed, the fan cooler will be become slightly noiseier in order to compensate for the increase in CPU temperature.

> Warning: It is strongly recommended to disable CPU Fan AutoGuardian feature, if you wish to use other fan cooler, allowing the fan to run at its default speed.

System Component Characteristics

These fields provide you with information about the system's current operating status. You cannot make changes to these fields. These fields include:

CPU Voltage, AGP Voltage, +3.3V, +5V, +12V, -12V, DDR Voltage, +5VSB, Voltage Battery, CPU Temperature, PWM Temperature, Fan 1 Speed, Fan 2 Speed

✎ *Frequency/Voltage Control*

```
            Phoenix - Award WorkstationBIOS CMOS Setup Utility
                         Frequency/Voltage Control
┌─────────────────────────────────────────────────┬──────────────────────┐
│  CPU Clock Ratio            [ 8 X]               │      Item Help       │
│  Auto Detect PCI Clk        [Enabled]            │                      │
│  Spread Spectrum            [Enabled]            │  Menu Level    ▶     │
│  CPU Clock                  [100MHz]             │                      │
│                                                  │                      │
│                                                  │                      │
│                                                  │                      │
│                                                  │                      │
│                                                  │                      │
│                                                  │                      │
│                                                  │                      │
│                                                  │                      │
│                                                  │                      │
└─────────────────────────────────────────────────┴──────────────────────┘
 ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values      F6: Fail-Safe Defaults    F7: Optimized Defaults
```

CPU Clock Ratio

    This item allows you to adjust CPU Ratio. The item becomes unavailable if your CPU clock ratio is locked.

    Min: 8

    Max: 24

    ➢ Key in a DEC number: (Between Min and Max.)

Auto Detect PCI Clk

    This item allows you to enable/disable auto detection PCI Clock.

    ➢ The choice: Enabled or Disabled.

Spread Spectrum

    This item allows you to enable/disable the spread spectrum modulation.

    ➢ The choice: Enabled or Disabled.

CPU Clock

    This item allows the user to adjust CPU Host Clock.

    CPU FSB400 select range 100 (Min) ~ 132.

    CPU FSB533 select range 133 ~ 165 (Max).

    ➢ Key in a DEC number: (Between Min and Max.)

✎ *Load Fail-Safe Defaults*

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

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

> Pressing 'Y' loads the BIOS default values for the most stable, minimal
> performance system operations.

✎ *Load Optimized Defaults*

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

> Load Optimized Defaults (Y/N) ? N

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

✍ *Set Supervisor/User Password*

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility

 ► Standard CMOS Features            ► Frequency/Voltage Control

 ► Advanced BIOS Features              Load Fail-Safe Defaults

 ► Advanced Chipset Features           Load Optimized Defaults

 ► Integrated Peripherals             Set Supervisor Password

 ► Power Management Setup              Set User Password

 ► PnP/PCI Configurati┌─────────────────────────┐ t Setup
                      │  Enter Password:        │
 ► PC Health Status   └─────────────────────────┘ ut Saving

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

                      Change/Set/Disable Password
```

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

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

No Password Setting:
If you want to disable the password, just press <Enter> as a password input is requested.

If You Forget Password:
If you forget the password, the only way to access the system is to clear the CMOS memory. Please refer to page 25 on clear CMOS setting.

✍ Save & Exit Setup

Pressing < Enter > on this item asks for confirmation:

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

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

✍ Exit Without Saving

Pressing < Enter > on this item asks for confirmation:

Quit Without Saving (Y/N)? N

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