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Contents

Chapter 1
Introduction

This mainboard is a 100MHz highly integrated high-performance mainboard based on the advanced Pentium® II microprocessor and featuring the high-end AGPset chipset. The mainboard offers high flexibility in configuration and is fully IBM PC/AT compatible.

Key Features

The advanced features of the mainboard include:

- Supports Pentium™ II 233~**500** MHz and Celeron 266~333 MHz CPUs with Frequency at 66 or 100 MHz in Slot 1 for **Micro ATX** Form Factor;

- Provides 3 DIMMs for **DDR**/SDRAM/EDO memory modules and is expandable up to 768MB, **selectable 66 or 100MHz clock speed for SDRAM** when 100MHz bus clock is being used;

- Supports ACPI, Legacy PMU and the Ultra DMA/33, fully compliant to PC97 & PC98;

- Built-in high performance 64bit **3D AGP** Graphics Accelerator with **8MB** frame buffer;

- Built-in **Hardware Monitor** circuit supports thermal, power and fan speed monitor, optional Intel LANDesk Client Manager (LDCM) support;

- Bundled AMI **Desktop Client Manager** for abnormal condition detect and thermal management through the network link or self take care;

- Provides ATX power connector, and supports various features of ATX power, such as Power Button/Suspend, Alarm Wake Up, Interrupt Wake-up from keyboard/mouse, Modem Ring On, Wake-up On LAN;

- Provides 3 PCI, 1 ISA slots, and PCI Bus Master IDE interface supports 4 IDE devices with 2 channels;

- Onboard super Multi-I/O chip supports 2 serial ports with 16550 compatible Fast UART, 1 IR port, 1 parallel port with EPP and ECP capabilities, and one floppy disk drive interface with 1 Mb/s transfer rate;

- Bundled **PC-cillin98** (OEM) Provides automatic virus protection for Windows 95/98 and the Internet;

- Onboard **3D Sound Pro** meets PC'98 spec. and support HRTF Positional Audio, Direct Sound 3D, provide drivers for 3D games that use Aureal software interface, Software Wave-table Synthesizer, and Digital Audio Interface (SPDIF) IN/OUT.

Unpacking the Mainboard & Static Electricity Precautions

This Mainboard package contains the following items:

1. This Mainboard and the Device Driver

2. The Slot1 holder and AT cables

3. This User's Guide

4. SPDIF/IN cable and VGA cable/bracket

The mainboard is easily damaged by static electricity. Follow the precautions below while unpacking or installing the mainboard.

1. Do not remove the mainboard from its original package until you are ready to install it.

2. Frequently ground yourself to discharge any static electric charge that may build up in your body while working on installation and/or configuration. For example, you may ground yourself by grasping an unpainted portion of the system's metal chassis.

3. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.

4. Handle the mainboard by its edges or by the mounting bracket to avoid touching its components.

5. Check the mainboard for damage. If any integrated circuit appears loose, press carefully to seat it firmly in its socket.

6. Do not apply power if the mainboard appears damaged. If there is damage to the board contact your dealer immediately.

Chapter 2
Hardware Configuration

Before you install the mainboard into the system
chassis, you may find it convenient to first configure
the mainboard's hardware. This chapter describes how
to set jumpers and install memory modules, and where
to attach components.

CPU Installation

This mainboard supports Intel Pentium® II CPU using a Single Edge Contact (SEC) slot. Make sure that you have the following items (which should be included in the package) before doing any installation. All parts are labeled here with item numbers which will be refered to in the Installation Procedures section. Item 1 and 2 together are the retention mechanism, please refer to following procedures to complete your CPU installation.

1) 4 screws:
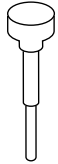
2) 1 retention clip:
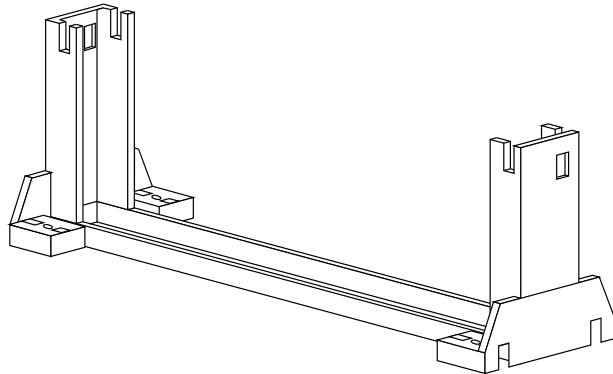
Installation procedures

Follow the following steps in order to install your intel Pentium® II properly.

Step 1:

Make sure that the mainboard is set the same direction as the following drawing before doing any installation.
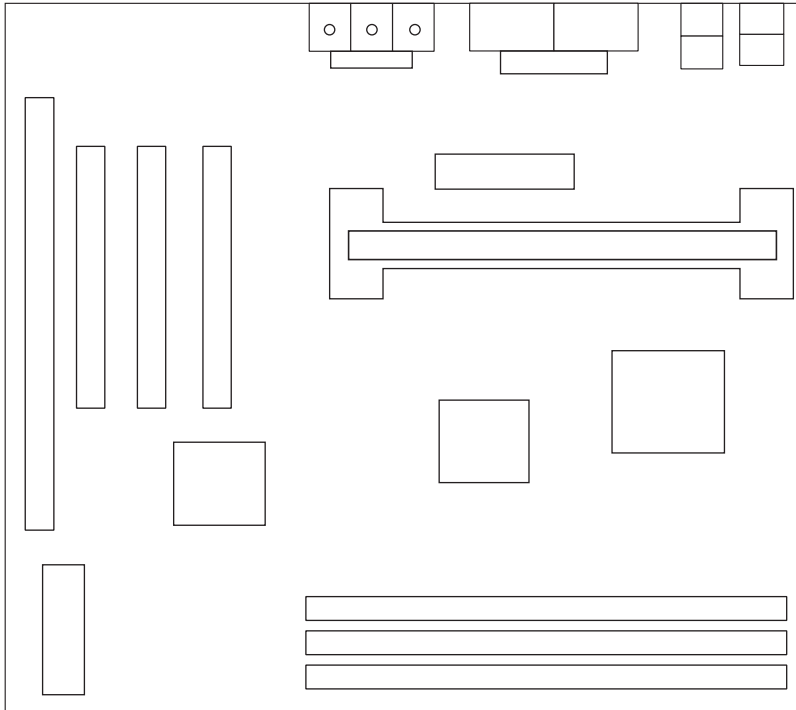
Step 2:

There are 2 sets of small holes along Slot 1 of your motherboard: two on the top and two on the bottom. Snap the retention clip (2) right into those 2 sets of holes
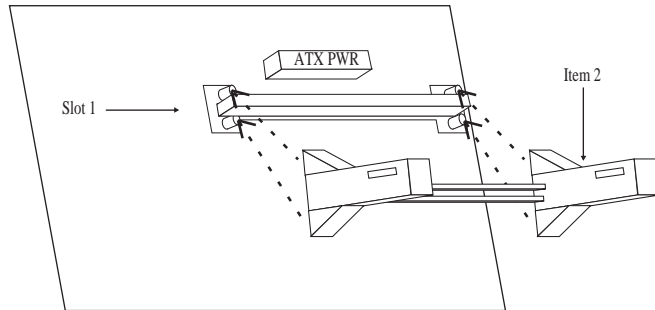
If the retention clip is installed incorrectly, you will not be able to insert the retention clip into the CPU and in this situation you might need to rotate the retention clip by 180°.

Step 3:

Find the hole in each corner of the retention clip then insert the 4 screws from the top of the motherboard.

Holes for screws
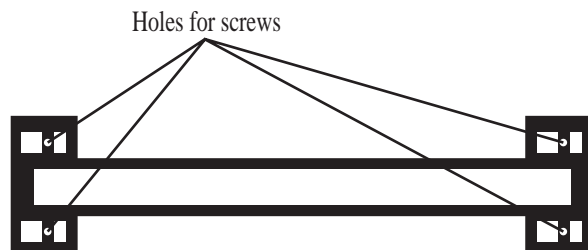
Step 4:

And then simply push the screws downward to secure
the the retention clip.

Push in to secure.
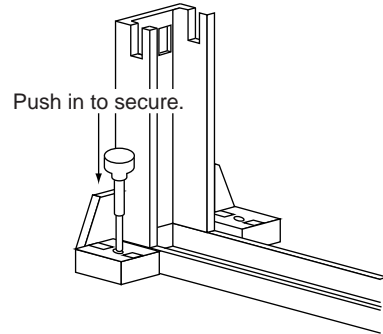
Step 5:

Flatten the two latches on the side of CPU. Insert the
CPU into the retention clip. Lock the two latches to
secure the CPU.
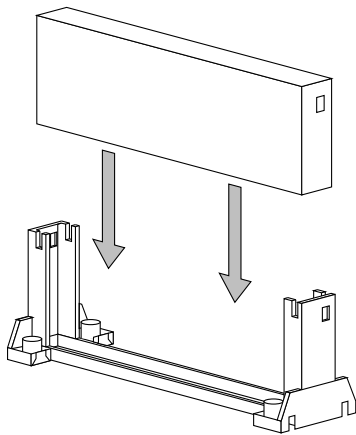
Mainboard Component Locations
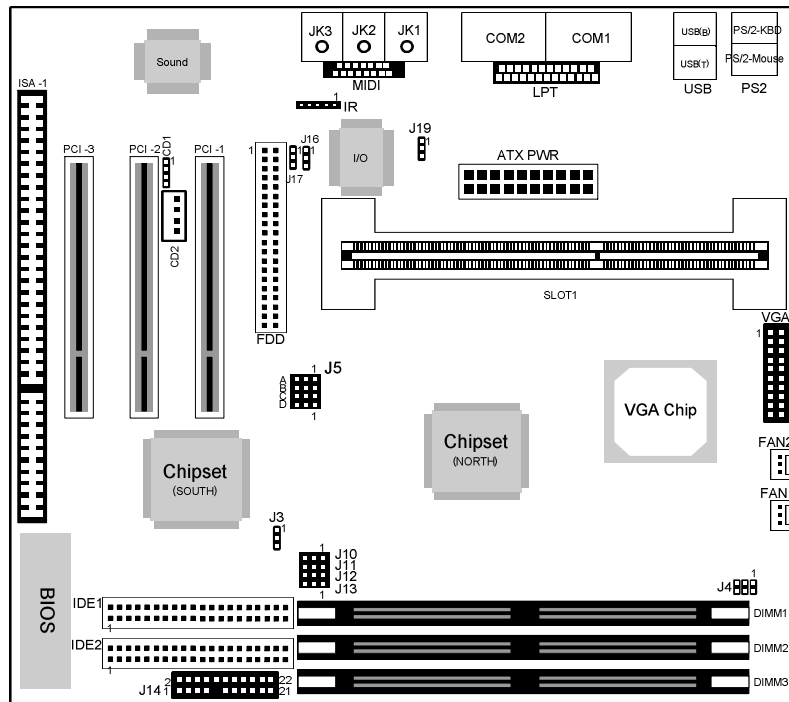
Figure 2-1. Mainboard Component locations

Connectors

Attach system components and case devices to the
mainboard via the mainboard connectors. A description
of each connector follows. See figure 2-1 for the
location of the connectors on the mainboard.

*Note: Make sure that the power is turned off before making
any connection to the board.*

ATX PWR - ATX Power Connector

Software Power-Off

Follow the steps below to use the "Software Power-Off Control" function in Windows 95/98 with ATX power supply.

1. Click the **START** button on the Windows 95/98 task bar.
2. Select **Shut Down The Computer** to turn off the computer. The message **"It is now safe to turn off your computer."** will not be shown when using this function.

Modem Ring Power-On

While in Soft-off/Suspend state, if an external modem ring-up signal occurs, the system wakes up and can be remotely accessed. Make sure that the Ring Resume From Soft Off option is set to Enabled in the BIOS setup section (Refer to the Power Management section in Chapter 3.)

Alarm Wake Up

If you want to autoboot the system at a certain time, set the function of RTC Alarm time properly and the function of RTC Alarm Resume From Soft Off option in the BIOS Setup section will be set to Enabled.

J14 (21, 22) – Power Button and Suspend Switch Connector

Attach the ATX Power Button or Suspend Switch cable to this connector.

In the AT power system, this connector will act as a suspend switch; and in the ATX power system, this connector will be not only an ATX power button but a Suspend switch as well. Details are described below:

When the system is off, push the power button to turn the system on. When the system is on, push the power button rapidly to switch the system to the Suspend mode, and, by pushing and holding the button for more than 4 seconds, it will turn the system completely off. When the system is in the Suspend mode, push the power button rapidly to turn the system on.

J19 – Wake up On LAN Connector

While in Soft-off/Suspend state, if an external LAN signal occurs, the system wakes up and can be accessed with the LAN card.

Pin	Description
3	5V Stand By
2	Ground
1	Active High

External Connectors Location

PS2
PS/2 Mouse (6-pin Female)

Parallel(printer) port (25-pin Female)
LPT

Game port
MIDI

USB

PS/2 Keyboard
(6-pin Female)

COM1
COM2
Serial Ports (9-pin Male)

JK1 JK2 JK3
Line in MIC Line out
Sound ports
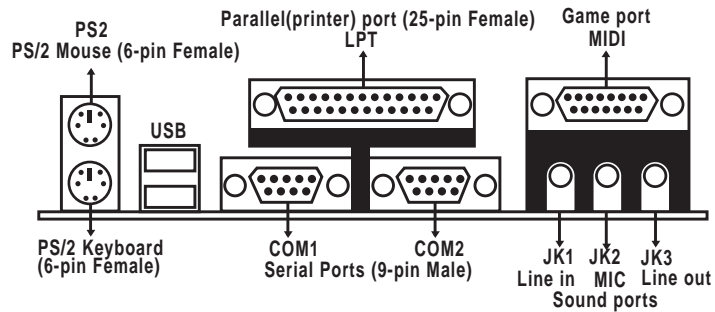
Side View

FDD - Floppy Disk Drive Connector
IDE1/IDE2 - Primary/Secondary IDE Connector
VGA - VGA Connector
FAN1/FAN2 - CPU/System Fan Connector

IR - InfraRed Connector

Pin	Signal
1	+5V
2	N.C.
3	IRRXL
4	Ground
5	IRTX

J14 (2, 4, 6, 8, 10) – Keylock & Power LED Connector

Keylock connector enables and disables the keyboard key-in function on the case.

Pin	Description
2	LED Output
4	N.C.
6	Ground
8	Keylock
10	Ground

J14 (1, 3, 5, 7) – Speaker Connector

Pin	Description
1	+5V
3	Ground
5	Ground
7	Data Out

J14 (15, 16) – HDD LED Connector

Pin	Description
15 (+)	+5V
16 (−)	Active Low

J14 (17, 18) – Reset Switch Connector

Setting	Description
Open	Normal Mode
Close	Reset System

Sound Pro Connectors

Sound and Game(on the External Connectors)

Sound ports contains Line-in, MIC(Microphone), and Line-out(Speaker).
Game port is also used as the Joystic.

CD1/CD2 - Analog Audio for Sony/Panasonic

Connect to " AUDIO " on the CD-ROM drive, and the signal
for Panasonic jack is G-S-G-S and S-G-G-S for sony

J16 - Digital Audio IN

Connect Digital Audio IN to "DIGITAL AUDIO" on the
CD-ROM drive (depending on the type of your CD-ROM
drive) by using SPDIF/IN cable.

| Pin	Signal
1	5V
2	Ground
3	0.5V

J17 - Digital Audio OUT

Using optional SPDIF/OUT cable (or bracket) for the
external Audio Amplifier or Minidisk connection.

Pin	Signal
1	5V
2	Ground
3	0.5V

Jumper Settings

J3 - CMOS RAM Clear Selector

Description	Setting
Normal Mode	(1 top, 3 bottom)
Clear CMOS (while shipping)	(1 top, 3 bottom)

Note: 1. Make sure the jumper is set to Normal Mode before use.
*   2. Once you need to cleare the CMOS, make sure your system is truned off and the*
*   power core is unplugged.*

J5 - CPU Multiplier Selectors

Mul.	Setting	Mul.	Setting	Mul.	Setting
2.0X	A B C D	3.5X	A B C D	5.0X	A B C D
2.5X	A B C D	4.0X (default)	A B C D	5.5X	A B C D
3.0X	A B C D	4.5X	A B C D		

J10~J13 - Frequency Selectors

Fre.	Setting	Fre.	Setting
66MHz (default)	J10 J11 J12 J13	100MHz (SDRAM 100M)	J10 J11 J12 J13
100MHz (SDRAM 66M)	J10 J11 J12 J13		

J4 - DIMM Voltage Selectors

Voltage	Setting
5V	
3.3V (default)	

Memory Installation

The mainboard lets you add up to 768MB of system memory through DIMM sockets on the board. Three DIMM sockets are divided into three banks: Bank 0, Bank 1, and Band 2. The mainboard supports the following memory configurations.

Bank	Memory Module
Bank 0 DIMM1	4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB
Bank 1 DIMM2	4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB
Bank 2 DIMM3	4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB
Total System Memory = Bank 0 + Bank 1 + Bank 2	

Notes: 1. The speed of SDRAM DIMM modules have to be faster than 12ns ("–12"parts), while 100MHz clock speed used, the speed of SDRAM DIMM should meet the PC100 SDRAM specification (8ns or "–8" SDRAM at least).

2. The EDO/FPM DRAM are not recommended for the performance purpose of the system.

Chapter 3
BIOS Setup

This chapter explains how to configure the mainboard's BIOS setup program. The setup program provided with the mainboard is the BIOS from AMI.

After you have configured the mainboard and have assembled the components, turn on the computer and run the software setup to ensure that the system information is correct.

The software setup of the system board is achieved through Basic Input-Output System (BIOS) programming. You use the BIOS setup program to tell the operating system what type of devices are connected to your system board.

The system setup is also called CMOS setup. Normally, you need to run system setup if either the hardware is not identical with information contained in the CMOS RAM, or if the CMOS RAM has lost power.

Note: Hold down the <End> key then power on to reboot the system when installing newer BIOS into this mainboard .

Entering BIOS Setup

To enter the BIOS Setup progrem:

1. Turn on or reboot the system. A screen appears
    with a series of diagnostic checks.

2. When "Hit < DEL > if you want to run SETUP"
    appears, press the < DEL > key to enter the BIOS
    setup program. The following screen appears:

```
            AMIBIOS HIFLEX SETUP UTILITY - VERSION 1.2X
         (C) 1998 American Megatrends, Inc. ALL Rights Reserved

                         Standard CMOS Setup

                        Advanced CMOS Setup

                       Advanced Chipset Setup

                       Power Management setup

                      PCI / Plug and Play Setup

                          Peripheral Setup

                       Hardware Monitor Setup

                     Change Supervisor Password

                       Auto-Detect Hard Disks

                Auto Configuration with Optimal Settings

            Auto Configuration with Best Performance Settings

                       Save Settings and Exit

                         Exit Without Saving


         Standard CMOS setup for changing time, date, hard disk type, etc.

         ESC: Exit           ↑↓: sel       F2/F3: Color        F10: Save & Exit
```

3. Use your Keyboard to choose options. Modify
    system parameters to reflect system options. Press
    Alt-H for Help.

Default

Every option in the BIOS Setup contains two default
values: Best default and the Optimal default value.

Auto Configuration with Optimal Settings

The Optimal default values provide optimum system
settings for all devices and system features.

Auto Configuration with Best Performance Settings

The Best default values provide best performance
settings for all devices and system features, however
depending on the devices used, these settings are not
recommend for long hours of work load.

Setup Items

Standard CMOS Setup

Choosing the item from the BIOS Setup main menu.
All Standard Setup options are described in this
section.

Date/Time   Select the Date/Time option to change the date
or time. The current date and time are
displayed. Enter new values through the
displayed.

Pri Master;
Pri Slave;
Sec Master;
Sec Slave

Choose these options to configure the hard disk drive named in the option. When you click on an option, the following parameters are listed: **Type**, **LBA/Large Mode**, **Block Mode**, **32Bit Mode**, and **PIO Mode**. All parameters relate to IDE drives execpt **Type**. Choose the **Type** and select *Auto*, BIOS automatically detects the IDE drive parameters and displays them. Choose on **LBA Mode** and select *On* to enable support for IDE drives with capacities greater than 528MB. Choose on **Block Mode** and select *On* to support IDE drives that use Block Mode. Choose on **32Bit Mode** and select *On* to support IDE drives that permit 32-bit accesses.

Floppy Drive A;B Choose these options to specify the floppy drive type. The settings are **360KB 5 1/4"**, **1.2MB 5 1/4"**, **720KB 3 1/2"**, **1.44MB 3 1/2"**, or **2.88MB 3 1/2"**.

Advanced CMOS Setup

Choosing the item from the BIOS Setup main menu.
All Advanced Setup options are described in this section.

Quick Boot   Set this option to *Enabled* BIOS to boot within 5
                          seconds.

1st Boot Device;   Set these options to select the boot sequence
2nd Boot Device;   from different booting devices.
3rd Boot Device

Try Other Boot   Choose *Yes* to search other boot devices to boot
Devices   up the system when all the options in the
                          previous function failed.

Hard Disk Access   This option is set to select the hard disk access
Control   control.

SMART for Hard   This option allows you to utilize the SMART
Disks   function of HDDs.

Boot Up Num-Lock Set this option to turn on Num Lock key when the
                          system is powered on.

Floppy Drive Seek Set Disabled to provide a faster boot and reduces
                          the possibility of damaging the floppy heads.

PS/2 Mouse   Set this option to Enable BIOS to support a PS/2
Support   type mouse.

Primary Display   This option specifies the primary display in the
                          computer.

Password Check   This option specifies the type of BIOS password protection that is implemented.

The settings are:

Setup: The password prompt appears only when an end user attempts to run BIOS Setup.

Always: A password prompt appears every time the computer is powered on or rebooted.

The BIOS password does not have to be enabled. The end user sets the password by choosing the Change Supervisor Password item on the BIOS Setup screen.

Boot to OS/2 > 64MB   You need to set this option to *Enabled* when using the OS/2 operating system with installed DRAM which is greater than 64MB.

L1/L2 Cache   Set this option to *Enable* the CPU L1/L2 cache.

System BIOS Cacheable   BIOS always copies the system BIOS from ROM to RAM for faster execution. Set this option to *Enabled* to permit the contents of the F0000h RAM memory segment to be written to and read from cache memory.

C000, 32K Shadow;	The settings are:	
C800, 16K Shadow;	*Disabled*:	The specified ROM is not copied to RAM.
CC00, 16K Shadow;		
D000, 16K Shadow;	*Enabled*:	The contents of the ROM area are not only copied from ROM to RAM for faster execution, the contents of the RAM area can be written to or read from cache memory.
D400, 16K Shadow;		
D800, 16K Shadow;		
DC00, 16K Shadow		
	Cached:	The contents of the ROM area are copied from ROM to RAM for faster execution.

Advanced Chipset Setup

Choose the item from the BIOS Setup main menu.
All Chipset Setup options are described in this section.

DIMM# 1, 2, 3 Timing	Set these options to select the speed of used memory bank(DIMM# 1, 2, 3).
SDRAM CAS# Latency	Set this option to select the proper SDRAM CAS# Latency.
DRAM Page Mode	Set this option to *Enabled* the Multi-Page mode for used DRAM.

DRAM Integrity Mode	Choose *Non-ECC*, *EC-Only*, or *ECC*.	
	Non-ECC:	Has byte-wise write capability but no provision for protecting data integrity in the DRAM array.
	EC-Only:	Data errors are detected but not corrected.
	ECC:	Allows a detecton between single-bit and multiple-bit errors and recovery of single-bit errors.

A.G.P. Aperture Size   Set this option to select the memory-mapped, graphics data structures can reside in the Graphics Aperture. Use the default setting.

DRAM Around Write   Set this option to *Enabled* the around write function for used DRAM.

Speculative Read   Set this option to *Enabled* the speculative read function.

PCI Delayed Transaction   Set this option to *Enabled* the delay transaction for PCI.

Read Caching   Set this option to *Enabled* the read caching.

CPU To PCI Write Buffer   Set this option to *Enabled* the write buffer for CPU to PCI.

PCI Dynamic Bursting   Set this option to *Enabled* the dynamic bursting for PCI.

PCI Master 0 W/S Write   Set this option to *Enabled* the 0 W/S write for PCI master.

ISA Bus Clock   Set this option to select the clock of ISA Bus.

VGA Frame Buffer USWC   Set this option to *Enabled* the USWC for VGA frame buffer.

PCI Frame Buffer   Set this option to *Enabled* the USWC for PCI
USWC   frame buffer.

USB Function   Set this option to *Enabled* the system BIOS USB
                          (Universal Serial Bus) functions.

USB Keyboard   Set this option to *Enabled* the USB keyboard
Legacy Support   to support DOS mode.

Power Management Setup

Choosing the item from BIOS Setup main menu.

Power Management/ APM

Set this option to enable power management features and APM (Advanced Power Management).

Green PC Monitor Power State

This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power savings state after the specified period of display inactivity has expired.

Video Power Down Mode

This option specifies the power conserving state that the VESA VGA video subsystem enters after the specified period of display inactivity has expired.

Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired.

Standby Time out (Minute)

This option specified the length of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state.

Suspend Time Out (Minute)

This option specified the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state.

Throttle Slow Clock Ratio

This option specifies the throttle ratio of speed at which the CPU clock is running when it is in the power saving states.

Display Activity;
IRQ3, 4, 5, 7, 9, 10,
11, 13, 14, 15
When set to *Yes*, these options enable event monitoring on the specified hardware interrupt request line and the comprter is in a power saving state, BIOS watches for activity on the specified IRQ line. The computer enters the full on power state if any activity occurs.

Power Button
Function
Set this option to specify the operation of Soft-Off by the Power Button. Select *On/Off* to enter "On-Off" or select *Suspend* to enter "On-Suspend-Off" operation cycle, or select *On Only* or *Off Only*.

Restore on AC/
Power Loss
Set this option to spcify the operation of restore power loss.

Ring/LAN Power
On
Set this option to *Enabled* the modem ring/LAN signal to power on or wake up the system which is Soft Off or Suspend.

RTC Alarm Power
On
Set this option to *Enabled* the RTC Alarm to resume the system which is Soft Off.

RTC Alarm Date;
RTC Alarm Hour;
RTC Alarm Minute;
RTC Alarm Second
Set these options to specify the RTC Alarm time on Date/Hour/Minute/Second.

PCI / Plug and Play Setup

Choose the item from the BIOS Setup main menu.

Plug and Play Aware OS Set this option to *Yes* if the operation system in this computer is aware of and follows the Plug and Play specification. Currently, Windows 95/98 are PnP-aware.

Clear NVRAM Set this option to *Enabled* clear the NVRAM when system boot up to the test procedure.

PCI Latency Timer (PCI Clocks) Set this option to specify the proper PCI latency timer.

Primary Graphics Adapter Set this option to select AGP or PCI VGA for primary graphics adapter.

PCI VGA Palette Snoop When this option is set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device.

PCI IDE Bus Master Set this option to *Enabled* the bus master for PCI IDE.

OffBoard PCI IDE Card This option specifies if an offboard PCI IDE controller adapter card is installed in the computer. You must specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller is installed. If an offboard PCI IDE controller is used, the onboard IDE controller is automatically disabled. If an offboard PCI IDE controller adapter card is installed in the computer, you must also set the Pri. OffBoard PCI IDE IRQ and Sec. OffBoard PCI IDE IRQ options.

Pri. , Sec. OffBoard PCI IDE IRQ These two options specify the PCI interrupt used by the primary (or secondary) IDE channel on the offboard PCI IDE controller.

DMA Channel 0, 1, 3, 5, 6, 7 These options specify the bus that the specified DMA channel is used on.

IRQ3, 4, 5, 7, 9, 10, 11, 14, 15 These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards.

Reserved Memory Size This option is designed to be used for reserving memory for the IO card.

Reserved Memory Address This option is designed to be used for reserving memory address for the IO card.

Peripheral Setup

Choose the item from the BIOS Setup main menu.

Sound Pro Chip Support Set this option to *Enabled* the onboard Sound Pro function.

OnBoard FDC Set this option to *Enabled* the FDC(Floppy Drive Controller) on the motherboard or auto detects the FDC.

Floppy Drive Swap Set this option to *Enabled* you to swap floppy drives between A: and B:.

Floppy Access Control Set this option to select the floppy access control.

OnBoard Serial Port1 Set this option to specify the base I/O port address of serial port 1.

OnBoard Serial Port2   This option to specify the base I/O port address of serial port 2.

OnBoard Ir Port   This option to specify serial port 1/2 for IR function.

Ir Mode   Set this option to specify the IR mode, *HPSIR* or *ASKIR*.

OnBoard Parallel Port   Set this option to specify the base I/O port address of the parallel port on the motherboard.

Parallel Port Mode   Depends on the type of your external device which connects to this port.

Parallel Port IRQ   Set this option to specify IRQ for parallel port.

Parallel Port DMA Channel   This option is only available if the setting of the Parallel Port Mode option is *ECP*.

OnBoard IDE   Set this option to specify the channel used by the IDE controller on the motherboard.

Hardware Monitor

Set CPU Fan (Lowest Count)   Set this option to specify the fan lowest count of CPU alarm.

Current CPU/System Temperature/Fan Speed; Vin1,Vin2, Vid,AVDD Voltage   These options are displayed only show the status of system hardware.

Change Supervisor Password

This item lets you configure the system password which is required every time when the system boots up or an attempt is made to enter the Setup program. The password cannot be longer than six characters.

Note: Keep a safe record of the new password. If you forget or lose the password, the only way to access the system is to clear CMOS memory by holding down the <End> key then powering on to reboot the system.

Auto-Detect Hard Disks

If your system has an IDE hard drive, you can use this utility to detect its parameters and automatically enter them into the Standard CMOS Setup. This utility will autodetect up to four IDE devices.

Save Settings and Exit

Select this item to save the values entered during the current session and then exit the BIOS setup program.

Exit Without Saving

Select this item to exit the BIOS setup program without saving the values which has been entered during the current session.