VL-601

MAINBOARD MANUAL

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Chapter 1

Overview

Based on the highly-integrated Intel 440LX AGPset, the VL-601 combines blistering Pentium® II processor performance with support for the new Accelerated Graphics Port (AGP) interface which provides a dedicated path for memory -intensive graphics applications- delivering faster system performance and arcade-quality 3D graphics. The VL-601 also supports intelligent diagnostic and power management features like ISMP™ (Intelligent System Management & Protection) and ACPI (Advanced Configuration and Power Interface) to provide a powerful and versatile ATX-size platform for leading-edge PC '97 compliant systems.

The VL-601 runs a range of Intel Pentium® II processors. For added power and performance, the VL-601 supports up to 512KB Burst Level II cache and up to 384MB DRAM via three DIMM sockets which accept high-speed SDRAM and EDO memory types.

The mainboard comes with a full set of I/O features conveniently integrated on the rear I/O panel, including one USB connector and an integrated PCI Bus Master Enhanced IDE controller with support for the new Ultra DMA/33 protocol, which doubles ATA-2 Hard Disk Drive data transfer rates to 33MB/s while maintaining full backwards compatibility with existing PIO Mode 3, PIO Mode 4 and DMA Mode 2 devices.

Compliant with the Microsoft PC'97 standard at both the hardware and BIOS levels, the VL-601 comes with support for ISMP™ which continuously checks the thermal and voltage status of your system changes where necessary and reports any discrepancies to a network administrator. The VL-601 reduces the total cost of ownership with support for DMI (Desktop Management Interface) and Intel LANDesk® Client Manager (LDCM) software which allows for optimized system manageability across a network.

Chapter 1 of this manual gives you a brief overview of the VL-601 mainboard, including its main components and features. Chapter 2 contains advice on how to upgrade and install key components on the mainboard.

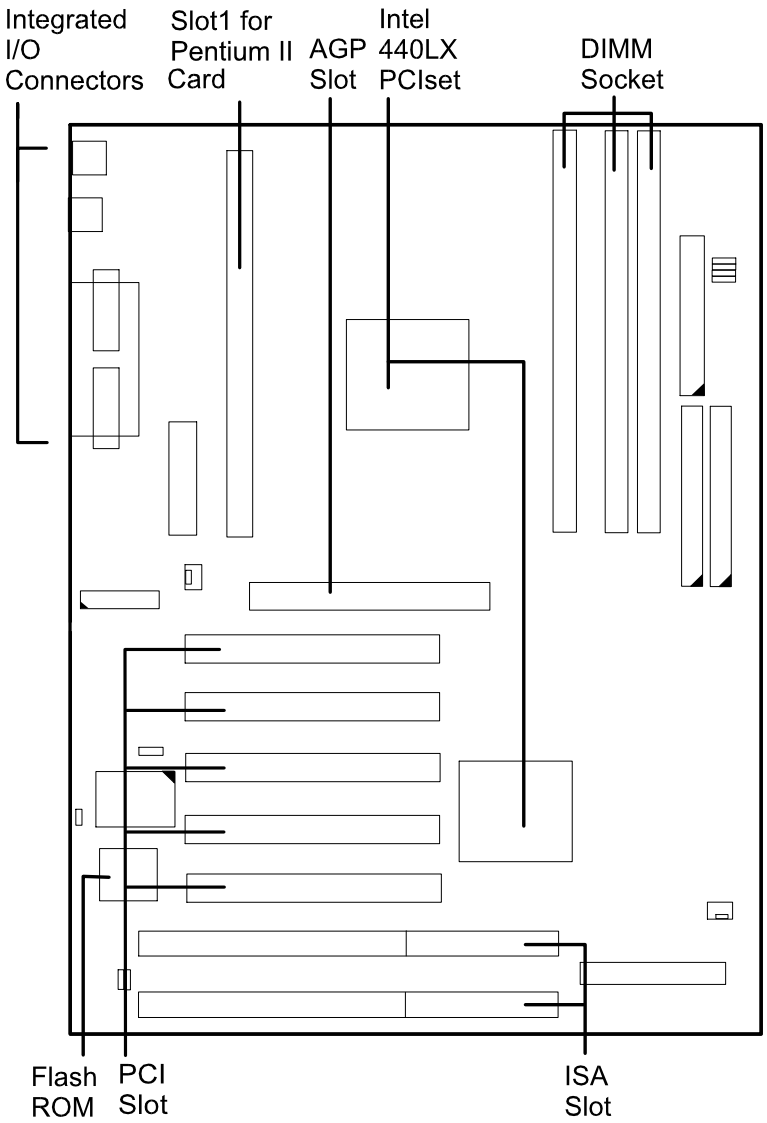
For the most up-to-date information about your mainboard and the latest FAQs and BIOS updates, visit FIC Online at www.fic.com.tw.

Package Checklist

Please check that your package contains all the items listed below. If you discover any item is damaged or missing, please contact your vendor.

- The VL-601 mainboard
- This user manual
- One IDE device cable
- One floppy disk drive cable
- Retention Module
- Software CD-ROM
  - Desktop Management Interface (DMI) software
  - BIOS Flash software
  - PIIX bus master IDE driver
  - Intel INF update software
  - Intel LANDesk® Client Manager (LDCM) software (optional)
  - Anti-Virus tool

The VL-601 Mainboard



Main Features

The VL-601 mainboard comes with the following high-performance features:

- Easy Installation
  BIOS with support for Plug and Play, auto detection of IDE hard drives, LS-120 drives, MS Windows™ 95, Windows™ NT, and OS2™.

- Flexible Processor Support
  Onboard 242-pin Slot1 supports leading-edge processors:
  Intel Pentium® II processors 233/266/300/333 MHz with MMX™ technology.

- Leading Edge Chipset
  Intel 82440LX AGPset includes a CPU interface controller, advanced cache controller, integrated memory controller, synchronous ISA bus controller, integrated power management unit, concurrent PCI (PCI 2.0 and 2.1), and USB.

- Ultra-fast Level II Cache
  Supports 256/512KB L2 synchronous PBSRAM cache memory on Pentium® II card.

- Versatile Main Memory Support
  Accepts up to 384MB RAM in three banks using DIMMs of 8, 16, 32, 64, 128MB with support for EDO and SDRAM memory.

- Onboard Accelerated Graphics Port (AGP)
  One 32-bit AGP slot supports 1x/2x AGP VGA cards for superior 3D video and graphics performance with transfer speeds up to 264MB/second under 1x Transfer Mode and up to 528MB/second under 2x Transfer Mode.

- ISA & PCI Expansion Slots
  Two 16-bit ISA and five 32-bit PCI expansion slots provide all the room you need to install a full range of add-on cards.

- USB Support
  Two USB ports integrated in the rear I/O panel and an optional onboard USB connector (for front panel) allow convenient, high-speed

Plug and Play connections to the growing number of USB compliant external peripheral devices on the market.

- IrDA Connector
  An onboard IR connector for wireless infrared connection is available.

- Enhanced PCI Bus Master IDE Controller Support
  Integrated Enhanced PCI Bus Master IDE controller features two dual-channel connectors that accept up to four Enhanced IDE devices, including CD-ROM and Tape Backup Drives, as well as Hard Disk Drives.

- Super Multi I/O
  Integrated Winbond W83977TF-A™ Plug and Play multi-I/O chipset features two high-speed 16550A compatible serial ports, one IR port, one EPP/ECP capable parallel port, and one FDD connector.

- Remote Wake-Up Support
  One LAN Wake-up connector supports LAN cards equipped with either the AMD PCnet-ISA II™ (79C961A) or PCnet-PCI II™ (79C970A) chipsets for remote wake-up functionality.

- Intel LANDesk® Client Manager (LDCM) Software Support
  LDCM is a DMI-compliant application for local and network management of desktop client systems. The application reduces the number of help desk calls by supplying the user with self diagnostics such as a PC health meter and local alert of potential problems.

Advanced Features

The mainboard features EDO and SDRAM support, Hardware Monitoring, DMI and ACPI, that not only optimize the performance of the latest processors but also enhance the manageability, power management capabilities, and user-friendliness of your system.

1). Enhanced Performance Features

- Optimized Intel Pentium II® Processor Performance
  The mainboard utilizes the advanced features of the Intel 440LX PCIset to optimize the unrivaled performance of the Intel Pentium® II processor with MMX™ technology, allowing you to enjoy a richer video, audio, digital imaging and communications experience from the latest generation of multimedia software.

- Onboard Accelerated Graphics Port (AGP)
  The 32-bit AGP bus provides a dedicated 66Mhz/133Mhz path from the graphics card to the system memory offering much greater bandwidth than the 32-bit PCI bus does which currently operates at a speed of 33Mhz. AGP enabled 3D graphics cards can directly access main memory across this fast path instead of using local memory. This is especially important for memory-intensive 3D graphics applications so as to produce more detailed 3D textures, greater clarity and higher levels of resolution without impacting on system performance. This mainboard is fully compliant with the AGP 1.0 specification. To make use of the improved AGP performance, the mainboard should be installed with SDRAM type memory and the VGA card and drivers should also be fully AGP compliant. Using Microsoft's forthcoming versions of Microsoft Windows™ 95 and Windows™ NT which implement DirectDraw™ will allow the system to take full use of AGP's benefits without the need to install additional drivers.

- Enhanced PCI Bus Master IDE Controller with Ultra DMA/33 Support
  Integrated Enhanced PCI Bus Master IDE controller features two dual-channel connectors that accept up to four Enhanced IDE devices, including CD-ROM and Tape Backup Drives, as well as Hard Disk Drives supporting the new Ultra DMA/33 protocol which doubles data transfer rates to 33MB/sec. Standard PIO Mode

- Concurrent PCI Architecture
  The mainboard's Concurrent PCI Architecture enables more efficient operation of CPU, PCI and ISA transactions for faster and smoother multimedia performance. It also allows the use of PCI 2.1 and 2.0 compatible add-in cards for long system life, built-in scalability and the flexibility to adapt your system to future applications.

2). Intelligent Features

ISMP™ (Intelligent System Management & Protection)

This mainboard features FIC's patent-pending ISMP™ (Intelligent System Management & Protection) which intelligently monitors the system hardware, making adjustments where necessary and reporting any discrepancies to a network administrator.

- CPU Thermal Monitoring Alert
  A special heat sensor located under the CPU monitors the CPU temperature to make sure that the system is operating at a safe heat level. If the temperature is too high, the sensor automatically generates an SMI (System Management Interrupt) to turn on the system fan and slow down the CPU clock frequency. At the same time, the system warns you that the CPU is overheating. CPU utilization is restored to normal levels when the temperature returns to a safe level.

- System Over-Voltage Protection and Report
  This mainboard features Voltage Protect which automatically shuts down the system if system or CPU voltage increases by more than 5%. The monitored range for system voltage is -12V, -5V, +12V, +5V, +3.3V, and the CPU voltage +2.8V.

- Chassis Intrusion
  This mainboard also features a special security feature which can detect if the chassis is opened, and alert a system administrator.

PC '97 Compliant

This mainboard is fully compliant with the new PC '97 standard at both the BIOS and hardware levels. PC '97 is a set of hardware, bus and device design requirements set by Microsoft in conjunction with other industry leaders aimed at making PCs easier to use by maximizing cooperation between the operating system and hardware.

The system design requirements under PC '97 support a synergy among PC hardware, Microsoft Windows™ Operating Systems, and Windows™-based software. Key elements include support for Plug and Play compatibility and power management for configuring and managing all system components, and 32-bit device drivers and installation procedures for both Windows™ 95 and Windows™ NT.

ACPI Ready

This mainboard fully implements the new ACPI (Advanced Configuration Power Interface) standard, an open PC hardware, Operating System and peripheral device interface specification that is supported by such industry leaders as Microsoft and Intel. ACPI enables PCs to come on instantly when accessed by a user and remain available to perform certain tasks even after the PC is turned off.

Additional benefits of ACPI include improved thermal management, reduced energy consumption, and OS directed Plug and Play capabilities. ACPI is currently being implemented in forthcoming versions of Microsoft Windows™ 95, Windows™ NT, and Windows™ 98. Key ACPI features implemented on this mainboard include:

- Soft-Off Support
  The mainboard's Soft-Off feature allows you to turn off your computer using the Operating System (Windows™ 95). The feature requires a power supply with a soft-off power controller.

- RTC Alarm
  The RTC alarm feature allows you to preset the computer to wake-up at a certain time allowing you to implement a number of useful functions, such as automatically sending out a fax late at night. The feature requires a power supply with a soft-off power controller.

- Remote Ring-On
  The Remote Ring-On function allows your computer to be turned on remotely via a modem while it is in Sleep Mode. This feature is particularly useful when, for example, you are expecting a fax late at night and leave only your modem on to minimize power consumption. As soon as the phone rings, the modem automatically turns on the system, which answers the phone and downloads the fax. Then the computer shuts off again, thereby minimizing its consumption of power. The Remote Ring-On function requires a power supply with a soft-off power controller.

Please see the BIOS Setup (Chapter 3) for more information on how to use these features.

DMI (Desktop Management Interface)

DMI (Desktop Management Interface) is a standard for organizing system configuration information. Using DMI, computer configuration can be made much simpler, quicker, and easier. Computer system configuration information can be read and modified from remote locations, permitting remote configuration and boot up. Please read Appendix A of this manual for more information.

Intel LANDesk® Client Manager (optional)

This mainboard comes with optional Intel LANDesk® Client Manager, a Desktop Management Interface (DMI) compliant application which simplifies local and network management of desktop client systems by monitoring PC health, and by alerting local and designated remote users of potential problems. For example, the application will indicate when memory usage is high or hardware components are likely to fail. This capability provides new levels of manageability to deliver a lower cost of PC ownership by maximizing system uptime, increasing user productivity and reducing the number of help desk calls. Because it is industry-standard DMI compliant, Intel LANDesk® Client Manager can be used with other DMI-based network management tools.

The LANDesk® Client Manager, including the client interface and the administrator's console used by the network administrator or manager, has a graphical user interface for ease-of-use and understanding and can be used for monitoring PC health, configuring key files and viewing inventory. Please read Appendix A of this manual for more information.

Infrared Connections

This mainboard features support for highly-sophisticated IR technology, which allows bi-directional and cordless data transactions with other IrDA compliant computers and peripheral devices using infrared as a medium. This transmission is carried out in either Full Duplex Mode or Half Duplex Mode. The former allows simultaneous data transmission and reception, while the latter disables the reception when transmission occurs.

The I/O chipset on this mainboard features onboard IR interface that is fully compliant with the IrDA standard. An IrDA device can be installed via a 9-pin D-type connector in the rear panel of the computer.

Highly Convenient Integrated I/O Connectors

This mainboard features has an integrated rear I/O panel that incorporates a full set of I/O ports to allow simple and convenient connections to a complete selection of external peripheral devices.

In addition to two 16550A UART compatible serial ports and one EPP/ECP capable parallel port, the panel features one USB connector that provides high speed connection to the new generation of USB peripheral devices. PS/2 keyboard and PS/2 mouse connectors provide additional I/O connectivity.

Installation Procedures

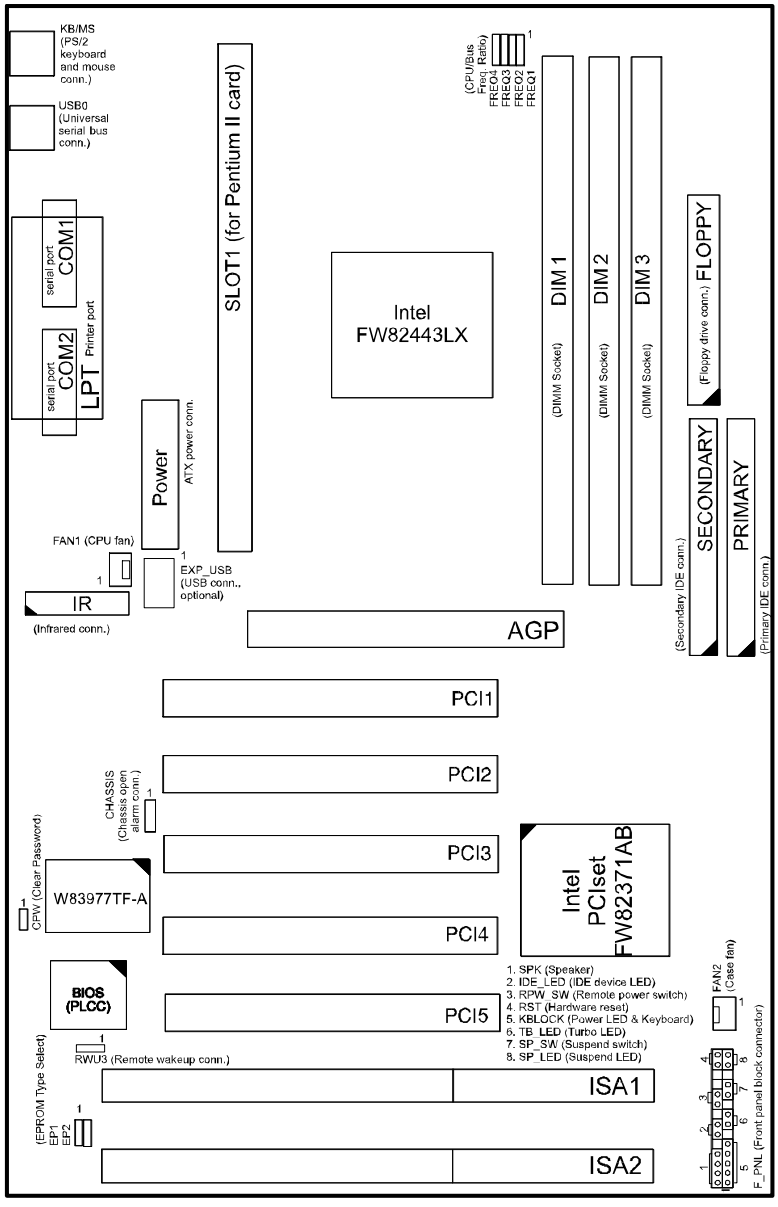
The VL-601 has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

To set up your computer, you should follow these installation steps:

- Step 1 - Set system jumpers
- Step 2 - Install System RAM modules
- Step 3 - Install the CPU
- Step 4 - Install expansion cards
- Step 5 - Connect cables and power supply
- Step 6 - Set up BIOS feature

CAUTION : If you use an electric drill to install this mainboard on your chassis, please wear a static wrist strap. The recommended electric drill torque is from 5.0 to 8.0 kg/cm to avoid damaging the chips' pins.

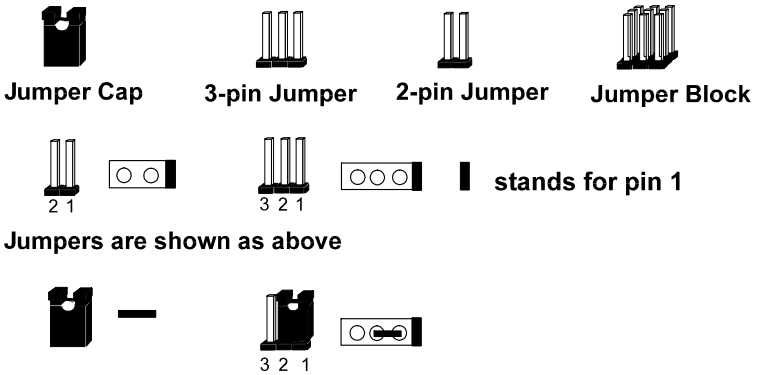
Mainboard Layout



1). Set System Jumpers

Jumpers

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. 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 manaul are shown below:



Jumpers are shown as above

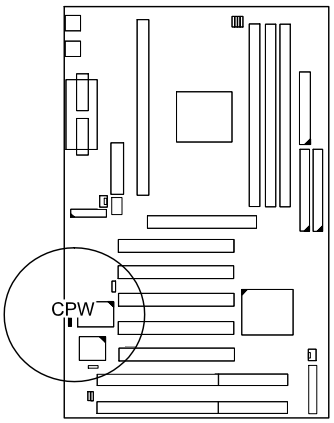
Jumper cap is shown as above

Jumpers in a Block

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 Password: CPW

This jumper allows you to set the password configuration to **Enabled** or **Disabled**. You may need to enable this jumper if you forget your password.

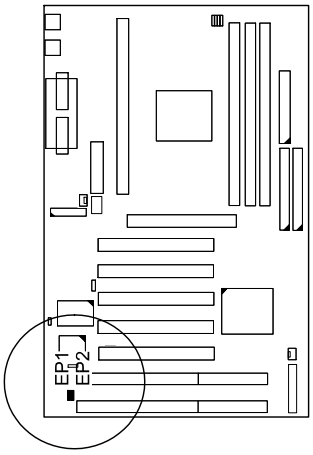


Enable

Disable
(Default)

Flash EPROM Type Selection: EP1, EP2

These two jumpers allow you to configure the Flash EPROM chip



1MB	EP1	EP2
Intel 28F001 / MXIC MX28F1000		
SST 29EE010 / ATMEL AT29C010A		

2MB	EP1	EP2
AMD AM29F002T		
SST 29EE020		
ATMEL AT29C020		
MXIC MX28F2000P		

2). Install RAM Modules

SDRAM

The working space of the computer is the Random Access Memory (RAM). The system cannot act upon data unless it is loaded into RAM. When more memory is added, the working memory of the computer is larger, thereby increasing total performance.

The mainboard RAM is comprised of three 168-pin Dual In-line Memory Modules (DIMMs). Each DIMM socket is able to support up to 128MB* standard fast EDO and lightning-fast SDRAM.

SDRAM is an advanced new memory technology that boosts overall system performance with its ability to synchronize all operations with the processor clock signal. This makes the implementation of control interfaces easier, and speeds up column access time. SDRAM features an on-chip burst counter that can be utilized to increment column addresses for very fast burst access, which means that SDRAM allows new memory access to be initiated before the preceding access has been finished.

Before making DRAM upgrades you should verify the type and speed of the RAM currently installed from your dealer. Installing mixtures of RAM types other than those described in this manual will have unpredictable results.

NOTE : * A RAM module of this size was not available for testing at press time.

DIMM

RAM Module Configuration

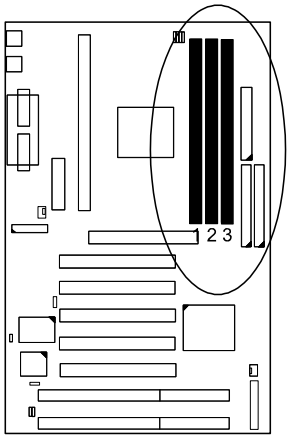
This mainboard provides three onboard DIMM sockets for allowing 3.3V (unbuffered) EDO/SDRAM DIMM modules. Either 8, 16, 32, 64, or 128MB* DIMM can be installed on these three sockets. The maximum total memory supported is up to 384MB*.

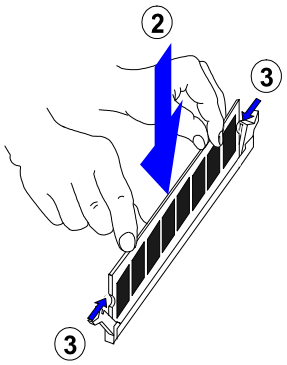
NOTE :
1. * A RAM module of this size was not available for testing at press time.
2. This mainboard supports DIMMs with latency times of 10ns, 12ns and 15ns. ECC memory and parity check is also supported.

Install DIMMs

Complete the following procedures to install DIMMs:

1. Locate the DIMM slots on the mainboard. (See figure below.)





2. Install the DIMM straight down into the DIMM slot with both hands.

3. The clips of the slot will close up to hold the DIMM in place when the DIMM touches the slot's bottom.

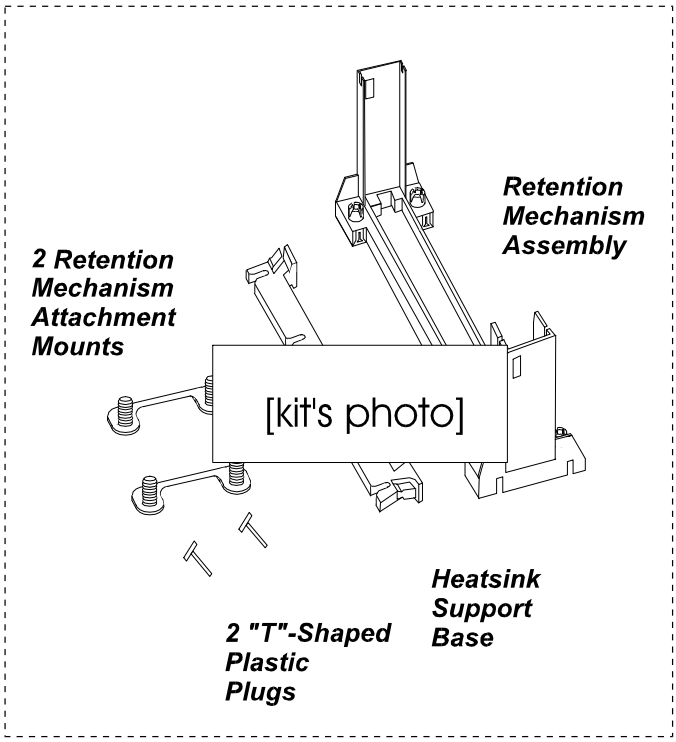
Remove DIMMs

Press the clips with both hands to remove the DIMM.

3). Install the CPU

Retention Mechanism Kit

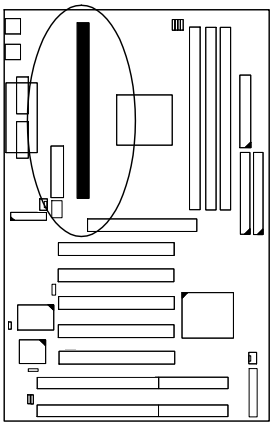
The mainboard comes with a Retention Mechanism Kit as shown below. If any piece is missing, please contact your local mainboard dealer to help you.



NOTE : If two “T”-shaped plastic plugs and heatsink support base are not in the package, they are installed onboard by manufactory.

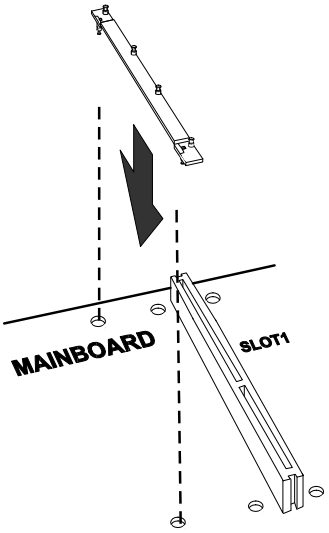
CPU Module Installation

1. Locate Slot1 on the VL-601 mainboard.

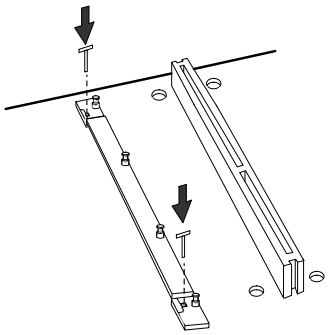


NOTE : If two "T"-shaped plastic plugs and heatsink support base are installed onboard by manufactory, please skip step 2 and 3.

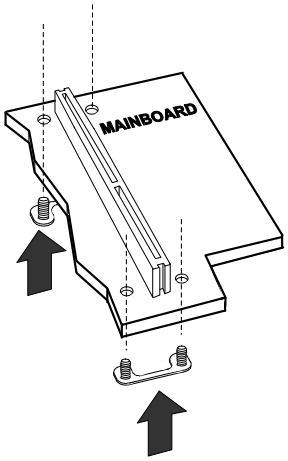
2. Place the Heatsink Support Base on the mainboard as shown.



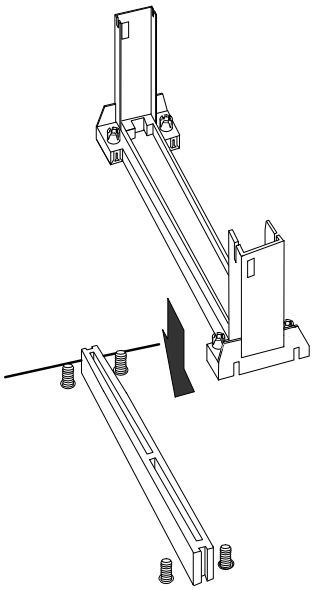
3. Affix it by inserting one “T”-shaped plastic plug into the hole on each end.



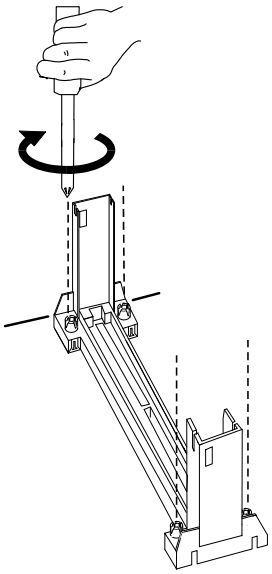
4. Install two Retention Mechanism Attachment Mounts on the board



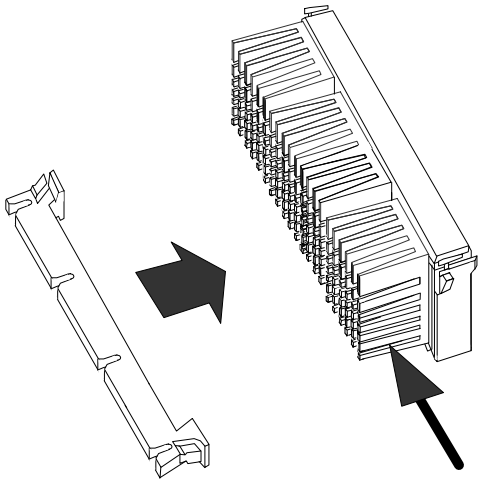
5. Place the Retention Mechanism Assembly on the board, on top of the Rentention Mechanism Attachment Mounts.



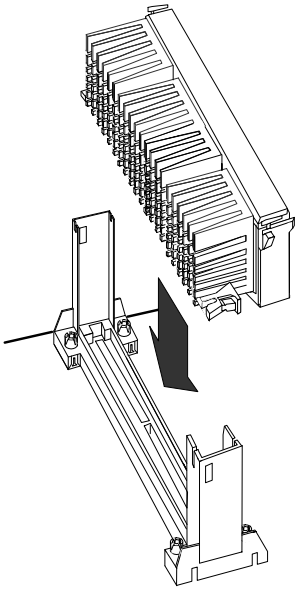
6. Affix the Retention Mechanism Assembly with four screws.



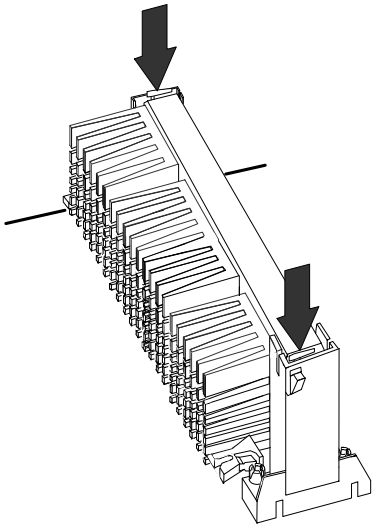
7. Horizontally slide the Heatsink Top Support into the lowest gaps on the CPU module heatsink as shown below.



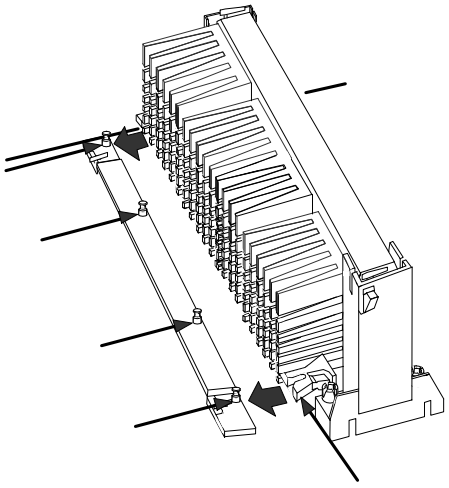
8. Slide the CPU module into the Retention Mechanism Assembly.



9. Press the buttons on either end of the CPU module.

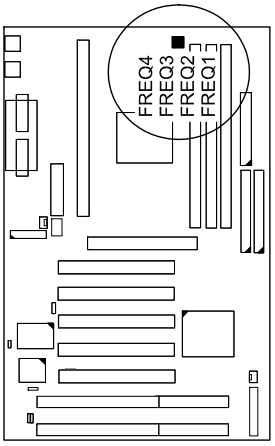


10. Hook the Heatsink Top Support to the Heatsink Support Base to affix the CPU module.



CPU to Bus Frequency Ratio: FREQ1, FREQ2, FREQ3, FREQ4

These four jumpers are used in combination to decide the ratio of the internal frequency of the CPU to the bus clock.



Ratio	FREQ4	FREQ3	FREQ2	FREQ1
3.5 X	1	1	1	1
4 X	1	1	1	1
4.5 X	1	1	1	1
5 X	1	1	1	1
5.5 X	1	1	1	1
6 X	1	1	1	1

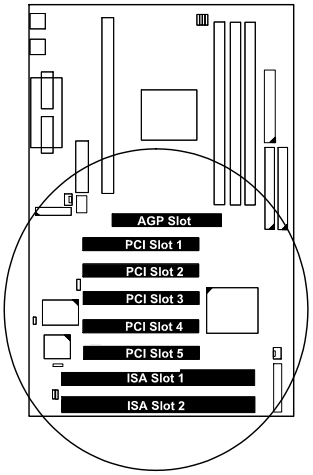
Intel Pentium II CPUs

Frequency

CPU Speed	Bus Clock	Ratio	FREQ4	FREQ3	FREQ2	FREQ1
333 MHz	66 MHz	5 x	1	1	1	1
300 MHz	66 MHz	4.5 x	1	1	1	1
266 MHz	66 MHz	4 x	1	1	1	1
233 MHz	66 MHz	3.5 x	1	1	1	1

4). Install Expansion Cards

Your VL-601 features one 32-bit AGP Bus, two ISA Bus and five PCI Bus expansion slots.



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.

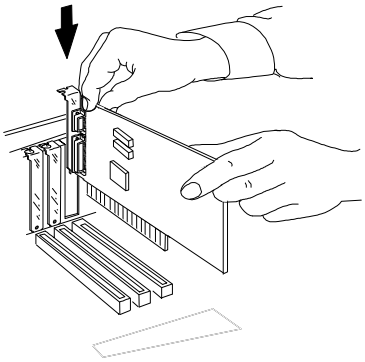
CAUTION :

1. Always turn the system power off before installing or removing any device.
2. Always observe static electricity precautions.
   See “Handling Precautions” at the start of this manual.

To install an expansion card, do the following:

1. Remove the chassis cover and select an empty expansion slot.
2. Remove the corresponding slot cover from the chassis.
   Unscrew the mounting screw that secures the slot cover and pull the slot
   cover out from the 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. (See figure below.)

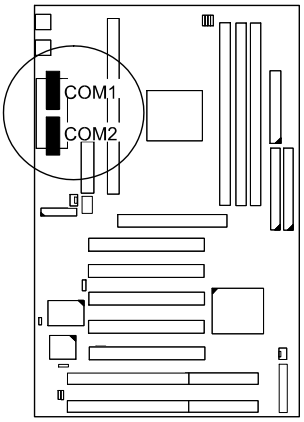


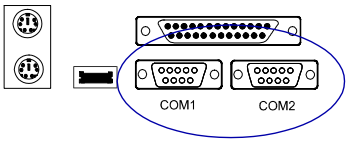
4. Push the card firmly into the slot. Push down on one end of the
expansion card, then the other. Use this “rocking” motion until the add-in
card is firmly seated inside the slot.
5. Secure the board with the mounting screw removed in Step 2.
Make sure that the card has been placed evenly and completely into the
expansion slot.

5). Connect Cables and Power Supply

Serial Port Connectors: COM1, COM2

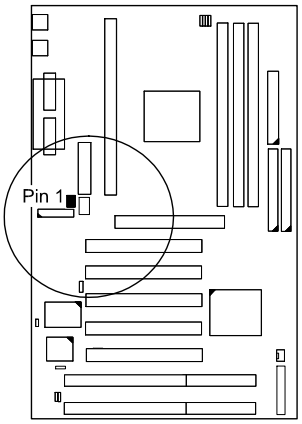
These two 9-pin D-Sub male connectors allow you to connect with your devices that use serial ports, such as a serial mouse or a modem.

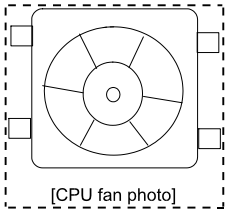


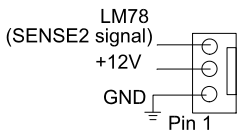


CPU Fan Connector: FAN1

This connector is linked to the CPU fan. When the system in Suspend mode, the CPU fan will turn off; when it back to full on mode, the fan will turn on.

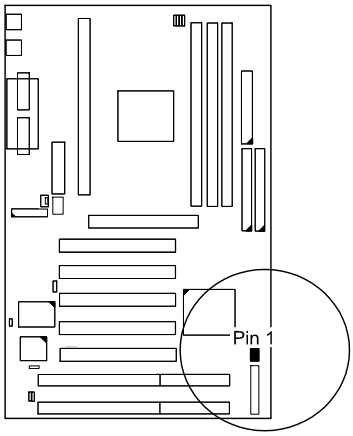


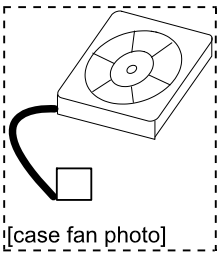


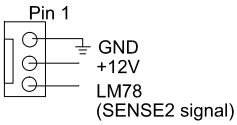


System Case Fan Connector: FAN2

This 3-pin connector links to your cooling fan on the system case to lower the system temperature.

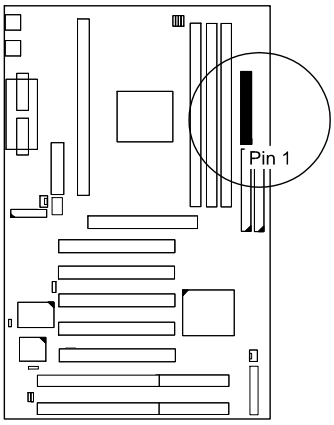






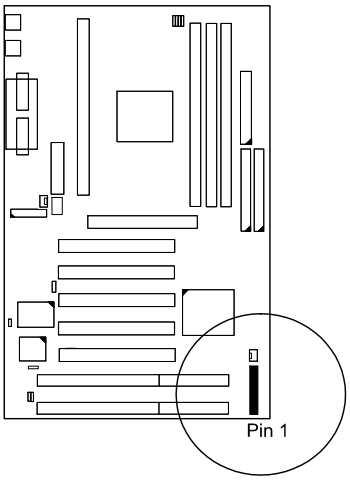
Floppy Diskette Drive Connector: FLOPPY

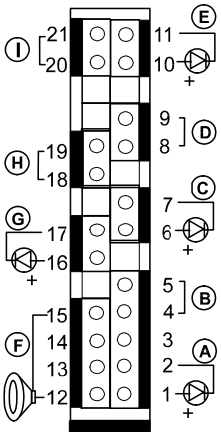
This 34-pin block connector connects to your floppy disk drive using the cable that is provided with this mainboard.



Front Panel Block Connector: F_PNL

This block connector concludes : PW_LED, KB_LOCK, TB_LED, SP_SW, SPK, SP_LED, IDE_LED, RPW_SW, and RST connectors.

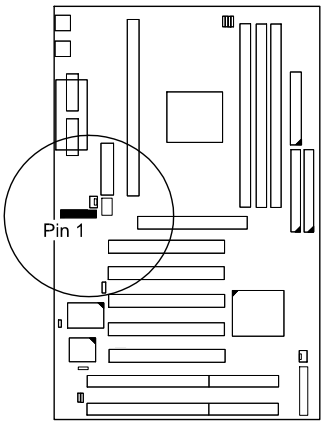




Item	Connector	Pin Type	Feature
A	PW_LED	2-pin male	indicates the system power status
B	KB_LOCK	2-pin male	allows the keyboard to access the system
C	TB_LED	2-pin male	indicates the system speed is in normal or turbo speed
D	SP_SW	2-pin male	Suspend mode switch
E	SP_LED	2-pin male	indicates the system into Suspend mode when LED lit
F	SPK	4-pin male	connects to speaker
G	IDE_LED	2-pin male	indicates the IDE HDD I/O access LED lit
H	RPW_SW	2-pin male	remote power switch
I	RST	2-pin male	allows you to reset the system

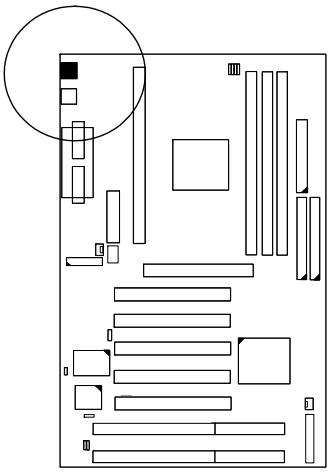
Infrared Connector: IR

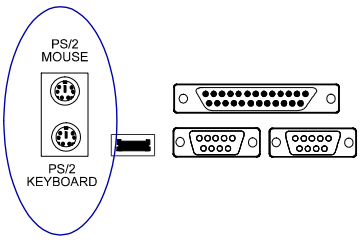
This 2x5-pin male connector is used for connecting to the infrared ports and allows transmission of data to another system which also supports the IR feature.

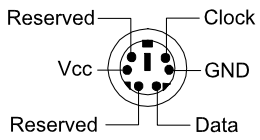


PS/2 Keyboard and Mouse Connector: KB, MS

These two 6-pin female connectors are used for your PS/2 keyboard and PS/2 mouse.

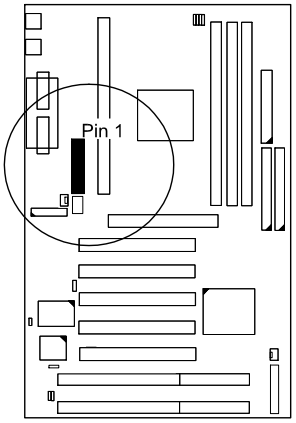






ATX Power Connector: POWER

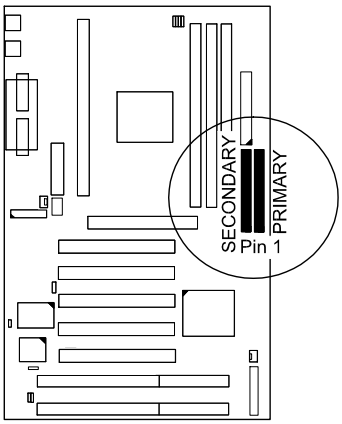
This 20-pin male block connector is connected to the ATX power supply.



+3.3V	11	1	+3.3V
-12V	12	2	+3.3V
GND	13	3	GND
-PWR_ON	14	4	+5V
GND	15	5	GND
GND	16	6	+5V
GND	17	7	GND
-5V	18	8	PWR_GOOD
+5V	19	9	5V_VR
+5V	20	10	+12V

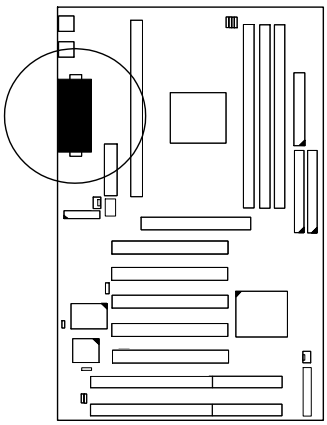
IDE HDD Device Connectors: PRIMARY, SECONDARY

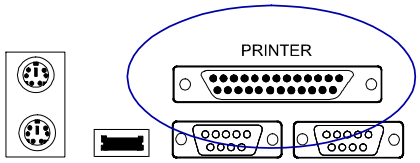
These two 40-pin block connectors are used for your IDE hard disks. If you have one IDE hard disk, connect it to the PRIMARY connector using the IDE HDD flat cable provided with the mainboard. If you want to install another IDE hard disk or CD-ROM, please use the SECONDARY connector.



Printer Connector: LPT

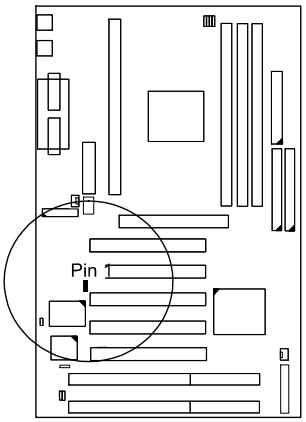
This 25-pin D-Sub female connector is attached to your printer.

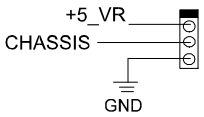




Chassis Open Alarm Connector: CHASSIS

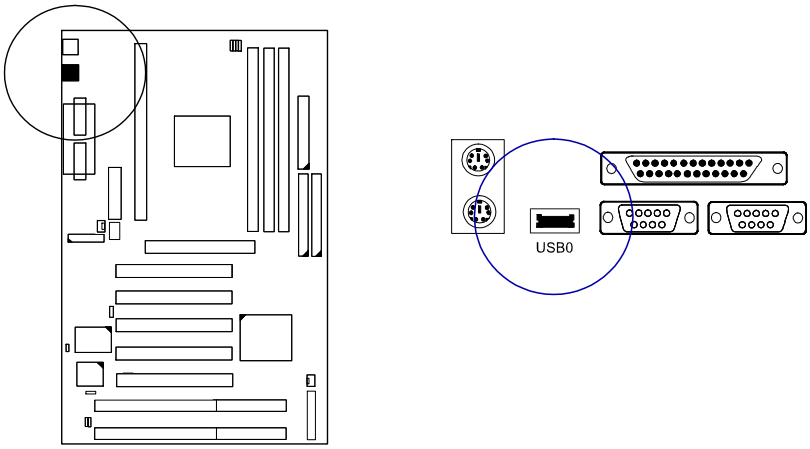
This 3-pin pinhead connector allows the LAN server to detect if the chassis is open via LDCM.





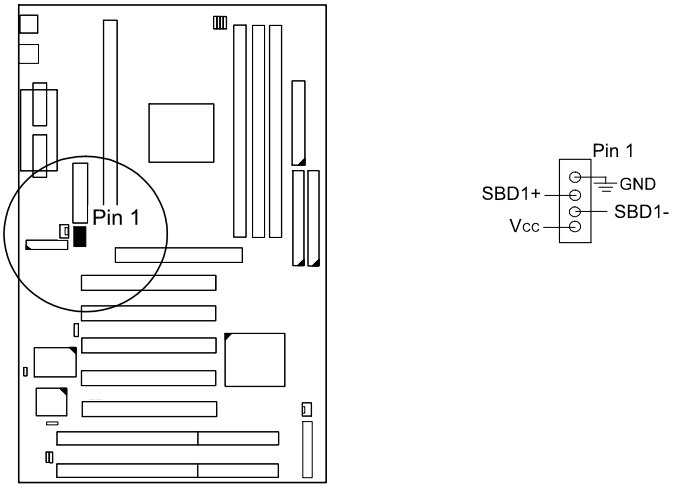
Universal Serial Bus Connector: USB0

This connector is used for linking with your USB peripheral device via the rear panel of the system.



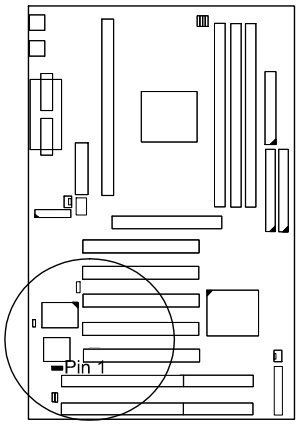
Universal Serial Bus Connector: EXP_USB (optional)

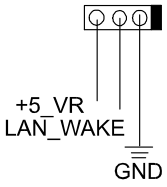
This optional 4-pin connector is used for linking with the USB connector via the front panel of some system case.



Remote Wake-Up Connector: RWU3

This 3-pin pinhead connector allows the remote LAN server to wake up your system via LDCM.

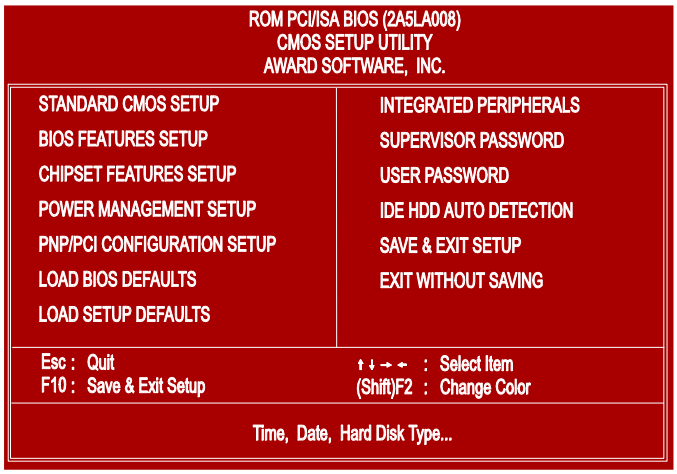




BIOS Setup

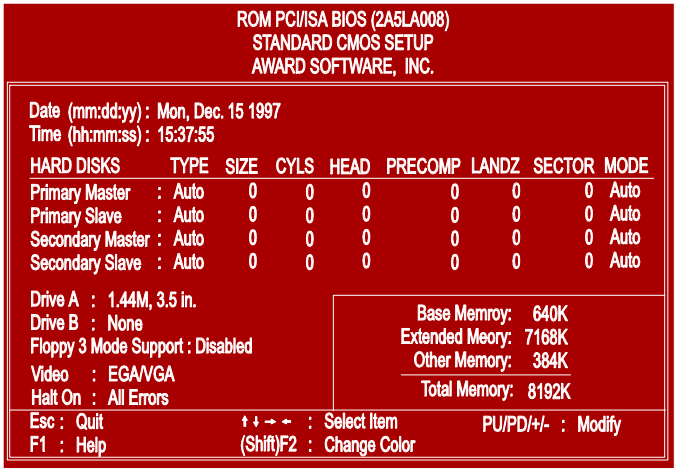
The mainboard comes with an Award BIOS chip that contains the ROM Setup information of your system. This chip serves as an interface between the processor and the rest of the mainboard's components. This chapter explains the information contained in the Setup program and tells you how to modify the settings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

CMOS Setup Utility



A Setup program, built into the system BIOS, is stored in the CMOS RAM. This Setup utility program allows changes 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 the PgUp or PgDn keys to select the value you want in each item.

Hard Disk Configurations

TYPE: Select from 1 to 45 to fill remaining fields with predefined values of disk drives. Select User to fill the remaining fields. Select Auto to detect the HDD type automatically.
SIZE: The hard disk size. The unit is Mega Bytes.
CYLS: 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 timing.
LANDZ: 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.
MODE: Select *Auto* to detect the mode type automatically. If your hard disk supports the LBA mode, select *LBA* or *Large*. However, if your hard disk cylinder is more than 1024 and does not support the LBA function, set at *Large*. Select *Normal* if your hard disk supporting cylinders is below 1024.

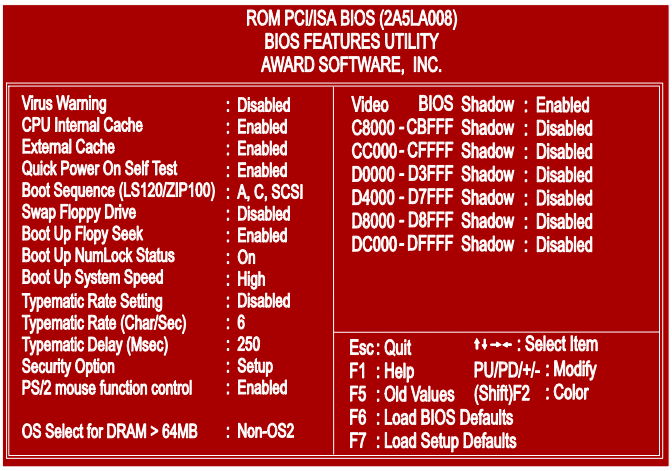
Floppy 3 Mode Support

This feature allows you to install a 3.5" (1-2MB) NEC 9801™ floppy drive. The options are: Both , Disabled (Default), Drive A, Drive B.

Software Turbo Speed

The BIOS supports Software Turbo Speed feature. Instead of pressing the Turbo Speed Button on the front panel, simply press the **Alt, Ctrl, and +** keys at the same time to enable the Turbo Speed feature; and press the **Alt, Ctrl, and -** keys at the same time to disable the feature.

BIOS Features Setup



Virus Warning

When enabled, assigns the BIOS to monitor the master boot sector and the DOS boot sector of the first hard disk drive. The options are: Enabled, Disabled (Default).

CPU Internal Cache

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

External Cache

When enabled, supports an optional cache SRAM.
The options are: Enabled (Default), Disabled.

Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test.
The options are: Enabled (Default), Disabled.

Boot Sequence (LS120/ZIP100)

Allows the system BIOS to first try to boot the operating system from the selected disk drive. The options are: A, C; C, A; C, CDROM, A; CDROM, C, A; C Only; LS/ZIP, C; A, C, SCSI (Default).

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 (Default).

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 (Default), 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 (Default), Off.

Boot Up System Speed

Allows you to adjust the system speed when the system boots up.
The options are: High (Default), Low.

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. When this item is enabled, you may change the typematic repeat rate.
The options are: Disabled (Default), Enabled.

Typematic Rate (Chars/Sec)

Sets the rate of a character repeat when the key is held down.
The options are: 6 (Default), 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

Sets the delay time before a character is repeated.
The options are: 250 (Default), 500, 750, 1000 millisecond.

Security Option

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

PS/2 Mouse Function Control

When enabled, allows you to release IRQ12 for using the PS/2 mouse.
The options are: Enabled (Default), Disabled.

OS Select For DRAM > 64MB

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

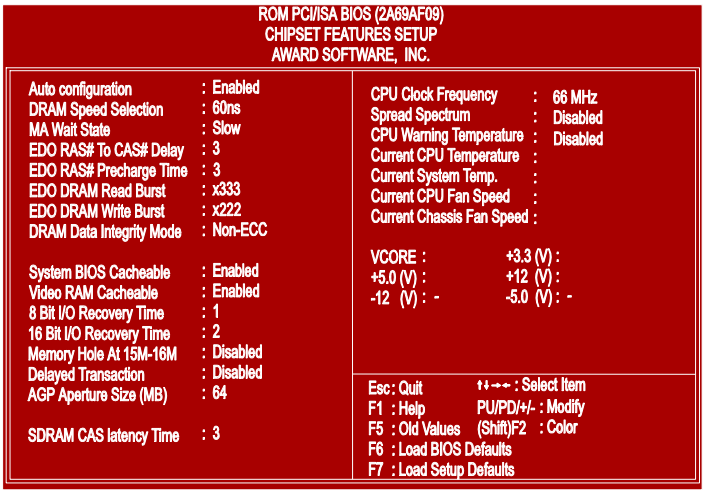
Video BIOS Shadow

Allows the BIOS to copy the video ROM code of the add-on video card to the system memory for faster access. The options are: Enabled (Default), Disabled.

C8000-CBFFF to DC000-DFFFF Shadow

Allows the BIOS to copy the BIOS ROM code of the add-on card to system memory for faster access. It may improve the performance of the add-on card.
Some add-on cards will not function properly if its BIOS ROM code is shadowed. To use these options correctly, you need to know the memory address range used by the BIOS ROM of each add-on card.
The options are: Enabled, Disabled (Default).

Chipset Features Setup



Auto Configuration

When set at Enabled, it allows you to configure the features that from the third one, Fast RAS To CAS Delay, to the eighth one, Refresh RAS# Assertion. The options are: Enabled (Default), Disabled.

DRAM Speed Selection

Allows you to select the speed of data access to EDO DRAM.
The options are: 60 ns (Default), 70 ns.

MA Wait State

Allows you to select the memory address wait state.
The settings are Slow or Fast. The default setting is Slow.

EDO RAS# to CAS# Delay

When Auto Configure DRAM Timing set at Disabled, allows you to define the delay time that from the DRAM RAS# active to CAS# active.
The settings are 2 Clocks or 3 Clocks. The default setting is 3 Clocks, depends on the CPU frequency and DRAM type.

EDO RAS# Precharge Timing

Allows you to select the DRAM RAS# Precharge Time (unit: clock).
The options are: 4, 3 (Default).

EDO DRAM Read Burst

When Auto Configure DRAM Timing set at Disabled, allows you to define the DRAM read burst timing.
The settings are x333 or x222. The default setting is x333, depends on the CPU frequency and DRAM type.

EDO DRAM Write Burst

When Auto Configure DRAM Timing set at Disabled, allows you to define the DRAM write burst timing.
The settings are x333 or x222. The default setting is x222, depends on the CPU frequency and DRAM type.

DRAM Data Integrity Mode

This feature provides software configurablity of selecting between ECC (ECC generation and checking/correction) mode, EC-only (error checking only) mode, or non-ECC mode of operation of the DRAM interface.
The settings are Non-ECC, EC-only or ECC.
The default setting is Non-ECC.

System BIOS Cacheable

When enabled, allows the ROM area F000H-FFFFH to be cacheable when cache controller is activated.
The options are: Disabled, Enabled (Default).

Video BIOS Cacheable

When enabled, allows the system to use the video BIOS codes from SRAMs, instead of the slower DRAMs or ROMs.
The options are: Enabled (Default), Disabled.

8 Bit I/O Recovery Time

Allows you to set the 8-bit ISA I/O recovery time.
The options are: 1 (Default), 2, 3, 4, 5, 6, 7, 8, NA. Unit: Bus clock.

16 Bit I/O Recovery Time

Allows you to set the 16-bit ISA I/O recovery time.
The options are: 1, 2 (Default), 3, 4, NA. Unit: Bus clock.

Memory Hole At 15M-16M

When enabled, the memory hole at the 15MB address will be relocated to the 15~16MB address range of the ISA cycle when the processor accesses the 15~16MB address area.

When disabled, the memory hole at the 15MB address will be treated as a DRAM cycle when the processor accesses the 15~16MB address area.

The options are: Enabled, Disabled (Default).

Delayed Transaction

Enable this feature to 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: Enabled, Disabled (Default).

AGP Aperture Size (MB)

It allows you to select the main memory frame size fo AGP use.

The options are 4, 8, 16, 32, 64 (Default), 128, 256MB.

SDRAM CAS lattency Time

If any DIMM is installed, this feature allows you to select the CAS Latency.

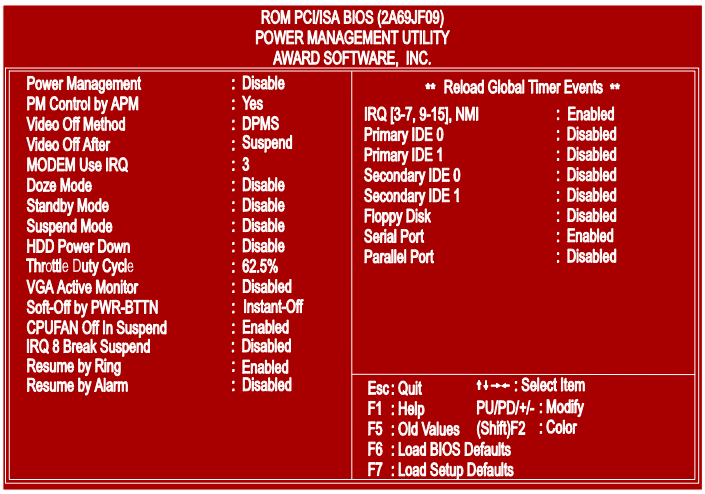
The settings are 2 Clocks or 3 Clocks. The default setting is 3 Clocks.

System Hardware Monitor -

(CPU Clock Frequency, Spread Spectrum, CPU Warning Temperature, Current CPU Temperature, Current System Temp., CPU Fan Speed, Current Chassis Fan Speed, VCORE)

This feature allows end users and technicans to monitor the data provided by the LDCM fucntion of this mainboard.

Power Management Setup



Power Management

This item allows you to adjust the power management features. Select *Disable* for disabling global power management features. Select *User Defined* 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: Disabled (Default), User Defined, MIN Saving, MAX Saving.

PM Control by APM

The option *No* allows the BIOS to ignore the APM (Advanced Power Management) specification. Selecting *Yes* will allow the BIOS wait for APM's prompt before it enters Doze mode, Standby mode, or Suspend mode. If the APM is installed, it will prompt the BIOS to set the system into power saving mode when all tasks are done.

The options are: No, Yes (Default).

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 (Default), Blank Screen.

Video Off After

This feature allows you to select under which mode to power off your monitor. The options are: Standby, Doze, N/A, Suspend (Default).

MODEM Use IRQ

This feature allows you to select the IRQ# of the system that is the same IRQ# as the modem use.

The options are: NA, 3 (Default), 4, 5, 7, 9, 10, 11.

Doze Mode

When disabled, the system will not enter Doze mode. The specified time option defines the idle time the system takes before it enters Doze mode.

The options are: Disabled (Default), 1, 2, 4, 8, 12, 20, 30, 40 Min, 1 Hr.

Standby Mode

When disabled, the system will not enter the Standby mode. The specified time option defines the idle time before enters Standby mode.

The options are: Disabled (Default), 1, 2, 4, 8, 12, 20, 30, 40 Min, 1 Hr.

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: Disabled (Default), 1, 2, 4, 8, 12, 20, 30, 40 Min, 1 Hr.

HDD Power Down

Selecting *Disable* will turn off the hard disk drive (HDD) motor. Selecting *1 Min..15 Min* allows you define the HDD idle time before the HDD enters the Power Saving Mode. The option *When Suspend* lets the BIOS turn the HDD motor off when system is in Suspend mode.

The options *1 Min..15 Min* and *When Suspend* 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 (Default), 1 Min..15 Min, When Suspend.

Throttle Duty Cycle

This option specifies the speed at which the system clock runs in power saving modes. The settings are expressed as a ratio between the normal clock speed and the power down clock speed.
The settings are 12.5 %, 25 %, 37.5 %, 50 %, 62.5 % (Default), 75%, 87.5%.

VGA Active Monitor

Enable this feature to check if your VGA monitor can enter power-saving modes. The options are: Disabled (Default), Enabled.

Soft-Off by PWR-BTTN

This feature is designed for the case when you use an ATX power supply. 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. or Instant-Off (Default).

CPUFAN Off In Suspend

Enabling this feature will allow the CPU fan stop running when the system enters Suspend mode.
The options are Disabled or Enabled (Default).

IRQ8 Break Suspend

Enable this feature will keep the system not in the Suspend mode when IRQ8 is active. The settings are Disabled (Default) or Enabled.

Resume by Ring

If an ATX power supply is installed and this feature is enabled, the system will be turned on from the power-off by a remote phone call via the modem.
The options are Disabled or Enabled (Default).

Resume by Alarm

When set at Enabled, it allows you to set the time when the system to be turned on from the system power-off status.
The settings are Disabled or Enabled. The default setting is Disabled.

Date (of Month) Alarm

If Resume by Ring is set at Enabled , 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 (Default), 1..31.

Time (hh:mm:ss) Alarm

If Resume by Ring is set at 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.

IRQ[3-7,9-15], NMI

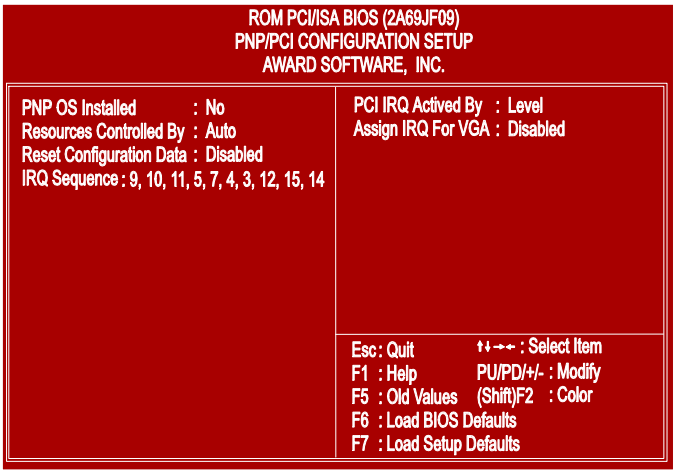
Enable this feature will keep the system not in the Suspend mode when IRQ3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15 is active.

The settings are Disabled or Enabled. The default setting is Enabled.

Primary IDE 0, Primary IDE 1, Secondary IDE 0, Secondary IDE 1, Floppy Disk, Serial Port, Parallel Port

Enable this feature will keep the system not in the Suspend mode when the selected device is active. The settings are Disabled or Enabled. The default setting is Disabled, except Serial Port.

PNP/PCI Configuration Setup



PNP OS Installed

If your operating system is a Plug-and-Play one, such as Windows NT, Windows 95, select Yes. The options are: No (Default), Yes.

Resources Controlled By

If set at Auto, the BIOS arranges all system resources. If there exists conflict, select Manual. The options are: Auto (default), Manual. The manual options of IRQ- / DMA- assigned to are: Legacy ISA, PCI/ISA PnP.

Reset Configuration Data

When enabled, allows the system to clear the last BIOS configuration data and reset with the default data. The options are: Enabled, Disabled (default).

IRQ Sequence

This feature allows you to select the PCI IRQ sequence. The options are: 15, 11, 10, 9, 12, 14, 5, 7, 3, 4; 9, 10, 11, 5, 7, 4, 3, 12, 15, 14 (Default).

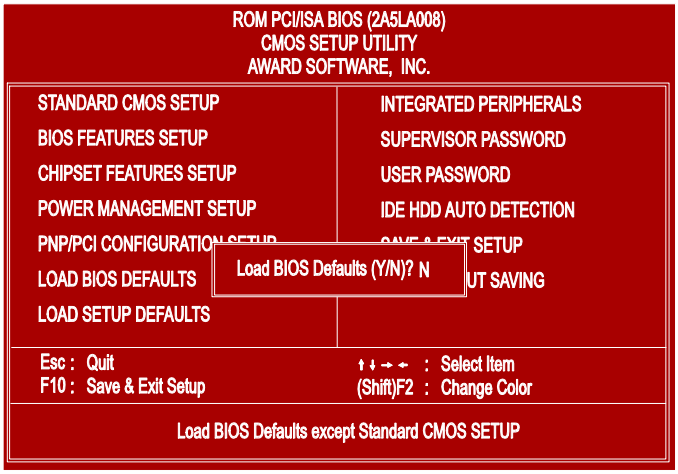
PCI IRQ Actived By

We suggest that you set this to its default configuration unless you are a qualified technician. The options are: Level (Default), Edge.

Assign IRQ For VGA

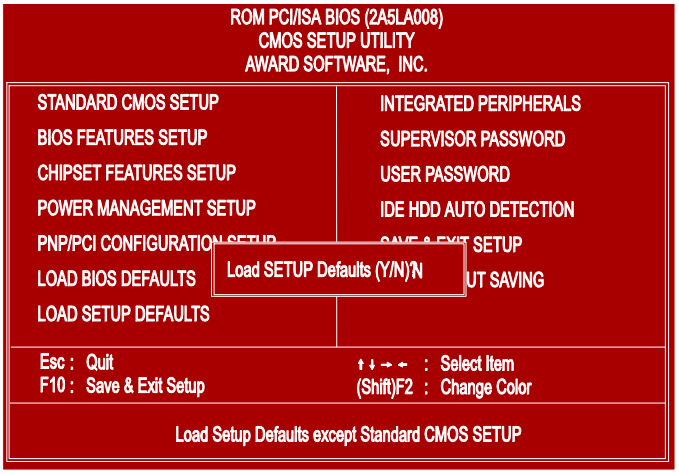
If your PCI VGA card does not need an IRQ, select Disabled to release an IRQ for system use. The options are: Enabled, Disabled (Default).

Load BIOS Defaults



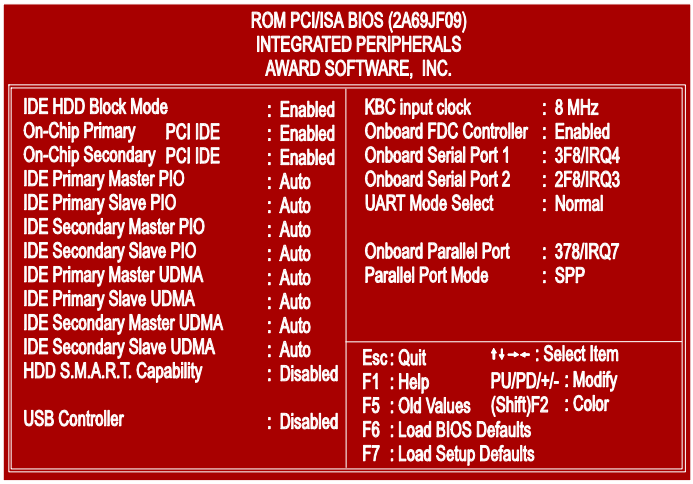
BIOS defaults contain the most appropriate values of the system parameters that allow minimum system performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burns into the ROM.

Load Setup Defaults



Selecting *this field* loads the factory defaults for BIOS and Chipset Features which the system automatically detects.

Integrated Peripherals



IDE HDD Block Mode

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

On-Chip Primary PCI IDE

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

On-Chip Secondary PCI IDE

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

IDE Primary Master PIO

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

IDE Secondary Master PIO

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

IDE Primary Master UDMA

Allows you to select the first PCI IDE channel of the first master 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 (Default), 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 (Default), Disabled.

IDE Secondary Master UDMA

Allows you to select the second PCI IDE channel of the secondary master 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 (Default), Disabled.

IDE Secondary Slave UDMA

Allows you to select the second PCI IDE channel of the secondary 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 (Default), Disabled.

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

“S.M.A.R.T” is the abbrevation of “Self-Mointoring, Analysis and Reproting Technology”. To enable it will assist you in preventing some (but not all) system down time due to hard disk drive failure.
The options are: Enabled, Disabled (Default).

USB Controller

If you do not use the onboard USB feature, it allows you to disable it.
The options are: Enabled, Disabled (Default).

BIOS Support USB Keyboard

If Enabled is selected in the above feature, this feature will appear.
If your USB devices cannot be detect automatically by the system BIOS or some driver diskettes came with your USB devices, please set at DOS for allowing you to install the driver. The options are: Setup (Default), DOS.

KBC input clock

This feature allows you to select different KBC input clocks which your keyboard actually supported. Please read your keyboard manual also for more information. The options are: 6, 8 (Default), 12, 16 MHz.

Onboard FDC Controller

When enabled, the floppy diskette drive (FDD) controller is activated.
The options are: Enabled (Default), 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 (Default), 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 (Default), 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 Normal, if you use COM2 as the serial port as the serial port, instead as an IR port. The options are: Normal (Default), IrDA, ASKIR.

RxD , TxD Active

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, Hi (Default); Hi, Lo; Lo, Hi; Lo, Lo.

IR Transmission Delay

When Enabled, the transmission delays 4 characters-time (40 bit-time) if SIR is changed from RX mode to TX mode. When Disabled, no transmission delay if SIR is changed from RX mode to TX mode.
The options are: Enabled (Default), Disabled.

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 (Default), 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

Allows you to connect with an advanced printer.
The options are: SPP (Default), EPP, ECP, ECP+EPP.

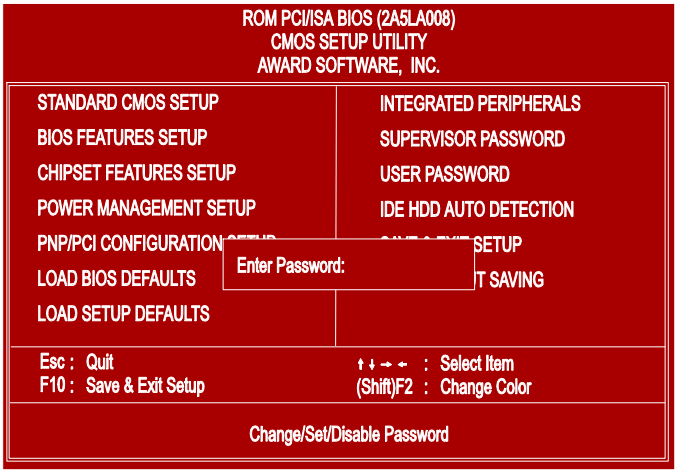
EPP Mode Select

If your select EPP or ECP+EPP in Parallel Port Mode, this feature allows you to select the EPP type version.
The options are: EPP1.9, EPP1.7 (Default).

ECP Mode Use DMA

If your select ECP or ECP+EPP in Parallel Port Mode, this feature allows you to select Direct Memory Access (DMA) channel.
The options are: 3 (Default), 1.

Supervisor/User Password



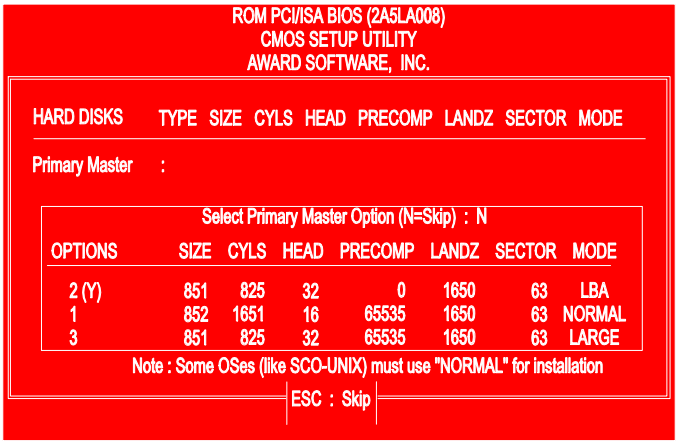
To enable the Supervisor/User passwords, select the item from the Standard CMOS Setup. You will be prompted to create your own password. Type your password up to eight characters and press Enter. You will be asked to confirm the password. Type the password again and press Enter. You may also press Esc to abort the selection and not enter a password. To disable password, press Enter when you are prompted to enter password. A message appears, confirming the password is disabled.

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

Clear Password

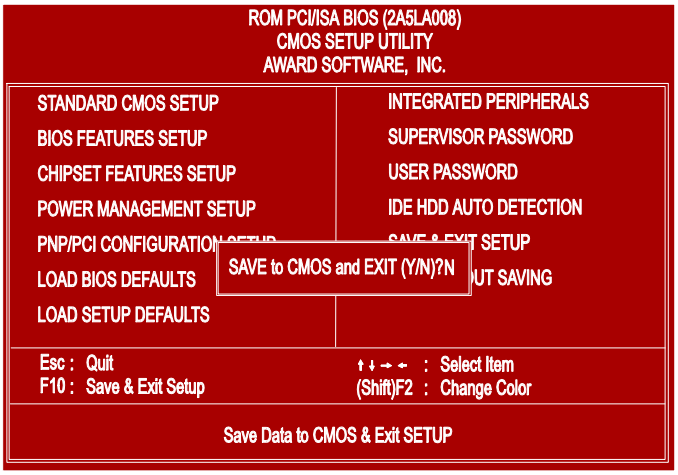
If you forget your password, turn off the system power first and remove the system unit cover. Locate Jumper CPW and cap it. Remove Jumper CPW and reset the system. At this point, you will not be asked for the password to enter Setup.

IDE HDD Auto Detection



The IDE Hard Disk Drive Auto Detection feature automatically configures your new hard disk. Use it for a quick configuration of new hard drives. This feature allows you to set the parameters of up to four IDE HDDs. The option with **(Y)** are recommended by the system BIOS. You may also keys in your own parameters instead of setting by the system BIOS. After all settings, press Esc key to return the main menu. For confirmation, enter the Standard CMOS Setup feature.

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)?

NOTE : Default values of the various Setup items on this chapter may not necessarily be the same ones.

Software Utilities

PIIX Bus Master IDE Driver

The mainboard package provides Intel PIIX Bus Master IDE Driver in the software utility CD-ROM for three operating systems: Windows™ 95, Windows™ NT, and OS2™. Please read the relating README files first, then execute the corresponding executable SETUP file for improving the system performance.

Intel INF Update Software

The mainboard package provides USB Support Software in the software utility CD-ROM. Before you run the SETUP file, please read the relating README file first. This software is necessary for the operating system to recognize Intel 440LX AGPset implemented on this mainboard.

BIOS Flash Software

The mainboard package provides BIOS flash software in the software utility CD-ROM. This software feature offers a software tool for upgrading BIOS use when it is necessary. Please print the Readme.doc file under Microsoft Word to read before you run the corresponding executable SETUP file for improving the system performance. For the most up-to-date information about your mainboard and the latest BIOS updates, please visit FIC Online at www.fic.com.tw.

Intel LDCM® (LANDesk Client Manager) Software (optional)

The mainboard package provides optional Intel LDCM® (LANDesk Client Manager) software in the software utility CD-ROM. Before you run the SETUP file, please read the relating LDCMutil file first.

Desktop Management Interface (DMI) Software

The American Megatrends DMI Wizard is a DOS utility that works with AMIBIOS, and all DMI-enabled versions of system BIOS. It can read the system BIOS file stored on the ROM file in the computer or it can read a user-supplied .ROM file; and can update the system BIOS ROM file (if the system BIOS is installed on a Flash ROM in the computer) or it can update a user-supplied .ROM file.

The mainboard package provides Desktop Management Interface (DMI) software in the software utility CD-ROM. Before you run the SETUP.EXE (for Award BIOS) or INSTALL.EXE (for AMI BIOS) file, please read the relating DMICFG.DOC (for Award BIOS) file or DMIAMI.DOC (for AMI BIOS) first.

Anti-Virus Tool

The mainboard package provides virus scan tool (optional) software in the software utility CD-ROM. This tool allows you to perform virus scan and cure when it is necessary. Please read the relating README file first before installing the corresponding executable file.