

VC31

MAINBOARD MANUAL

DOC No.: M01301

Rev. : A0

Date : 7, 2001

Part No. : 25-11618-00

Handling Precautions

Warning:

1. Static electricity may cause damage to the integrated circuits on the motherboard. Before handling any motherboard outside of its protective packaging, ensure that there is no static electric charge in your body.
2. There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer.
3. Discard used batteries according to the manufacturer's instructions.
4. Never run the processor without the heatsink properly and firmly attached. **PERMANENT DAMAGE WILL RESULT!**

Observe the following basic precautions when handling the motherboard or other computer components:

- Wear a static wrist strap which fits around your wrist and is connected to a natural earth ground.
- Touch a grounded or anti-static surface or a metal fixture such as a water pipe.
- Avoid contacting the components on add-on cards, motherboards, and modules with the *golden fingers* connectors plugged into the expansion slot. It is best to handle system components by their mounting brackets.

The above methods prevent static build-up and cause it to be discharged properly.

Trademark

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Handling Precautions

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Overview

The new microATX, 478-pin FC-PGA2 1stMainboard VC31 supports a full range of the latest generation Intel® Pentium 4 processors. The leading edge chipset Intel 845 MCH was designed for coworking with Pentium 4 (up to 2GHz) and Northwood® processor (min 2GHz) in the 478-pin package based on the VRM 9.0 spec and 400MHz. Built using the leading edge technology the Intel Pentium® 4 processors provide a significant performance over previous Pentium®III processors.

The most cost-effective P4 CPU level solution based on mainstream SDRAM architecture. Two PC133 SDRAM sockets allow for up to 2GB memory capacity (based on 512MB memory technology).

Support for the Ultra DMA/100 protocol and its high-speed interface further ensures that data transfer speeds are improved, especially for long sequential transfers required by audio/visual applications.

The 1stMainboard VC31 comes with a versatile range of I/O features such as 2 serial ports, 1 parallel port, 1 LAN jack (optional), 1 PS/2 mouse and keyboard connector, 4 USB connectors, 1 media connector (front audio, Line-in, Line-out and Mic-in, game/MIDI port). Ample expansion is available through 3 PCI, 1 AGP 4X, and 1 CNR to meet the requirement for enjoying the P4 CPU benefits in internet applications, video/3D graphics performance, and so forth.

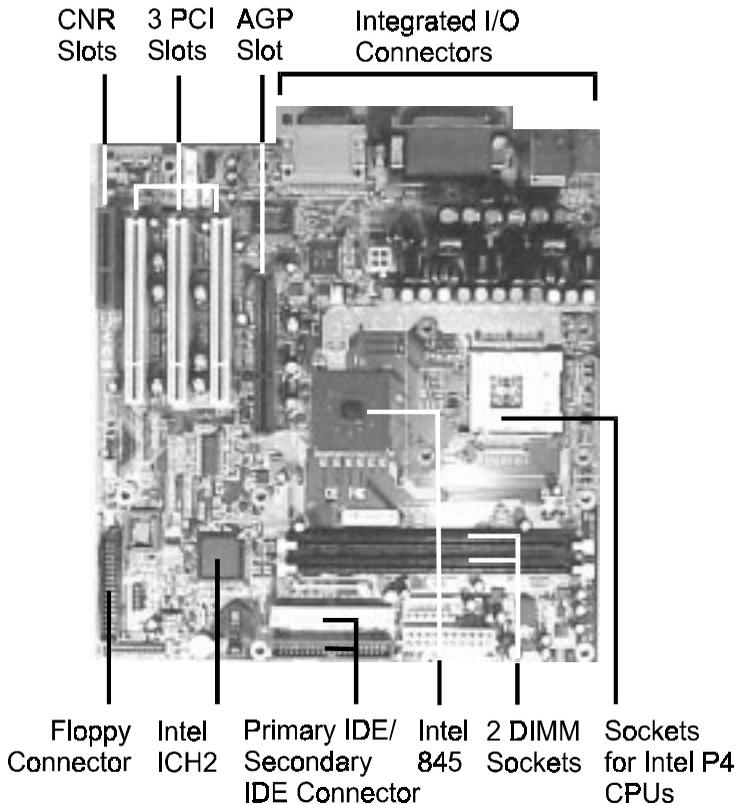
Other key features are Remote On/Off, Auto Power Failure Recovery, Keyboard /Mouse Power On, integrated temperature monitoring and system fan control. Included also is CD Pro with enhanced drivers and the new CD Plus package containing a few bundled software solutions such as Norton AntiVirus, Norton Ghost, Norton Virtual Drive.

Package Checklist

If you discover any item below was damaged or lost, please contact your vendor.

- The mainboard
- This user manual
- One FDD cable
- One HDD cable
- One ATA/100 cable
- Two software CDs (CD Pro, CD Plus)

The VC31 Mainboard



Main Features

■ Easy Installation

BIOS with support for Plug and Play, auto detection of IDE hard drives, LS-120 drives, IDE ZIP drives, Windows 95, Windows 98/SE, Windows ME, Windows NT, Windows 2000, and OS/2.

■ Leading Edge Chipset

Intel 845 provides integrated DRAM controllers with new Dynamic Power Management Architecture (DPMA), concurrent PCI, AGP compliant and USB. The built-in audio and video features of the Intel chipset 845 (MCH + ICH2) provide better visual performance with the Dynamic Video Memory Technology (DVMT) properties.

■ Versatile Main Memory Support

Accepts up to 2GB SDRAM using two DIMMs of 64, 128, 256, 512MB 1GB with support for lightning-fast SDRAM (100/133MHz).

■ Flexible Processor Support

Onboard CPU socket supports:

Intel® Pentium 4 / Northwood Processor (478-pin FC-PGA2 package)

1.4 GHz - 2.0 GHz* and up* at 400 system data bus

(*: not test yet)

■ Onboard IrDA Connector

An IrDA port integrated with front panel block connector for wireless infrared connections is available.

■ CNR, AGP, and PCI Expansion Slots

One CNR, one AGP Bus expansion slot, and three PCI Bus expansion slots provided the room to install a full range of add-on cards.

■ Super Multi Input/Output (I/O) Support

Integrated Plug and Play multi-I/O chipset features two high-speed UART 16550 compatible serial ports, one EPP/ECP capable parallel port, one game port, and one FDD connector.

■ LAN Support (optional)

Onboard (optional) LAN controller with one optional jack integrated with other rear panel I/O connectors provides users with a convenient connection with network environment.

■ Integrated Audio Subsystem

Embedded audio features in the ICH2 with an integrated PCI audio controller, DOS games compatible engine. The subsystem utilizes line-out, line-in, and MIC external jacks, one joystick port with MIDI interface.

■ Convenient Rear Panel USB Connection Support

Two USB ports integrated in the rear I/O panel and two extra USB ports for either front or rear panel connection allow convenient and high-speed Plug and Play connections to the growing number of USB compliant peripheral devices on the market.

■ Enhanced PCI Bus Master IDE Controller with Ultra DMA 33/66/100 Support

Integrated Enhanced PCI Bus Master IDE controller features two dual-channel connectors that up to four Enhanced IDE devices, including CD-ROM and Tape Backup Drives, as well as Hard Disk Drives supporting the new Ultra DMA 100 protocol. Standard PIO Mode 3, PIO Mode 4, DMA Mode 2, DMA Mode 4, UltraDMA-100 Mode 5 devices are also supported.

■ Onboard Accelerated Graphics Port (AGP)

The motherboard is installed one 32-bit AGP 4 X bus with a dedicated 66MHz/133MHz path from the graphics card to the system memory offering much greater bandwidth than the 32-bit PCI bus does. AGP enabled 3D graphics cards can directly access main memory across this fast path instead of using local memory.

ACPI Ready

This mainboard fully implements the new ACPI (Advanced Configuration and Power Interface) 1.0B Hardware and BIOS requirement. If you install ACPI aware of operating system, such as Windows 98, you fully utilized the power saving under ACPI. (*Windows ME/2000 Professional supports ACPI functions.*)

FIC Unique Innovation for Users (NOVUS) - Enhanced Mainboard Features and System Support

■ LogoGenie

A user friendly GUI supporting Windows 95/98/98SE (not Windows 2000/NT/ME), LogoGenie allows you to customize, create or select a Logo which will be displayed when the system is booting.



NOTE:

1. LogoGenie supports Award BIOS only.
2. If you create a Logo file (.bmp) by LogoGenie, the file size must be 640 x 464 x 256 colors.

To enable this utility, please proceed as follows:

1. Insert CD Pro (4.2 or above). Select LogoGenie from the Menu and follow the installation instructions.
2. After LogoGenie has been installed, go to Windows Start Box. In Programs Menu, select LogoGenie 2.0, then select LogoGenie.
3. Press F1 to read Help file to understand how to use this software if it is new to you.

■ BIOS Guardian

BIOS Guardian by default is enabled. It must be disabled in order to reflash BIOS, thus effectively acts as a fire-wall against viruses that can attack the BIOS while the system is running.



WARNING: While execute Step3 below, please do not turn off the system power in order to avoid BIOS damage.

BIOS Guardian can be disabled as follows:

1. Go to BIOS Set Up Menu. (Press **Del** key while booting.)
2. Go to Advanced BIOS Features Set Up Submenu.
3. Disable BIOS Guardian.
4. Save the setting, and restart system.



NOTE: However, if it is disabled and while boot the system, the POST screen will be held and shows you the message to let you know the current status of BIOS Guardian. To press **G** key will enable the BIOS Guardian again; or simply to press the **space bar** will continue the booting process.

■ Easy Key

Instead of completing the multi-layered BIOS setup process these 3 Easy Key functions provide direct access to Sub-Menu's when completing BIOS settings adjustments.

Easy-Keys are as follows:

- Ctrl + c:** To enter clock settings menu.
- Ctrl + p:** To load Performance Default settings and restart.
- Ctrl + f:** To load Fail-Safe Default settings and restart.

■ Overclock Partner

Should the system not start because clock speed settings have been increased to a speed incompatible with the system, the Overclock Partner allows you to reboot at system default settings, protecting hardware from any damages.

Complete the following steps:

1. Turn the system off.
2. Restart while holding down the **Insert** key. It is important that the **Insert** key is held down until the default clock speed is shown on the POST screen.
3. Enter BIOS settings menu, and re-set clock speed desired or default.

Installation Procedures

The mainboard has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

To set up your computer, you must complete the following steps:

- Step 1 - Set system jumpers/switches
- Step 2 - Install memory modules
- Step 3 - Install the Central Processing Unit (CPU)
- Step 4 - Install expansion cards
- Step 5 - Connect ribbon cables, cabinet wires, and power supply
- Step 6 - Set up BIOS software
- Step 7 - Install supporting software tools



WARNING: Excessive torque may damage the mainboard. When using an electric screwdriver on the mainboard, make sure that the torque is set to the allowable range of 5.0 ~ 8.0kg/cm.

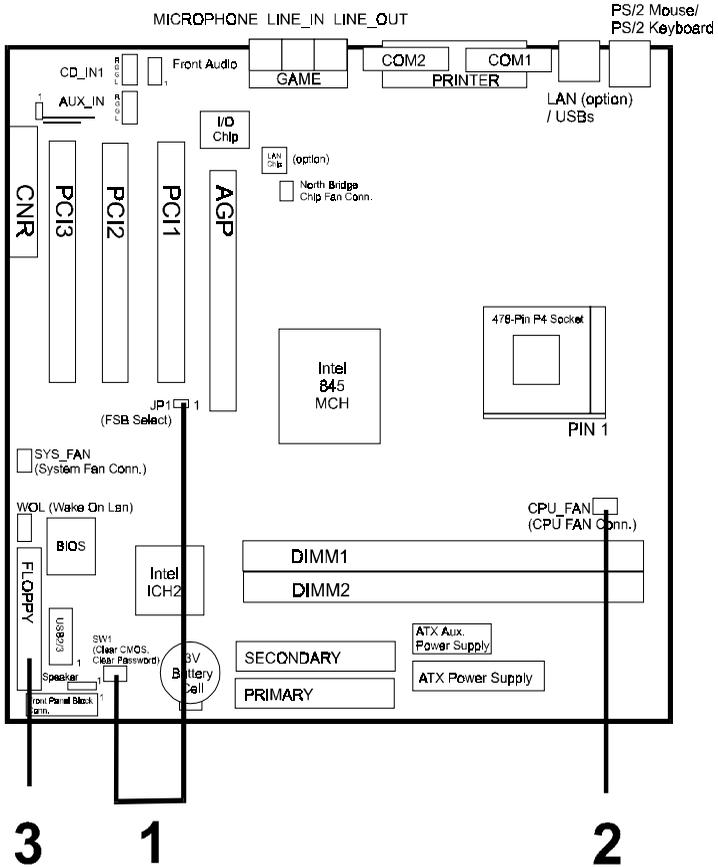
Mainboard components contain very delicate Integrated Circuit (IC) chips. To prevent static electricity from harming any of the mainboard's sensitive components, you should follow the following precautions whenever working on the computer:

1. Unplug the computer when working on the inside.
2. Hold components by the edges and try not to touch the IC chips, leads, or circuitry.
3. Wear an anti-static wrist strap which fits around the wrist.
4. Place components on a grounded anti-static pad or on the bag that came with the component whenever the components are separated from the system.

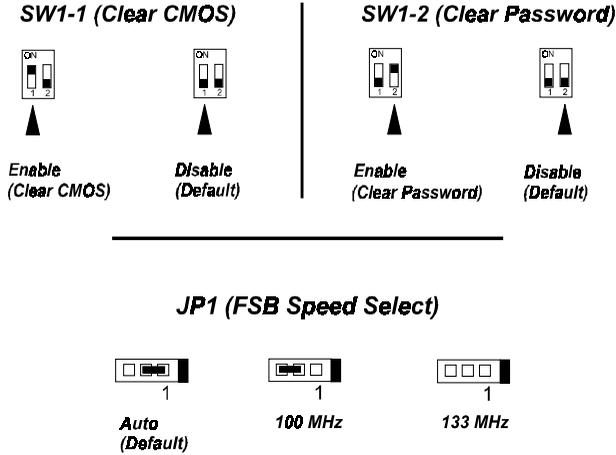
Quick Reference (from Page 2-2 to 2-4)

Mainboard Layout

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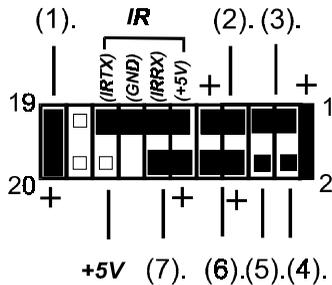


1). **Clear CMOS, Clear Password, FSB Speed Select**



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2). **Front Panel Block Cable Connection**



- (7). **Suspend Button** (1). **Power LED**
- (6). **Power Button** (2). **Reset Button**
- (5). **LED (Y)** (3). **HDD LED**
- (4). **LED (G)**

3). CPU Fan Installation

This connector is linked to the CPU fan. When the system is in some power saving mode, the CPU fan will turn off; when it reverts back to full on mode, the fan will turn back on. Without sufficient air circulation, the CPU may overheat resulting in damage to both the CPU and the mainboard.

Damage may occur to the mainboard and/or the CPU fan if these pins are used incorrectly. These are not jumpers, do not place jumper caps over these pins.

1). Set System Jumpers/Switches

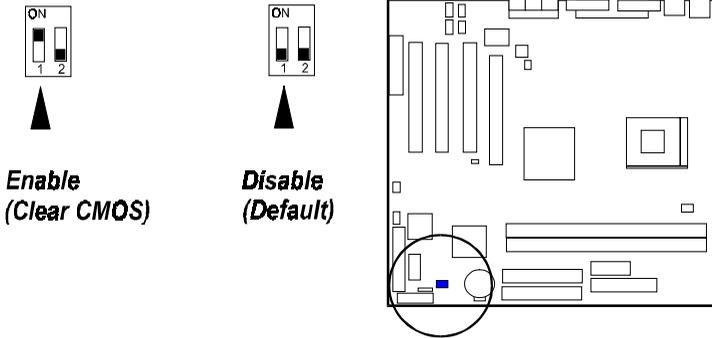
Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. A “1” is written besides pin 1 on jumpers with three pins. To **set** a jumper, a black cap containing metal contacts is placed over the jumper pin/s according to the required configuration. A jumper is said to be **shorted** when the black cap has been placed on one or two of its pins. The types of jumpers used in this manual are shown below:



NOTE: Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.

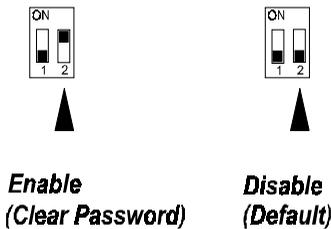
Clear CMOS: SW1-1

The CMOS RAM is powered by the onboard button cell battery. To clear the RTC data: (1) Turn off your computer. (2) Move the CMOS Clear switch SW1-1 to “On” (Enabled). (3) Turn on your computer to display “CMOS checksum error”. (4) Turn off your computer. (5) Move the CMOS Clear switch SW1-1 to “Off” (Disabled). (6) Turn on your computer. (7) Hold down the **Delete** key when boots. (8) Enter the BIOS Setup to re-enter user preferences.



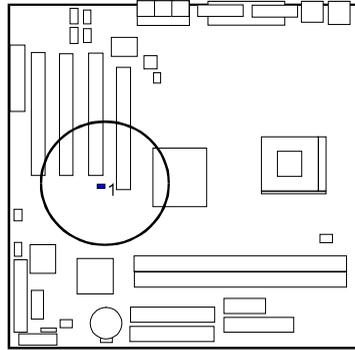
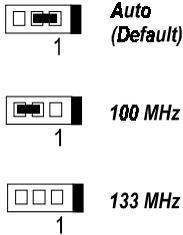
Clear Password: SW1-2

This switch allows you to enable or disable the password configuration. You may need to enable this switch by moving it to the “On” (Enabled) position if you forget your password. To clear the password setting: (1) Turn off your computer. (2) Move the Clear Password switch SW1-2 to “On” (Enabled). (3) Turn on your computer. (4) Hold down the **Delete** key during bootup and enter BIOS Setup to re-enter user preferences. (5) Turn off your computer, (6) Move the Clear Password switch SW1-2 to “Off” (Disabled). (7) Turn on your computer for the new settings to take effect.



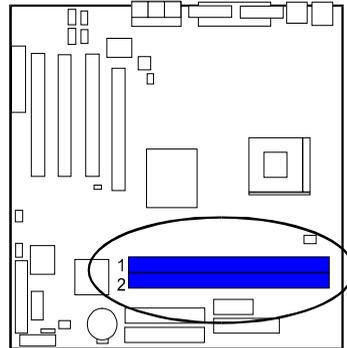
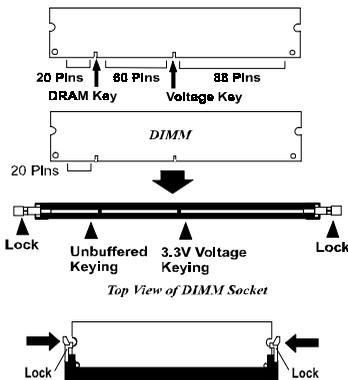
FSB Speed Select: JP1

This jumper allows you to select the FSB speed of your mainboard.



2). Install Memory Modules

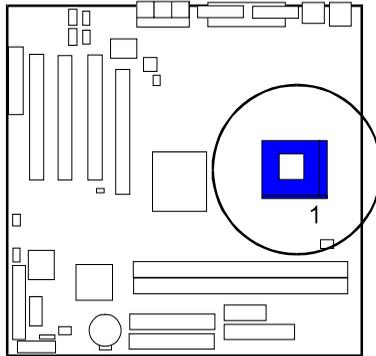
1. Locate the DIMM slots on the mainboard.
2. Install the DIMM straight down into the DIMM slot using both hands.
3. The clip on both ends of the DIMM slot will close up to hold the DIMM in place when the DIMM reaches the slot's bottom.



Press the clips with both hands to remove the DIMM.

3). Install the CPU

The mainboard has built-in Switching Voltage Regulator to support CPU Vcore autodetection. That is, It has the ability to detect and recognize the CPU voltage, clock, ratio and enables users to set up the CPU frequency from the BIOS Setup Screen. Users can adjust the frequency through “Frequency / Voltage Control” of the BIOS Setup Screen.

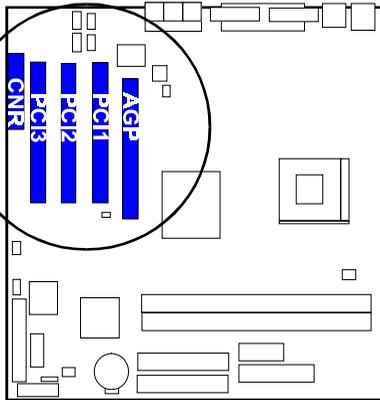


To install the CPU, do the following:

1. Lift the lever on the side of the CPU socket.
2. Handle the chip by its edges and try not to touch any of the pins.
3. Place the CPU in the socket. Do not force the chip. The CPU should slide easily into the socket.
4. Swing the lever to the down position to lock the CPU in place.
5. Place the cooling fan with heatsink on top of the installed CPU.

4). Install Expansion Cards

This section describes how to connect an expansion card to one of your system's expansion slots. Expansion cards are printed circuit boards that, when connected to the mainboard, increase the capabilities of your system. For example, expansion cards can provide video and sound capabilities. The mainboard features one CNR, one AGP, and three PCI bus expansion slots.



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CAUTION: Make sure to unplug the power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both the mainboard and expansioncards.

Always observe static electricity precautions.
Please read "Handling Precautions" at the start of this manual.

To install an expansion card, follow the steps below:

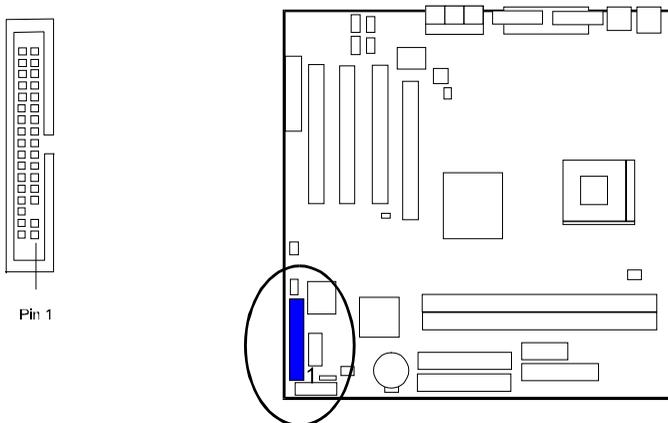
1. Remove the computer chassis cover and select an empty expansion slot.
2. Remove the corresponding slot cover from the computer chassis. Unscrew the mounting screw that secures the slot cover and pull the slot cover out from the computer chassis. Keep the slot cover mounting screw nearby.

3. Holding the edge of the peripheral card, carefully align the edge connector with the expansion slot.
4. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this “rocking” motion until the add-on card is firmly seated inside the expansion slot.
5. Secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely into the expansion slot.
6. Replace the computer system’s cover.
7. Setup the BIOS if necessary.
8. Install the necessary software drivers for the expansion card.

5). Connect Devices

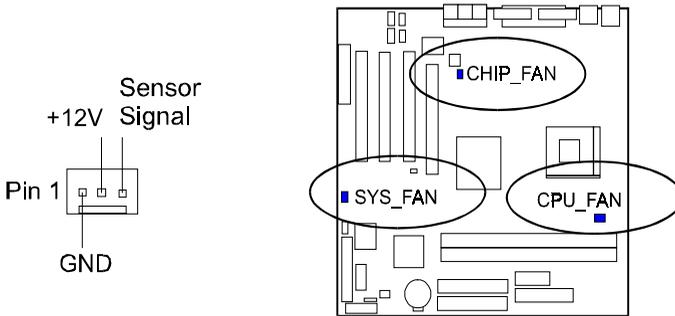
Floppy Diskette Drive Connector

This connector provides the connection with your floppy disk drive. The red stripe of the ribbon cable must be the same side with the Pin 1.



Fan Connectors

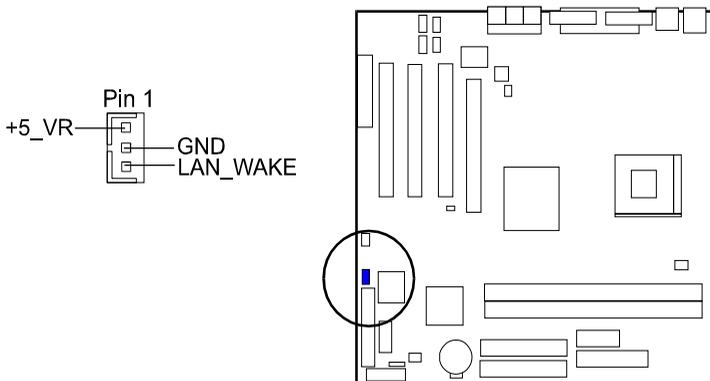
The two connectors, CPU_FAN, SYS_FAN are linked to the CPU fan, case fan, respectively. CHIP_FAN can be used either with the case fan or North Bridge chip fan. For preventing the system and chip from overheat damage, the fans on this board will keep running when the system in suspend mode.



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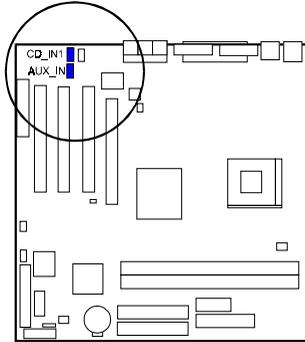
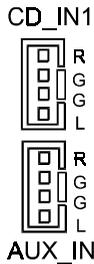
Wake-On-Lan Connector

This 3-pin connector allows the remove servers to manage the system that installed this mainboard via your network adapter which also supports WOL. When you install such a LAN card, please read its installation guide for more information.



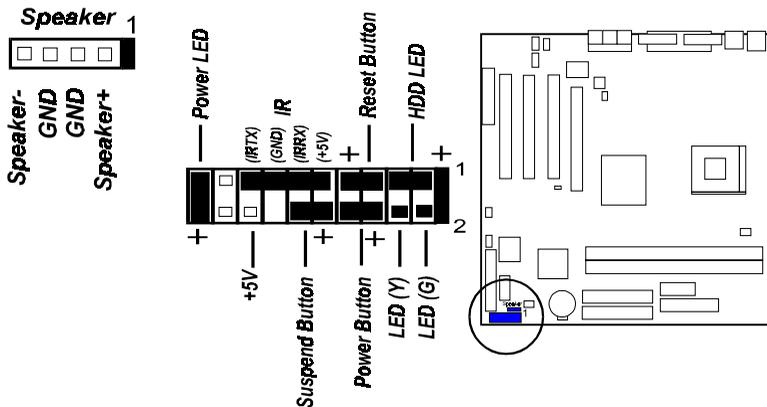
CD Audio-In Connectors

The connectors are for CD-ROM drive audio input use.



Front Panel Block and Speaker Connector

This block connector includes the connectors for linking with HDD LED, power LED, dual power LED, power button, suspend button, reset button, and IR on the front panel of the system case. Please identify polarities of plug wires for the case speaker and LEDs. Please ask vendor about this information when you buy them and install the system by yourself. The plug wires polarities of these buttons will not affect the function.



Power LED is connected with the system power indicator to indicate whether the system is on/off. It will blink when the system enters suspend mode.

IR is used to communicate with another IR device via a 4-wire plug.

Reset Button is connected to the reset button. Push this switch to reboot the system instead of turning the power button off and on.

HDD LED is connected to the IDE device indicator. This LED will blink when the hard disk drives are activated.

LED(G) is in green light when the system in power on status.

LED(Y) is in yellow light when the system in suspend mode.

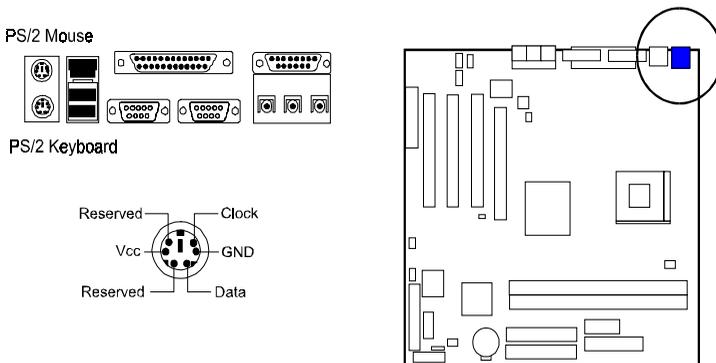
Power Button is connected with power button. Push this switch allows the system to be turned on and off rather than using the power supply button.

Suspend Button is connected with suspend button. To enter the system into power saving mode, simply press this button when the system is in full-on mode.

Speaker is connected with the case speaker.

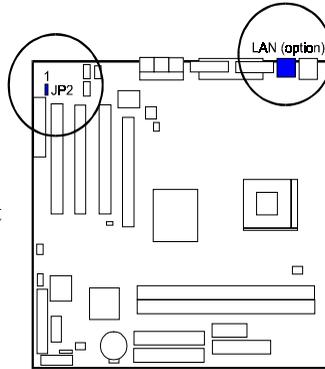
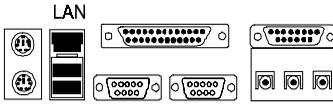
PS/2 Keyboard and Mouse Connector

These two 6-pin female (PS/2 keyboard is purple color and PS/2 mouse is green color) connectors are used for your PS/2 keyboard and PS/2 mouse.



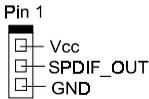
Optional LAN Connector

The mfg. optional RJ45 LAN jack is used for the LAN cable plug.



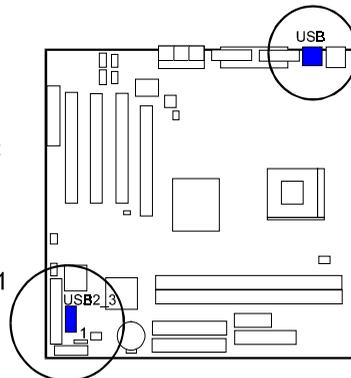
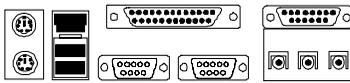
SPDIF Connector

If your board has a pinhead JP2 onboard, it is used for some system vendor use.

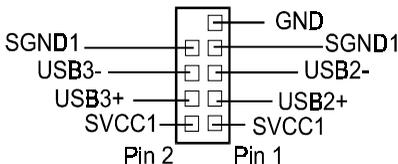


Universal Serial Bus Connectors

These two black connectors integrated on the edge of the board are used for linking with USB peripheral devices. This board also provides a connector USB2/3 for linking with the two extra USB connections. They can link with front panels of some system cases. Please note your operating system must support USB features, such as MS Windows 98, MS Windows 95 OSR2.5 with USB Supplement.

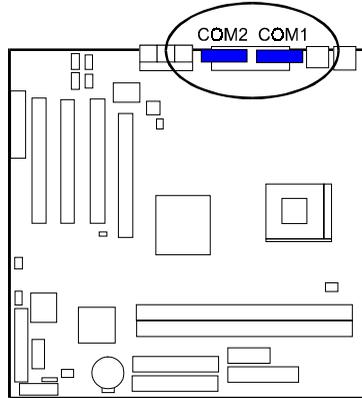
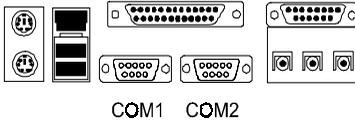


The figure below is the pin assignment of the USB2/3.



Serial Port Connectors

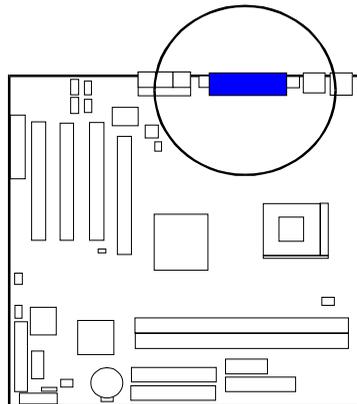
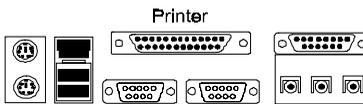
COM1/2 (9-pin D-sub male connector with teal color) allow you to connect with your devices that use serial ports, such as a serial mouse or an external modem.



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Printer Connector

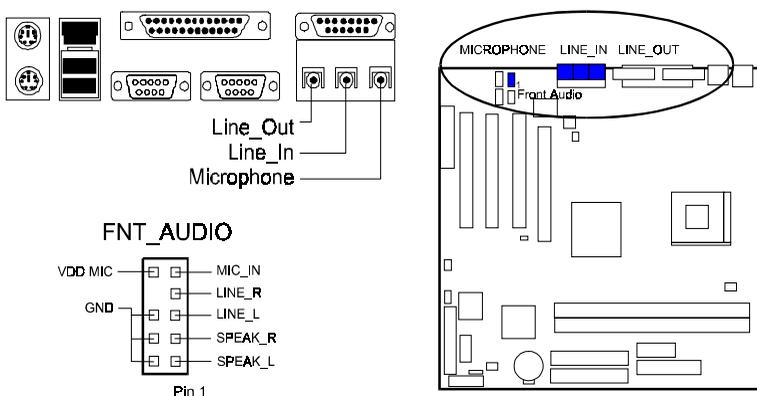
This 25-pin D-Sub female burgundy-colored connector is attached to your printer.



Audio I/O Jacks

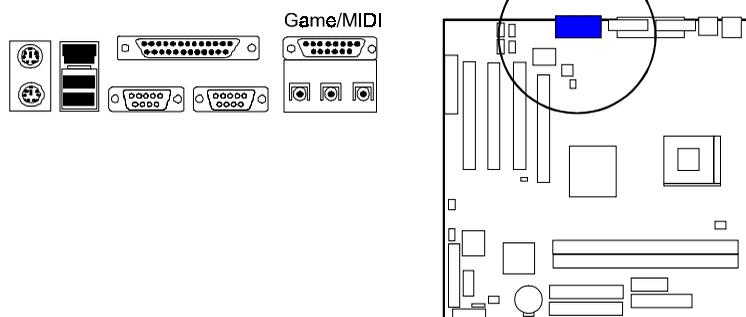
LINE_OUT (lime) can be connected to headphones or preferably powered speakers. LINE_IN (light blue) allows tape players or other audio sources to be recorded by your computer or played through the LINE_OUT. MIC_IN (pink) allows microphones to be connected for voice input. The mainboard also provides you with a front panel audio port connector, FNT_AUDIO, when needed. Its pin definitions were presented below.

Chapter 2
Installation
Procedures



Game/MIDI Connector

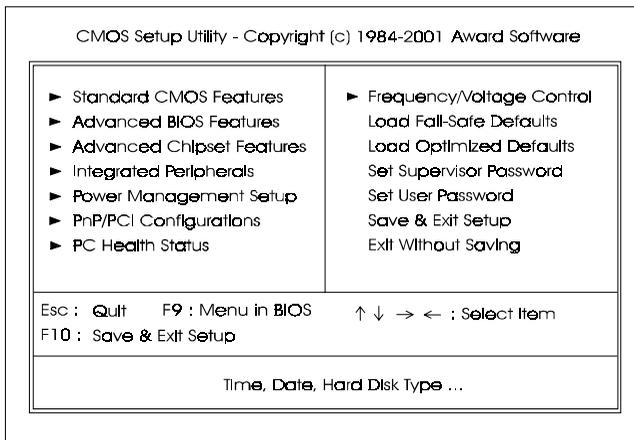
This 15-pin female gold-colored connector allows you to connect game joysticks or game pads. Connect MIDI devices for playing or editing audio.



BIOS Setup

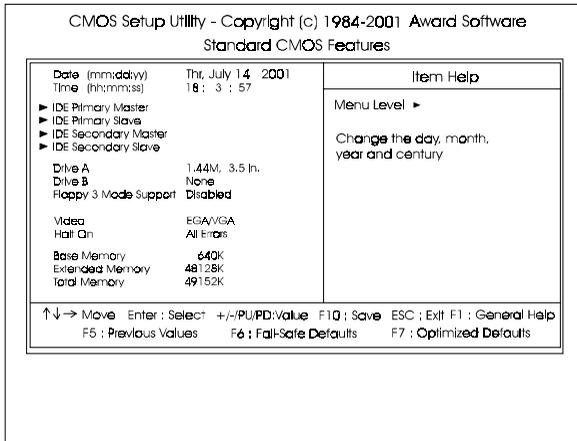
The mainboard comes with the chip that Award BIOS that contains the ROM Setup information of your system. (This chip serves as an interface between the processor and the rest of the mainboard's components.) This section explains the information contained in the Setup program and tells you how to modify the settings according to your system configuration.

CMOS Setup Utility



A Setup program, built into the system BIOS, is stored in the CMOS. This Setup utility program allows updates to the mainboard configuration settings. It is executed when the user changes system configuration; user changes system backup battery; or the system detects a configuration error and asks the user to run the Setup program. Use the arrow keys to select and press **Enter** to run the selected program.

Standard CMOS Setup



The Standard CMOS Setup screen is displayed above. Each item may have one or more option settings. The system BIOS automatically detects memory size, thus no changes are necessary. Use the arrow keys to highlight the item and then use **PgUp** or **PgDn** keys to select the value you want in each item.

Date

To set the date, highlight the *Date* field and then press **Page Up/Page Down** or +/- keys to set the current date. Follow the month, day and year format.

Time

To set the time, highlight the *Time* field and then press **Page Up/Page Down** or +/- keys to set the current time. Follow the hour, minute, and second format.

Hard Disks

This field records the specifications for all non-SCSI hard drives installed in the system. The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks, the first of which is the *Master* and the second is the *Slave*.

Hard Disk Configurations

Capacity:	The hard disk size. The unit is Bytes.
Cylinder:	The cylinder number of the hard disk.
Head:	The read/write head number of hard disk.
Precomp:	The cylinder number at which the disk drive changes the write current.
Landing Zone:	The cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.
Sector:	The sector number of each track defined on the hard disk.

Drive A / Drive B

This field records the types of floppy drives installed in the system. To enter the configuration value for a particular drive, highlight its corresponding field and then select the drive type using the **left-** or **right-arrow** key.

Floppy 3 Mode Support

This is a Japanese standard floppy type drive. The standard stores 1.2MB in a 3.5 inch diskette.

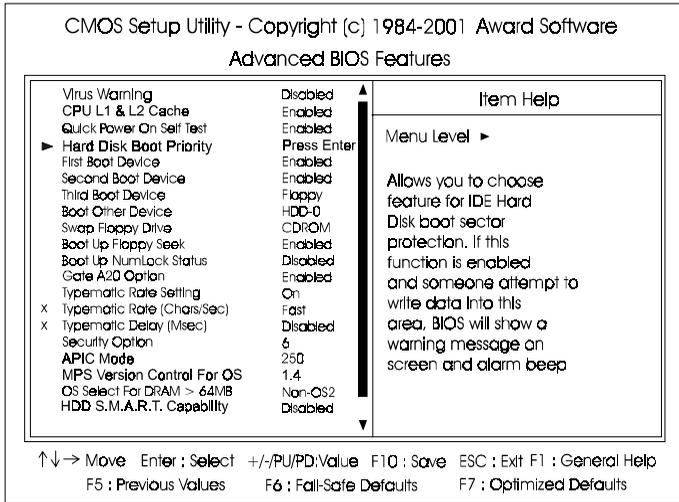
Video

Set this field to the type of video display card installed in the system.

Halt On

This field determines which types of errors will cause the system to halt.

Advanced BIOS Features



Virus Warning

This feature starts the virus scan tool to detect if boot virus in boot sector of the first hard disk drive when booting up.

The options are: Enabled, Disabled.

CPU L1 & L2 Cache

When enabled, improves the system performance. Disable this item when testing or trouble-shooting. The options are: Enabled, Disabled.

Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test.

The options are: Enabled, Disabled.

Hard Disk Boot Priority

This feature will auto detect all hard disks of bootable device on the system. It also allows users to select hard disk device booting priority.

First/Second/Third Boot Device

This feature allows user to select the boot device priority. The options are: Floppy, LS120, Hard Disk, CDROM, ZIP100, LAN, Disabled.

Boot Other Device

This feature allows user to select the boot device priority.
The options are: Enabled, Disabled.

Swap Floppy Drive

Allows you to switch the order in which the operating system accesses the floppy drives during boot up.
The options are: Enabled, Disabled.

Boot Up Floppy Seek

When enabled, assigns the BIOS to perform floppy diskette drive tests by issuing the time-consuming seek commands.
The options are: Enabled, Disabled.

Boot Up Numlock Status

When set to On, allows the BIOS to automatically enable the Num Lock Function when the system boots up. The options are: On, Off.

Gate A20 Option

When set at Fast, allows a faster access response under Protected mode.
The options are: Fast, Normal.

Typematic Rate Setting

The term typematic means that when a keyboard key is held down, the character is repeatedly entered until the key is released.
The options are: Disabled, Enabled.

Typematic Rate (Chars/Sec)

This feature is available only if the above item, Typematic Rate Setting, is set at Enabled. Sets the rate of a character repeat when the key is held down. The options are: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

This feature is available only if the item, Typematic Rate Setting, is set at Enabled. Sets the delay time before a character is repeated.
The options are: 250, 500, 750, 1000 millisecond.

Security Option

Allows you to set the security level of the system.
The options are: Setup, System.

APIC Mode

Allows you to decide if the system enters the APIC (Advanced Programmable Interrupt Controller) mode or not for more IRQs can be released.
The options are: Enabled, Disabled.

MPS Version Control For OS

When two CPUs onboard (not this board) this feature allows you to select MPS (Multi-Processor Spec.) version control for OS when logo test executes. The options are: 1.1, 1.4.

OS Select For DRAM > 64MB

If your operating system (OS) is OS/2, select the option OS2. Otherwise, stay with the default setting Non-OS2.
The options are: Non-OS2, OS2.

HDD S.M.A.R.T. Capability

S.M.A.R.T. stands for Self-Monitoring and Analysis Reporting Technology which allows your hard disk drive to report any read/write errors and issues a warning with LDCM installed.
The options are: Disabled, Enabled.

Report No FDD For WIN 95

When the field under the Standard CMOS Setup Menu for Drive A and/or Drive B is set at None, users must set this field is set at Yes for it to function properly. Otherwise, set at No, even if field for Drive A and/or Drive B is set at None, system will still detect and recognize of a floppy drive(s).
The options are: Yes, No.

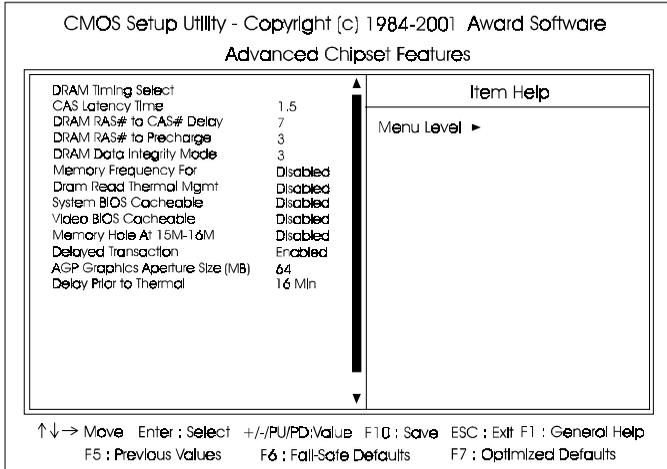
BIOS Guardian

It allows the system to prevent computer viruses. Users will need to disable it to update BIOS. The options are: Enabled, Disabled.



NOTE: Please disable this BIOS feature about BIOS Guardian before you start to reflash BIOS.

Advanced Chipset Features



DRAM Timing Selectable

This feature allows user to select the way to set DRAM timing. The options are: Manual, By SPD.

CAS Latency Time

This feature allows user to select the CAS latency time, when any SDRAM DIMM installed. The options are: 1.5, 2, 2.5, 3.

Active to Precharge Delay

This feature allows user to set Active to Precharge Delay, if any SDRAM installed.

The options are: 7, 6, 5.

DRAM RAS# to CAS# Delay

The feature allows user to set the delay time that from the DRAM RAS# active to CAS#. The options are: 3, 2.

DRAM RAS# Precharge Time

The feature allows user to set the DRAM RAS# Precharge Time. The options are: 3, 2.

DRAM Data Integrity Mode

The feature allows you to set the DRAM data integrity mode.
The options are: Non-ECC, ECC.

Memory Frequency For

This feature allows users to set the memory frequency.
The options are: PC100, PC133, Auto.

Dram Read Thermal Mgmt

The feature allows users to set the DRAM Read Thermal Management register which in the chip of Intel 845 for the trade-off between system temperature and its performance. The options are: 3, 2.

System BIOS Cacheable

Setting at Enabled will allow the caching of the BIOS ROM F0000H-FFFFFH, resulting in better system performance. It may cause system error when some program try to access the memory area.
The options are: Disabled, Enabled.

Video BIOS Cacheable

Setting at Enabled will allow the caching of the video BIOS ROM at C0000H-C7FFFH, resulting in better video performance. It may cause system error when some program try to access the memory area.
The options are: Disabled, Enabled.

Video RAM Cacheable

Setting at Enabled will allow the caching of the video RAM at A0000H-BFFFFH, resulting in better video performance. It may cause system error when some program try to access the memory area.
The options are: Disabled, Enabled.

Memory Hole At 15M-16M

When set at Enabled, the memory hole at 15MB address will be relocated to the 15M-16MB address range of the ISA or PCI cycle when the CPU accesses the 15M-16MB address area. When set at Disabled, the memory hole at 15MB address will be treated as a DRAM cycle when the CPU accesses the 15M-16MB address area. The options are: Disabled, Enabled.

Delayed Transaction

Setting at Enabled will abort the current PCI master cycle and to accept the new PCI master request, it reaccepts the original PCI master and returns the PCI data phase to the original PCI master. It will enhance the system performance. The options are: Disabled, Enabled.

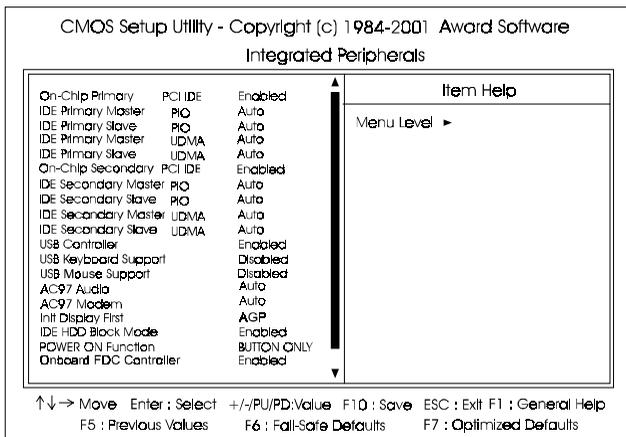
AGP Graphics Aperture Size (MB)

It allows user to select the main memory frame size of AGP use. The options are: 4, 8, 16, 32, 64, 128, 256.

Delay Prior to Thermal

It allows user to select the Delay Prior to Thermal. The options are: 4 Min, 8 Min, 16 Min, 32 Min.

Integrated Peripherals



On-Chip Primary PCI IDE

When enabled, it allows you to use the onboard primary PCI IDE. The options are: Enabled, Disabled.

IDE Primary Master PIO

Allows an automatic or a manual configuration of the PCI primary IDE hard drive (master) mode. The options are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary Slave PIO

Allows an automatic or a manual configuration of the PCI primary IDE hard drive (slave) mode. The options are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary Master UDMA

Allows an automatic configuration of the PCI primary IDE hard drive (master) mode if Ultra DMA is supported both on the motherboard and the hard disk. The options are: Auto, Disabled.

IDE Primary Slave UDMA

Allows an automatic configuration of the PCI primary IDE hard drive (slave) mode if Ultra DMA is supported both on the motherboard and the hard disk. The options are: Auto, Disabled.

On-Chip Secondary PCI IDE

When enabled, it allows you to use the onboard secondary PCI IDE. The options are: Enabled, Disabled.

IDE Secondary Master PIO

Allows an automatic or a manual configuration of the PCI secondary IDE hard drive (master) mode. The options are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Secondary Slave PIO

Allows an automatic or a manual configuration of the PCI secondary IDE hard drive (slave) mode. The options are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Secondary Master UDMA

Allows an automatic configuration of the PCI secondary IDE hard drive (master) mode if Ultra DMA is supported both on the motherboard and the hard disk. The options are: Auto, Disabled.

IDE Primary Slave UDMA

Allows you to select the first PCI IDE channel of the first slave hard disk mode or to detect it by the BIOS if the hard disk supports UDMA (Ultra DMA, faster than DMA). The options are: Auto, Disabled.

USB Controller

Disable this option if you are not using the onboard USB feature. The options are: Disabled, Enabled.

USB Keyboard Support

When a USB keyboard is installed, please set at Enabled. The options are: Enabled, Disabled.

AC97 Audio

This feature allows users to enable or disable the AC97 audio function. The options are: Auto, Disabled.

AC97 Modem

This feature allows users to enable or disable the AC97 modem function. The options are: Auto, Disabled.

Init Display First

When you install an AGP VGA card and a PCI VGA card on the board, this feature allows you to select the first initiation of the monitor display from which card. The options are: PCI Slot, Onboard.

IDE HDD Block Mode

When enabled, the system executes read/write requests to hard disk in block mode. The options are: Enabled, Disabled.

POWER ON Function

Allows you to set the method for powering-on the system. The default option of *BUTTON-ONLY* allows system power-on using the standard system case mounted ON/OFF switch. The option *Password* allows you to set up to 5 alphanumeric characters to power-on the system. The option *Any Key* allows you to touch the keyboard to power on the system. The option *Keyboard 98* allows you to use the standard keyboard 98 to power on the system.

The options are: BUTTON ONLY, Any Key, Keyboard 98.

Onboard FDC Controller

When enabled, the floppy diskette drive (FDD) controller is activated.

The options are: Enabled, Disabled.

Onboard Serial Port 1

If the serial port 1 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed. The options are: 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Disabled.

Onboard Serial Port 2

If the serial port 2 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed. The options are: 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, 3F8/IRQ4, Disabled.

UART Mode Select

Allows you to select the IR modes if the serial port 2 is used as an IR port. Set at Standard, if you use COM2 as the serial port as the serial port, instead as an IR port. The options are: HPSIR, ASKIR, Normal.

UR2 Duplex Mode

Allows you to select the IR modes.

The options are: Half, Full.

RxD , TxD Polarity Active

This feature is available only if the item, UART 2 Mode, is set at ASKIR or HPSIR. The feature allows you to select the active signals of the reception end and the transmission end. This is for technician use only.

The options are: Hi, Lo; Hi, Hi; Lo, Hi; Lo, Lo.

Use IR Pins

Allows you to select IR pin mode.

The options are: IR-Rx2Tx2, RxD2, TxD2.

Onboard Parallel Port

Allows you to select from a given set of parameters if the parallel port uses the onboard I/O controller.

The options are: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

Allows you to connect with an advanced printer via the port mode it supports.

The options are: SPP, EPP, ECP, ECP+EPP.

EPP Mode Select

This feature allows you to select the EPP type version.

The options are: EPP1.7, EPP1.9.

ECP Mode Use DMA

This feature allows you to select Direct Memory Access (DMA) channel if the ECP mode selected. The options are: 3, 1.

Game Port Address

This feature allows you to select the game port address or disable it.

The options are: 201, 209, Disabled.

Midi Port Address

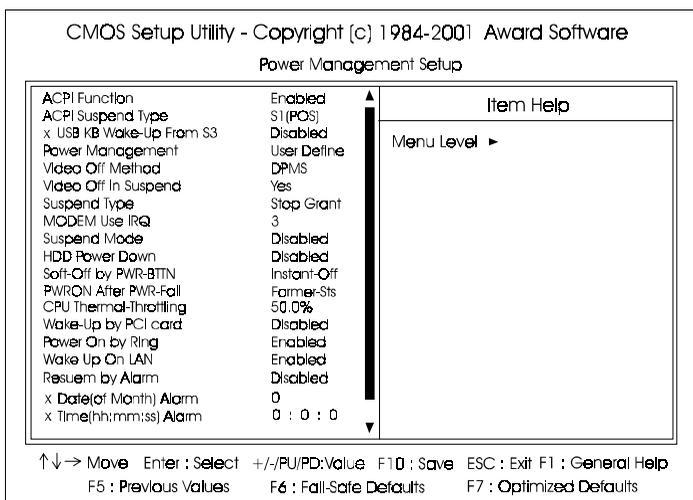
This feature allows you to select the Midi port address or disable it.

The options are: 330, 300, 290, Disabled.

Midi Port IRQ

It allows you to select Midi IRQ if Midi is enabled.
The options are: 10, 5.

Power Management Setup



ACPI function

This item allows you to disable the ACPI function.
The options are: Enabled, Disabled.

ACPI Suspend Type

This item allows you to select suspend mode when the system in ACPI mode. The options are: S1 (POS), S3 (PTR).

USB KB Wake-Up From S3

When set at Enabled, it allows USB keyboard to activate the system from ACPI S3 power saving mode. The options are Disabled, Enabled.

Power Management

This item allows you to adjust the power management features.

Select User Define for configuring your own power management features. Min Saving initiates all predefined timers in their minimum values. Max Saving, on the other hand, initiates maximum values. The options are: User Define, Min Saving, Max Saving.

Video Off Method

The option *V/H SYNC+Blank* allows the BIOS to blank off screen display by turning off the V-Sync and H-Sync signals sent from add-on VGA card. *DPMS* allows the BIOS to blank off screen display by your add-on VGA card which supports DPMS (Display Power Management Signaling function). *Blank Screen* allows the BIOS to blank off screen display by turning off the red-green-blue signals.

The options are: V/H SYNC+Blank, DPMS, Blank Screen.

Video Off In Suspend

The option allows you to select VGA status when the system goes to suspend mode. The options are: Yes, No.

Suspend Type

The option allows you to select VGA status when the system goes to suspend mode. The options are: Stop Grant, PwrOn Suspend.

MODEM Use IRQ

This feature allows you to select the IRQ# to meet your modem's IRQ#. The options are: 3, 4, 5, 7, 9, 10, 11.

Suspend Mode

When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode. The options are: Disable, 1, 2, 4, 8, 10, 20, 30, 40 Min, 1 Hour.

HDD Power Down

The option lets the BIOS turn the HDD motor off when system is in Suspend mode. Selecting 1 Min..15 Min allows you define the HDD idle time before the HDD enters the Power Saving Mode.

The options 1 Min..15 Min will not work concurrently. When HDD is in the Power Saving Mode, any access to the HDD will wake the HDD up.

The options are: Disable, 1 Min..15 Min.

Soft-Off by PWR-BTTN

The selection Delay 4 Sec. will allow the system shut down after 4 seconds after the power button is pressed. The selection Instant-Off will allow the system shut down immediately once the power button is pressed.

The settings are: Delay 4 Sec, Instant-Off.

PWRON After PWR-Fail

When the system is shut down owing to the power failure, the system will not be back to power on by itself. This feature allows you to set the system back to which power status of the system when the system power is resumed. The options are Off, On, Former-Sts.

CPU Thermal-Throttling

When thermal override condition occur, this item allows users to determine the duty cycle of the throttling.

The options are: 12.5%, 25.0%, 37.5%, 50.0%, 62.5, 75.0%, 87.5%.

Wake-Up by PCI card

When set at Enabled, any PCI-PM event awakes the system from a PCI-PM controlled state. The options are Disabled, Enabled.

Power On by Ring

An incoming call via modem awakes the system from its soft-off mode.

The options are Disabled, Enabled.

Wake Up On LAN

When set at Enabled, an input signal comes from the other client/server on the LAN awakes the system from a soft off state if connected over LAN.

The options are Disabled, Enabled.

Resume by Alarm

This feature allows you to set the when the system being turned on from the system power-off status.

The options are: Enabled (Default), Disabled.

Date (of Month)

This feature allows you to set the day of the alarm starts when the RTC Alarm Resume From Soft Off is set to be Enabled. The options are: 0, 1..31.

Timer (hh:mm:ss)

If an ATX power supply is installed and when RTC Alarm Resume is Enabled, this feature allows you to set the time of the alarm starts when the RTC Alarm Resume From Soft Off is set to be Enabled.

The options are: 7: 0: 0 (Default). hh (*hour*) - 0, 1, 2,..., 23; mm (*minute*) - 0, 1, 2,...,59; ss (*second*) - 0, 1, 2,...,59.

Primary IDE 0

When the primary master HDD is working, the system timer will be reloaded and the system will not be into the suspend mode.

The options are: Disabled (Default), Enabled.

Primary IDE 1

When the primary slave HDD is working, the system timer will be reloaded and the system will not be into the suspend mode.

The options are: Disabled (Default), Enabled.

Secondary IDE 0

When the secondary master HDD is working, the system timer will be reloaded and the system will not be into the suspend mode.

The options are: Disabled (Default), Enabled.

Secondary IDE 1

When the secondar slave HDD is working, the system timer will be reloaded and the system will not be into the suspend mode.

The options are: Disabled (Default), Enabled.

FDD, COM, LPT Port

When FDD, COM, or LPT is working, the system timer will be reloaded and the system will not be into the suspend mode.

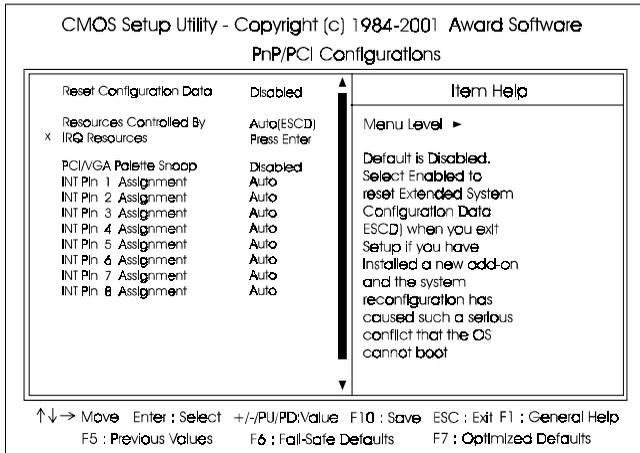
The options are: Disabled, Enabled.

PCI PIRQ[A-D]#

When the PCI PIRQ[A-D]# has been alerted, the system timer will be reloaded and the system will not be into the suspend mode.

The options are: Disabled, Enabled.

PnP/PCI Configurations



Reset Configuration Data

Enabling it to reset the system Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The options are: Disabled, Enabled.

Resources Controlled By

If set at Auto, the BIOS arranges all system resources. If there exists conflict, select Manual. The options are: Auto (ESCD), Manual.

If the manual options, after the feature IRQ Resources being pressed, of **IRQ- Assigned To** are: PCI Device, Reserved. When resources were controlled manually, assign each system interrupt a type, depending on each device type to use the interrupt.

PCI/VGA Palette Snoop

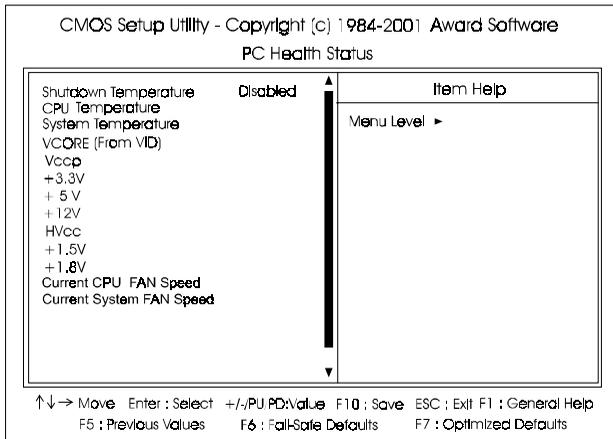
Set this feature to be enabled if any ISA adapter card installed in the system requires the VGA palette snoop function.

The options are: Disabled, Enabled.

INT Pin 1/2/3/4/5/6/7/8 Assignment

This feature allows you to assign the PCI IRQ numbers for PCI slots. Selecting the default, Auto, allows the PCI controller to automatically allocate the IRQ numbers. The options are: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14, 15.

PC Health Status



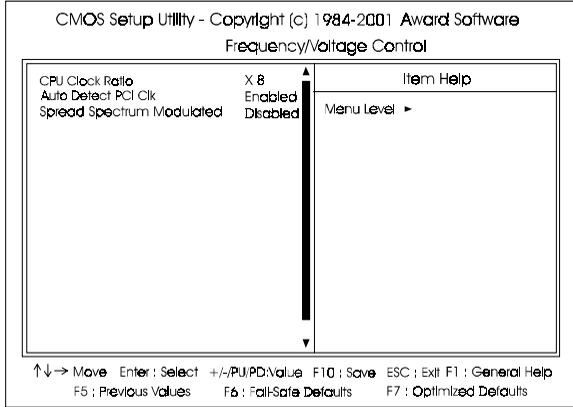
Shutdown Temperature

This feature helps to shutdown the system when the system temperature is as high as the selected temperature to prevent from the overheat problem. The option list presents all the temperatures that supported by the board and Disabled.

CPU Temperature / System Temperature / Vcore (Fom VID) / Vccp / +3.3V / +5V / +12V / HVcc / +1.5V / +1.8V / Current CPU FAN Speed / Current System FAN Speed

These items allow end users and technicians to monitor data provided by the BIOS on this mainboard. It is not user-configurable.

Frequency/Voltage Control



CPU Clock Ratio

This feature allows you to select the frequency multiplier for CPU host clock. The option list offers the ratios from X 3 to X 8.

Auto Detect PCI Clk

When enabled, BIOS will detect the PCI slot and DIMM slot. If no any device in, BIOS will auto disable its clock.

The options are: Enabled, Disabled.

Spread Spectrum Modulated

This feature is used to set the spread Spectrum to be center spread type or down spread type. The options are: Disabled, Enabled.

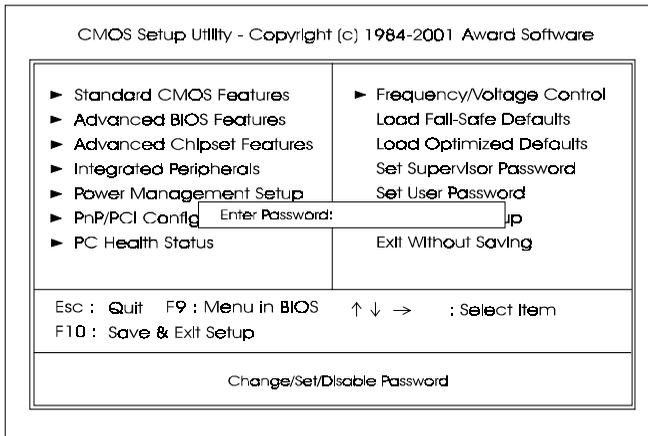
Load Fail-Safe Defaults

This submenu is selected to diagnose the problem after the computer boots, if the computer will not boot. These settings do not give optimal performance.

Load Optimized Defaults

This submenu is selected for default settings which provide the best system performance.

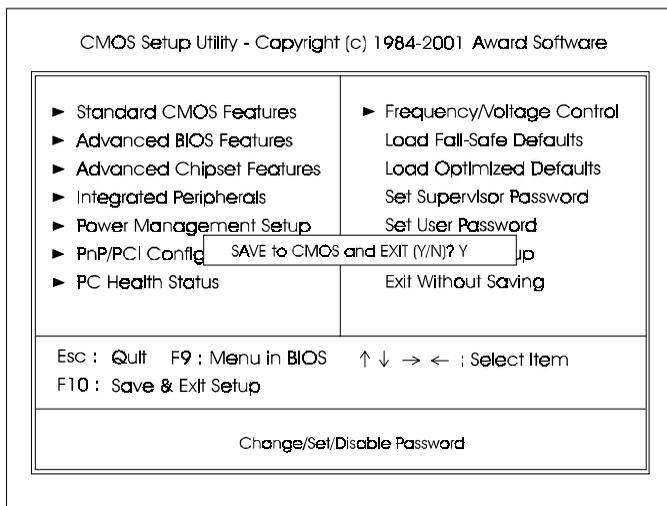
Supervisor/User Password



To enable the Supervisor/User passwords, select the item from the Standard CMOS Setup. You will be prompted to create your own password. Type your password up to eight characters and press Enter. You will be asked to confirm the password. Type the password again and press Enter. To disable password, press Enter twice when you are prompted to enter a password. A message appears, confirming the password is disabled.

Under the BIOS Feature Setup, if *Setup* is selected under the Security Option field and the Supervisor/User Password is enabled, you will be prompted password every time you try to enter the CMOS Setup Utility. If *System* is selected and the Supervisor/User Password is enabled, you will be requested to enter the Password every time when you reboot the system or enter the CMOS Setup utility.

Save and Exit Setup



After you have made changes under Setup, press Esc to return to the main menu. Move cursor to Save and Exit Setup or press F10 and then press Y to change the CMOS Setup. If you did not change anything, press Esc again or move cursor to Exit Without Saving and press Y to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility: **SAVE to CMOS and EXIT (Y/N)?**

Exit without Saving

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications: **Quit Without Saving (Y/N)?**

Quick Reference

The mainboard has several user-adjustable jumpers and/or switches on the board that allow you to configure your system to suit your requirements. This quick reference contains information on the various hardware settings on your mainboard.

To set up your computer, you must complete the following steps:

- Step 1 - Set system jumpers/switches
- Step 2 - Install system memory modules
- Step 3 - Install the Central Processing Unit (CPU)
- Step 4 - Install expansion cards
- Step 5 - Connect ribbon cables, cabinet wires, and power supply
- Step 6 - Set up BIOS software
- Step 7 - Set up supporting software tools



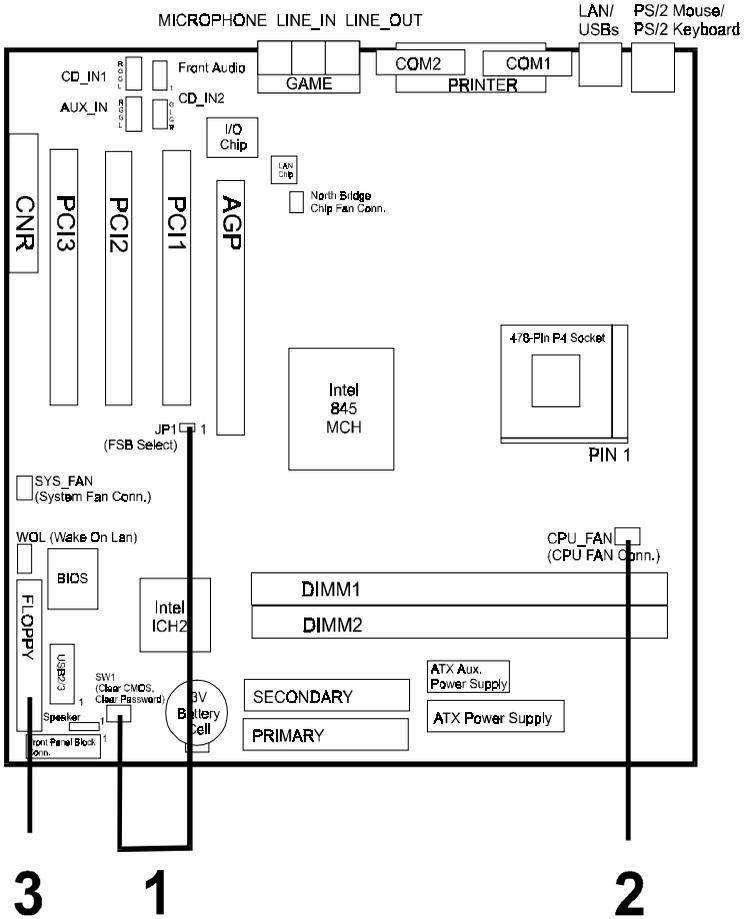
WARNING: Excessive torque may damage the mainboard. When using an electric screwdriver on the mainboard, make sure that the torque is set to the allowable range of 5.0 ~ 8.0kg/cm.

Mainboard components contain very delicate Integrated Circuit (IC) chips. To prevent static electricity from harming any of the mainboard's sensitive components, you should follow the following precautions whenever working on the computer:

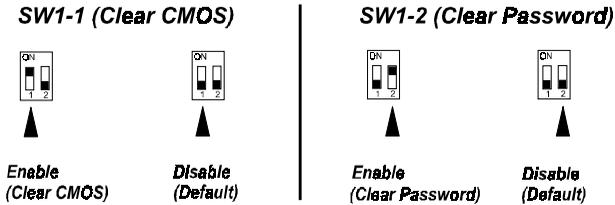
1. Unplug the computer when working on the inside.
2. Hold components by the edges and try not to touch the IC chips, leads, or circuitry.
3. Wear an anti-static wrist strap which fits around the wrist.
4. Place components on a grounded anti-static pad or on the bag that came with the component whenever the components are separated from the system.

Quick Reference

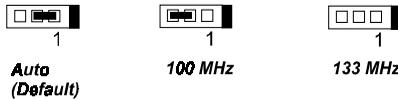
Mainboard Layout



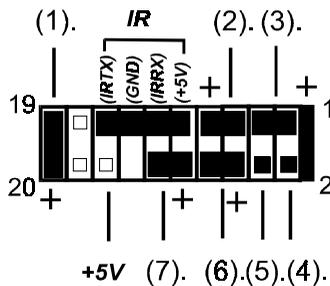
1). Clear CMOS, Clear Password, FSB Speed Select



JP1 (FSB Speed Select)



2). Front Panel Block Cable Connection



- | | |
|---------------------|-------------------|
| (7). Suspend Button | (1). Power LED |
| (6). Power Button | (2). Reset Button |
| (5). LED (Y) | (3). HDD LED |
| (4). LED (G) | |

3). CPU Fan Installation

This connector is linked to the CPU fan. When the system is in some power saving mode, the CPU fan will turn off; when it reverts back to full on mode, the fan will turn back on. Without sufficient air circulation, the CPU may overheat resulting in damage to both the CPU and the mainboard.

Damage may occur to the mainboard and/or the CPU fan if these pins are used incorrectly. These are not jumpers, do not place jumper caps over these pins.