

# Handling Precautions

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## CAUTION

*High potential static charge may cause damage to the integrated circuits on the board. Before handling any mainboard outside of its protective packaging, ensure that there is no static electric charge in your body.*

*Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.*

There are some basic precautions when handling the motherboard or other computer components:

- ◆ Keep the board in its anti-static bag until you are ready to install it.
- ◆ Protect your board from static electricity by well grounding of your body and the equipment during the installation, such as wearing a grounded wrist strap.
- ◆ Always handle the board by its edges.
- ◆ Do not touch the components on the boards, add-on cards/modules and the “gold finger” connectors plugged into the expansion slot. It is better to handle system components by their mounting bracket.
- ◆ Ensure the system power is completely turn-off before doing any installation work.

# Notice to Customers

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# Table of Contents

OVERVIEW.....	4
AUTO JUMPER.....	4
FEATURES SUMMARY.....	5
MAINBOARD INSTALLATION.....	6
CPU CARD INSTALLATION.....	7
INSTALLING SYSTEM MEMORY (RAM).....	8
EXPANSION CARDS INSTALLATION.....	9
CONNECTING EXTERNAL CONNECTOR.....	9
“AUTO JUMPER” GUIDE.....	16
QUICK INSTALLATION GUIDE.....	17
AWARD BIOS AND CMOS SETUP UTILITY.....	21
AWARD CMOS SETUP.....	22
STANDARD CMOS SETUP.....	24
BIOS FEATURES SETUP.....	26
CHIPSET FEATURES SETUP.....	29
POWER MANAGEMENT SETUP.....	31
PNP/PCI CONFIGURATION.....	35
INTEGRATED PERIPHERALS.....	39
QUICK REFERENCE OF MOTHERBOARD.....	42

*F*” during power on clears the CMOS RAM data, while pressing “*J*” during power on re-detects CPU in “Auto Jumper” mode.

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## FEATURES SUMMARY

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This motherboard comes with following features:

- Supports Intel PENTIUM II® or Celeron® Processor with automatic voltage adjustment.
- Optimized for the highest performance Intel PENTIUM II® processors with 100 MHz front-side bus
- AWARD PnP BIOS with support for power management, enhanced IDE/SCSI features and desktop management interface (DMI) which allows higher level of hardware compatibility.
- Flash BIOS for a more easy upgrade path.
- Three 168-pin DIMM sockets support up to 768MB SDRAM
- One Accelerated graphic port (AGP) for AGP card.
- Two 16-bit ISA expansion slots and four 32-bit PCI expansion slots.
- Integrated two PCI bus mastering Ultra IDE controller with two on-board connectors supporting up to four IDE devices such as Hard Disk, CD-ROM or Tape Backup drives.
- Integrated super I/O chip featuring one floppy disk controller, two 16550 UART compatible serial ports, one high speed EPP/ECP parallel port, one Infra Red port.
- Supports “Auto Jumper ” for detecting CPU configurations.
- WAKEUP-LINK interface header supporting Intel Wake-On-LAN
- Support either an AT or an ATX power supply
- Support “ Modem Ring Wakeup “
- With a On-Board Genesys GL520SM Hardware Monitor

# MAINBOARD INSTALLATION

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## Installation Precautions

During installation and initial test, use caution to avoid personal injury and damage to wiring due to sharp pins on connectors and printed circuit assemblies, rough chassis edges and corners, and hot components. Adhere to warnings and limitations regarding accessibility into areas designated only for authorized technical personnel.

## A Quick Introduction

To install and operate your new motherboard, you must follow the steps below:

1. Install the CPU with cooling fan
2. Install RAM modules
3. Connect cables, wires and power connector
4. Install expansion cards

## Auto Jumper

After hardware installation, the user should select the appropriate CPU speed in the “CPU CONFIGURATION SETUP” menu within the CMOS setup. Notice that there exists no jumper on this mainboard. The user may clear the CMOS content by pressing “**F**” key while switching on the system.

If a wrong CPU speed is selected, the system may behave unstable, causing the user not being able to get into CMOS setup. Pressing the “**J**” key while switching on the system can make re-selection in this case.

## CPU CARD INSTALLATION

The mainboard provides a 242-pin CPU card slot. The CPU card should have a fan attached to it to prevent overheating. If this is not the case then purchase a fan before you turn-on the system. There is one CPU fan power connector named J6 on-board.

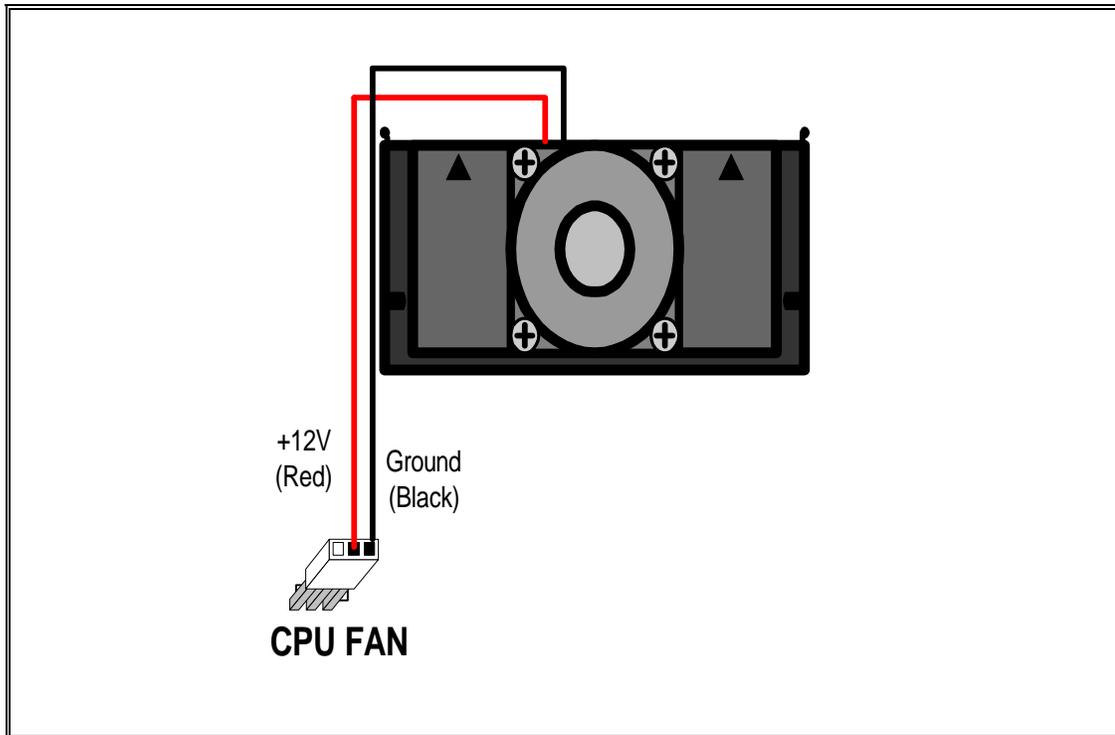


Fig. 2 CPU Cooling Fan Installation Diagram

### ! CAUTION

*Without an effective cooling fan, the CPU can overheat and cause damage to both the CPU and the motherboard.*

### CPU Cooling fan Connector

J6 provide the +12 Volts d.c. for your CPU cooling fan

J6	Signal Name
1	NC
2	+12V
3	Ground

# INSTALLING SYSTEM MEMORY (RAM)

The motherboard supports three 168-pin DIMM. The three 168-pin DIMM sockets are divided into three banks and each bank can accept SDRAM module.

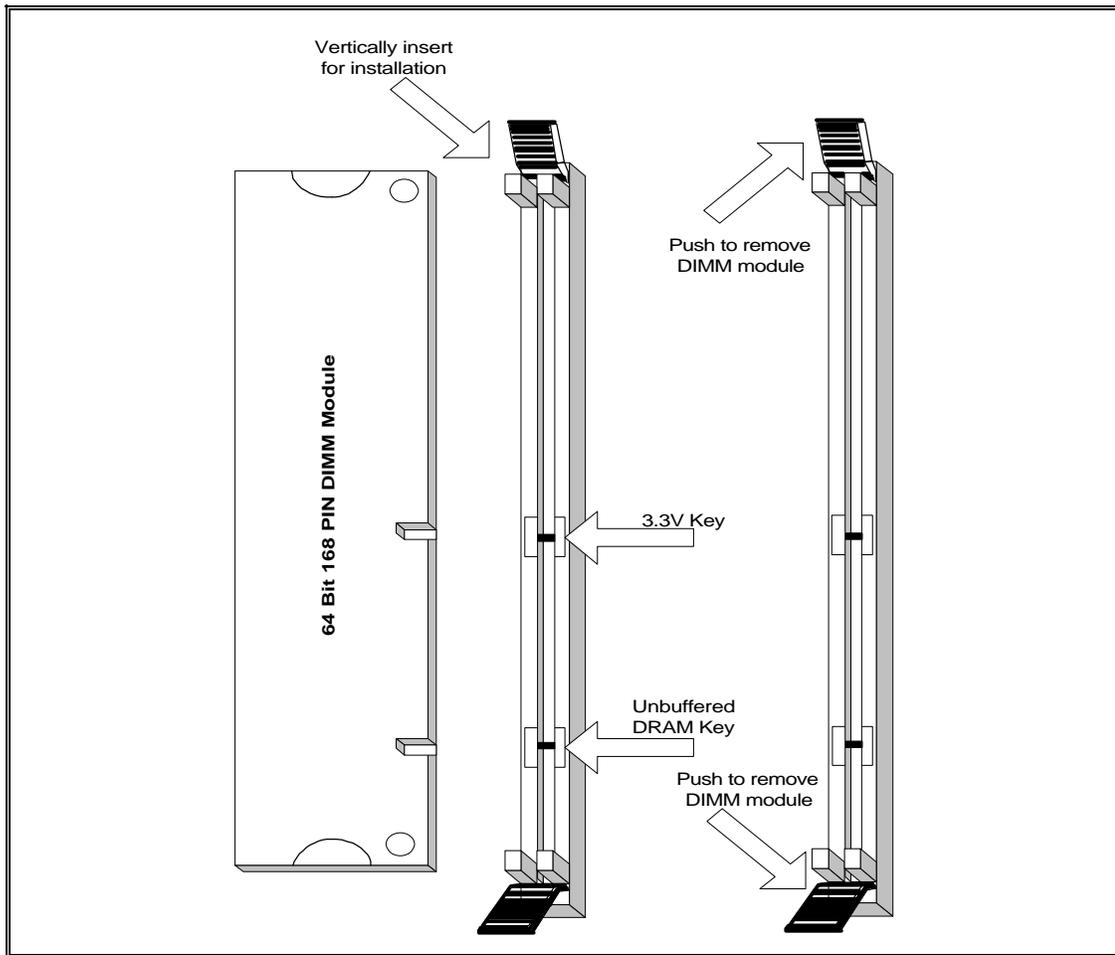


Fig. 3 168-Pin DIMM Module Installation Diagram

## Expansion Cards Installation

At the most of beginning, you must read your expansion card documentation on any hardware and software settings that may be required. The installation procedures are summarized as below:

1. Read the User's Guide/Manual of your expansion card.
2. If necessary, set any jumpers on your expansion card.
3. Power-off the system and then disconnected the power cord.
4. Remove your computer's cover.
5. Remove the metal bracket from one of the empty slot, ISA or PCI, corresponding to the type of expansion card.
6. Carefully align the card's connectors and press firmly, make sure at the connection is good.
7. Secure the card on the slot.
8. Replace the computer's cover.
9. Setup the BIOS configuration if necessary.
10. Install the required software drivers for your expansion card.



### CAUTION

*Before adding or removing any expansion card or other system components, make sure that you unplug your system power supply. Failure to do so may cause damage of your motherboard and expansion cards.*

## Connecting External Connector

### AT Power Connector

A 12-Pin power supplies provide two plugs incorporates standard  $\pm 5V$  and  $\pm 12V$ , each containing six wires, two of which are black. Orient the connectors so that the black wires are together.

Pin	Signal Name	Pin	Signal Name
1	Power Good Signal	7	Ground
2	+5V	8	Ground
3	+12V	9	-5V
4	-12V	10	+5V
5	Ground	11	+5V
6	Ground	12	+5V

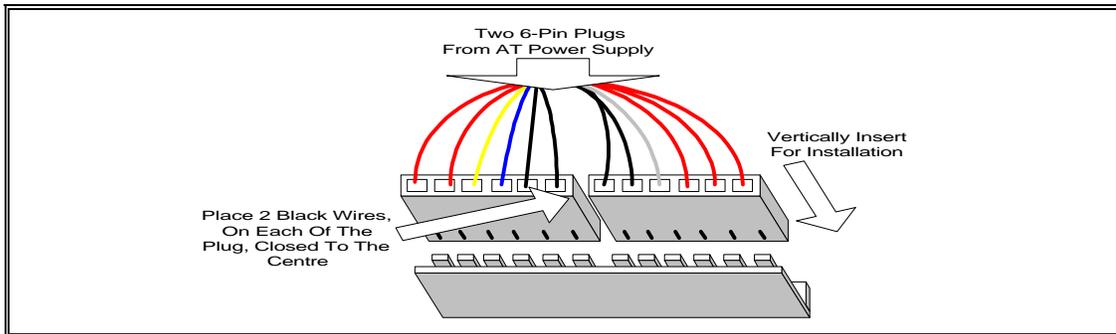


Fig. 4 AT Power Connector Installation

### ATX Power Connector

A single 20-pin connector incorporates standard  $\pm 5V$  and  $\pm 12V$ , optional 3.3V and soft-on/off signals. With a power supply, that supports remote power on/off, the mainboard can turn off the system power through software control, such as the shutdown in Windows 95 Start menu. The system BIOS will turn the system power off when it receives the proper APM command from the OS. APM must be enabled in the system BIOS and OS in order for the soft-off feature to work correctly.

Pin	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PW_ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWRGOOD	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

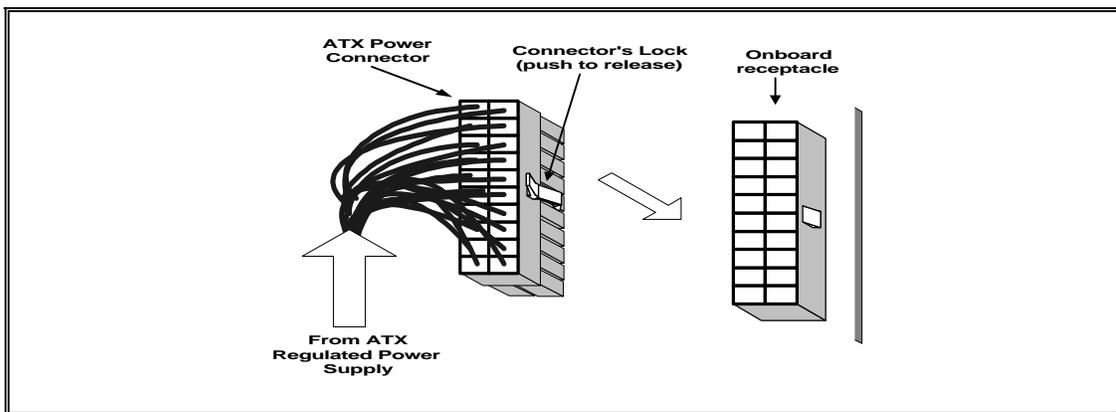


Fig.5 ATX Power Connector Installation

**Floppy Drive Connector**

This 34-pin connector supports the provided floppy drive ribbon cable. After connecting the single end to the on-board “FLOPPY” connector, connect the remaining plugs on the other end to the floppy drives correspondingly.

**IDE Connector**

The two on-board IDE connectors supports the provided 40-pin IDE hard disk ribbon cable. After connecting the single end to the board, connect the two remaining plugs at the other end of your hard disk(s). If you install two hard disks, you must configure the two drives by setting its jumpers according to the documentation of your hard disk. Also, you may connect the two hard disks to be both Masters using one ribbon cable on the primary IDE connector and one on the secondary IDE connector.

**! NOTICE**

*For the flat ribbon cable connection, please make sure that the pin 1 of the ribbon cable (the red wire side of the cable) is correctly connected to the on-board connector’s pin 1 as shown on the “Map of the Motherboard”.*

**Front Panel Function Connector**

All the front panel indicator, speaker, and switch functions are grouped into a on-board 26-pin connector. Front panel features supported include:

- System Reset, RESET
- Power LED, form KEYLOCK
- Hard Drive activity LED, IDE LED
- System Speaker, SPEAKER
- Soft-touch button power on/off, SW ON
- Turbo LED, TBLED
- External power saving control, EXTSMI (optional)

The connector pin out are described as the figure below:

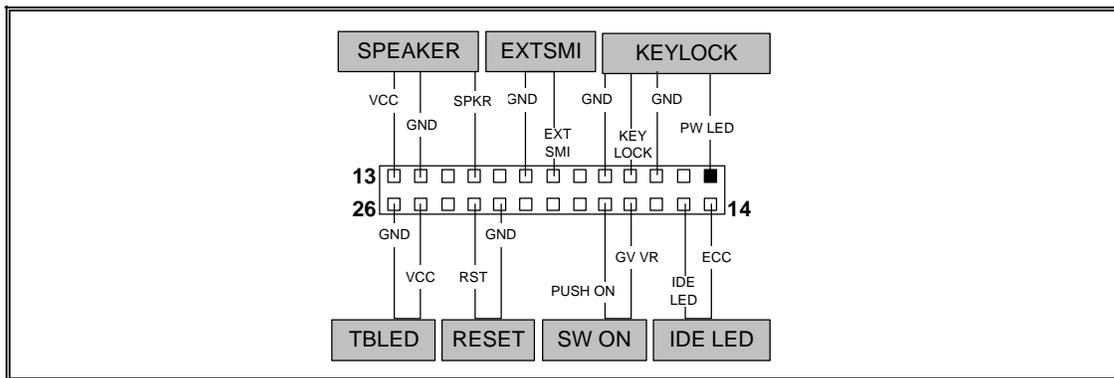


Fig.6 The Onboard Function Connector Pin Out

**About Soft Touch Power Button**

For the ATX system case, the new soft touch power button replaces the main power switch to switch ON / OFF your system. You can switch the system ON by pressing the button. If you want to switch OFF your system, press the button and hold it for 4 seconds. You can also change the functions of the power button in the CMOS setup at power management section.

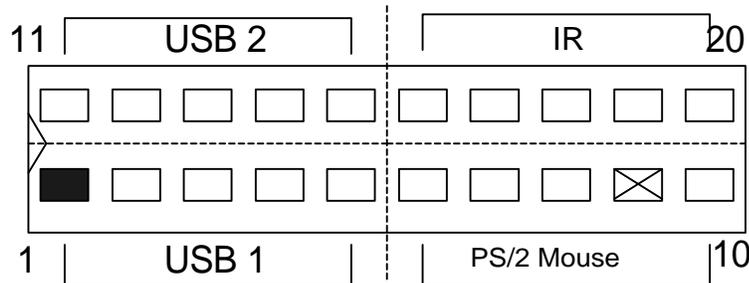
**Integrated Function Connector**

The total of two USB device connectors, a PS/2 mouse, and an Infrared devices are all allocated at this connector (JP12).

- Pin1 to Pin5 for USB1 connector
- Pin11 to Pin15 for USB2 connector
- Pin6 to Pin10 for PS/2 connector
- Pin16 to Pin20 InfraRed connector

The connector pin out signal definitions are described as the table below:

Pin	Signal Name	Pin	Signal Name
1 (USB1)	USB +5 Volt	11 (USB2)	USB +5 Volt
2	USB Port 1-	12	USB Port 2-
3	USB Port 1+	13	USB Port 2+
4	Ground	14	Ground
5	No Connect	15	No Connect
6 (PS/2 Mouse)	PS/2 Data	16 (IR)	+5V
7	PS/2 Clock	17	No Connect
8	Ground	18	Infrared Receive
9	No Connect	19	Ground
10	+5V	20	Infrared Transmit



**REPLACING BATTERY**

A 3V, CR-2030, Lithium battery is installed on the on-board battery socket. This battery is used to supply the CMOS RAM backup power during system powered-off. Danger of explosion if battery is incorrectly replaced. Therefore, if you have any difficulties, please consult to the technical personnel.

### **About Soft Touch Power Button**

For the ATX system case, the new soft touch power button replaces the main power switch to switch ON / OFF your system. You can switch the system ON by pressing the button. If you want to switch OFF your system, press the button and hold it for 4 seconds. You can also change the functions of the power button in the CMOS setup at power management section.

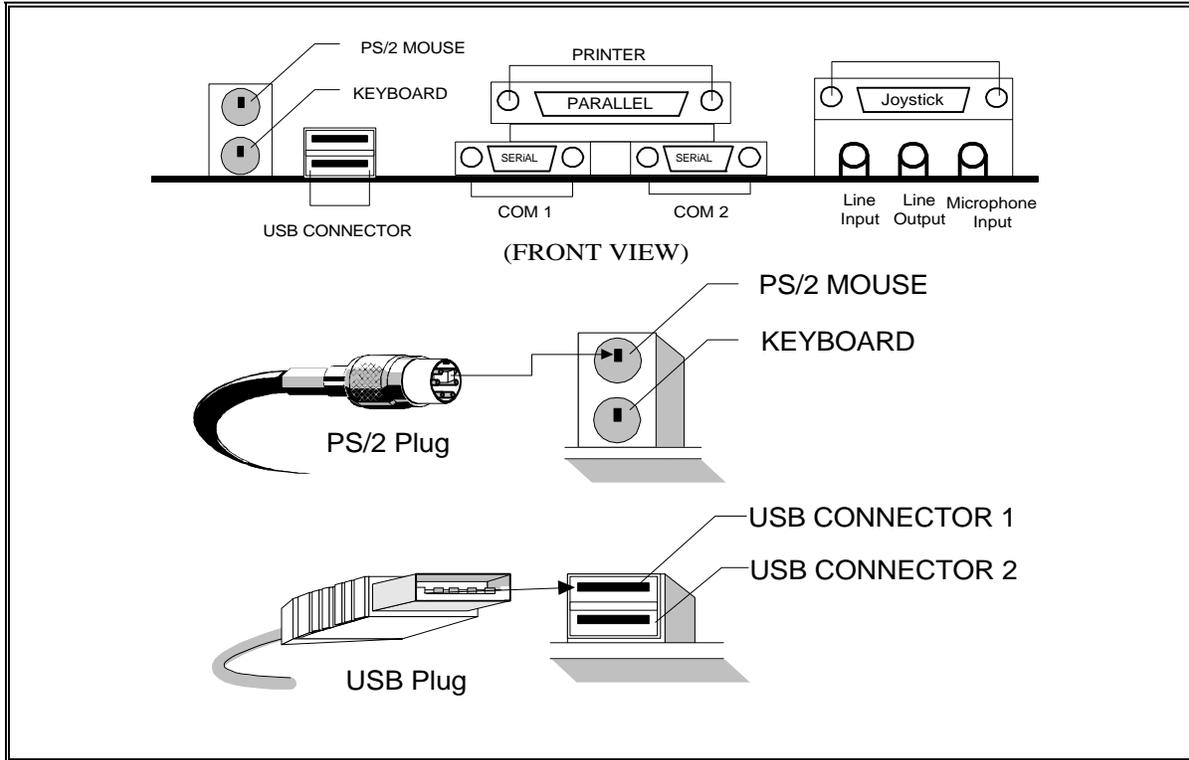
### **Infra-Red connector**

Serial port 2 can be configured to support an IrDA module via a 5-pin header connector. Once configured for IrDA, the user can transfer files to or from portable devices such as laptops, PDA's and printers using application software such as LapLink. The IrDA specification provides for data transfers at 115 Kbps from a distance of 1 meter. Consumer IR is also supported by the same connector.

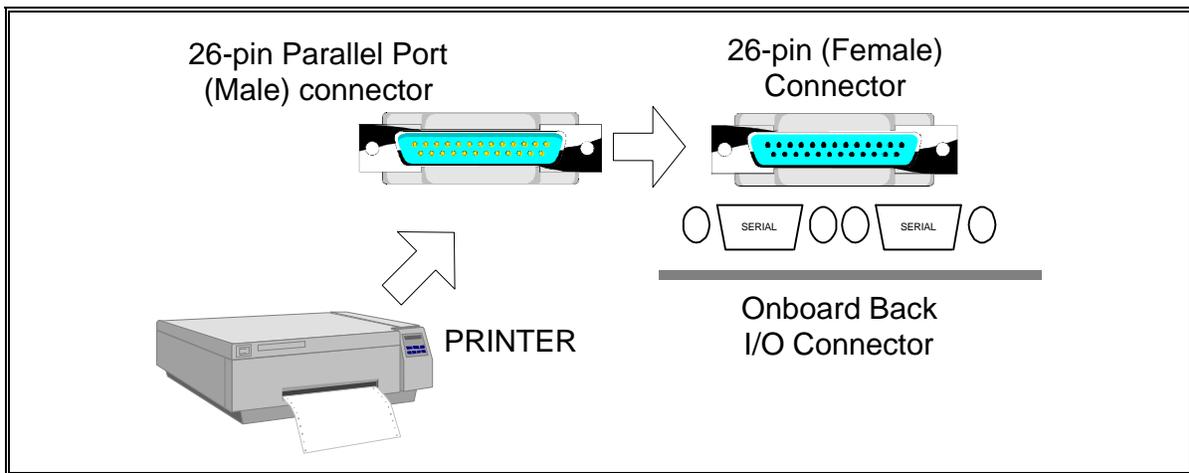
<b>JP15 Pin</b>	<b>Signal Name</b>
1	VCC, power source
2	N/C
3	IRRX, infra-red receive
4	N/C
5	IRTX, infra-red transmit

**I/O Back Panel Connectors**

The I/O back panel allows external access to PS/2 keyboard and mouse connectors as well as two serial ports, and one parallel port, which are integrated on the motherboard. The following figure showed the location of the I/O connectors.



**Fig.7 I/O Back Panel Connector Installation Diagram for PS/2 and USB**



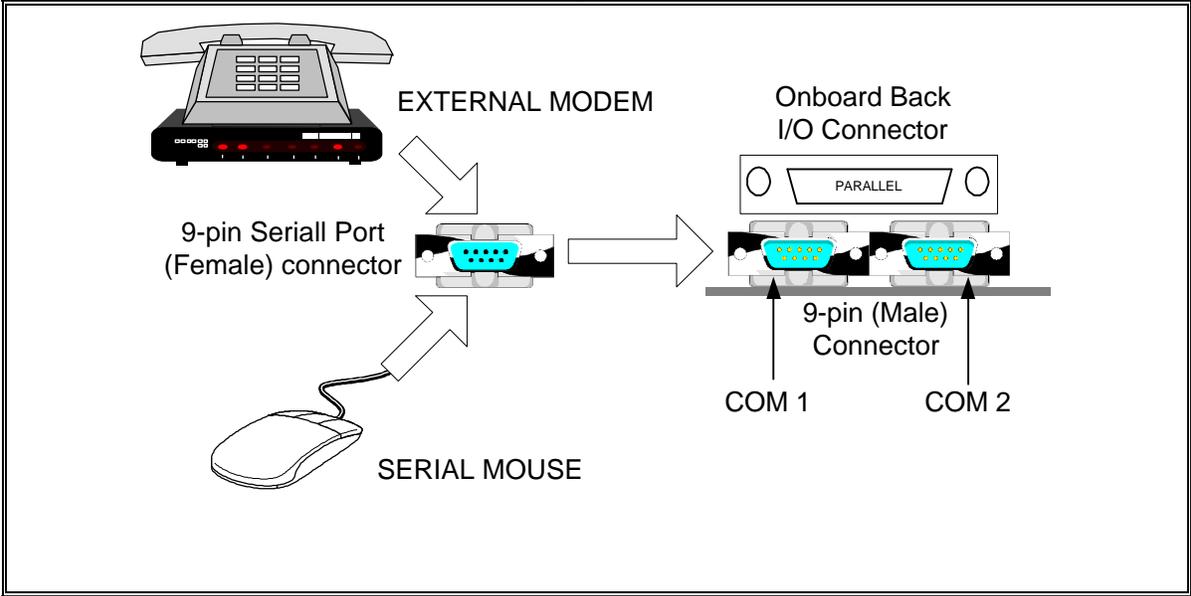
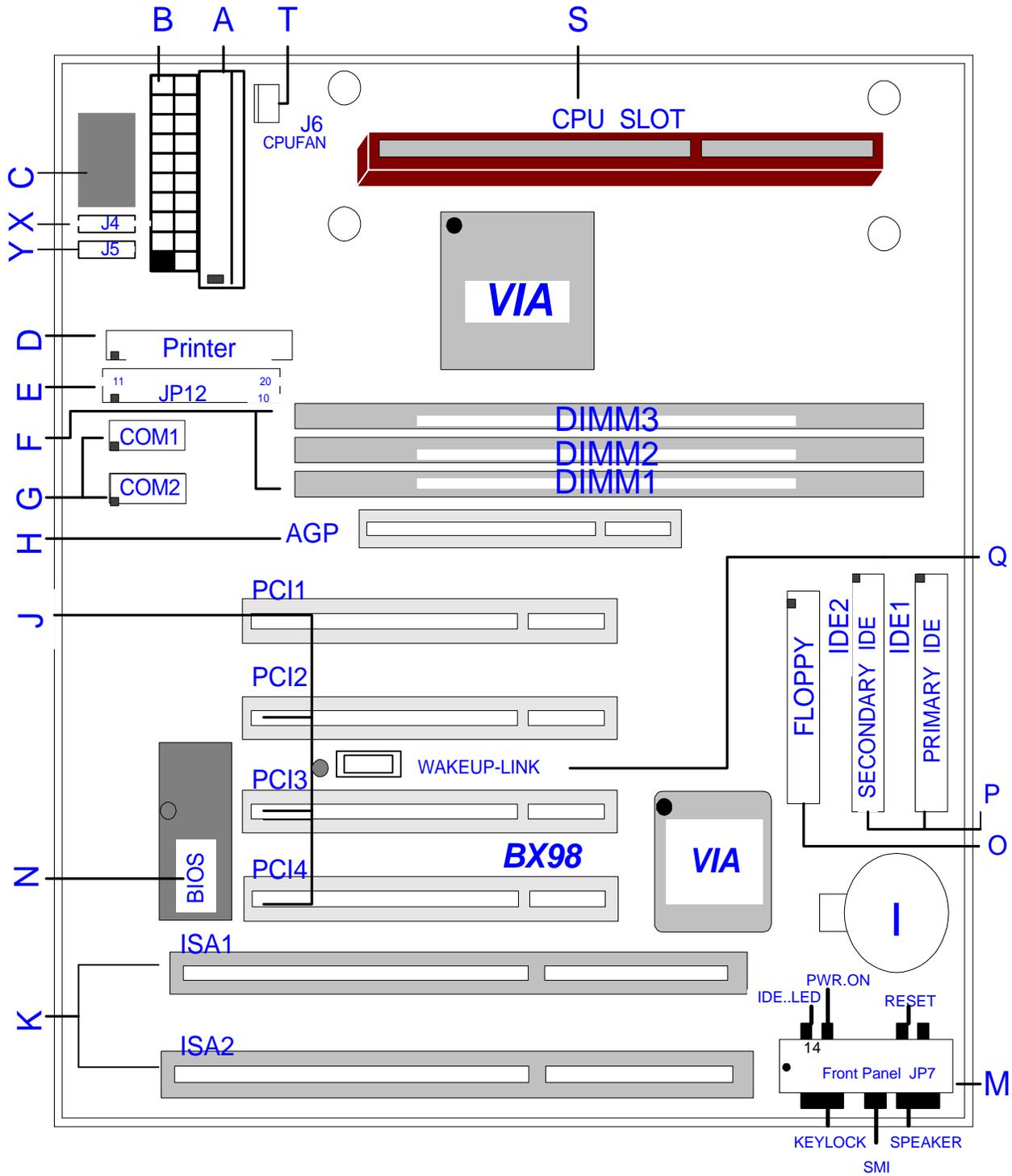


FIG. 8 I/O BACK PANEL CONNECTOR INSTALLATION DIAGRAM FOR SERIAL

- You can just select the Pentium II or Celeron CPU speed easily through **CMOS Setup Menu**.
- To clear the **CMOS** contents, the user only needs to press the key “**F**” during power on.
- If a wrong CPU speed is selected, the system may behave unstable, causing the user not being able to get into CMOS setup. Pressing the “**J**” key while switching on the system can enable the user to make re-selection again.

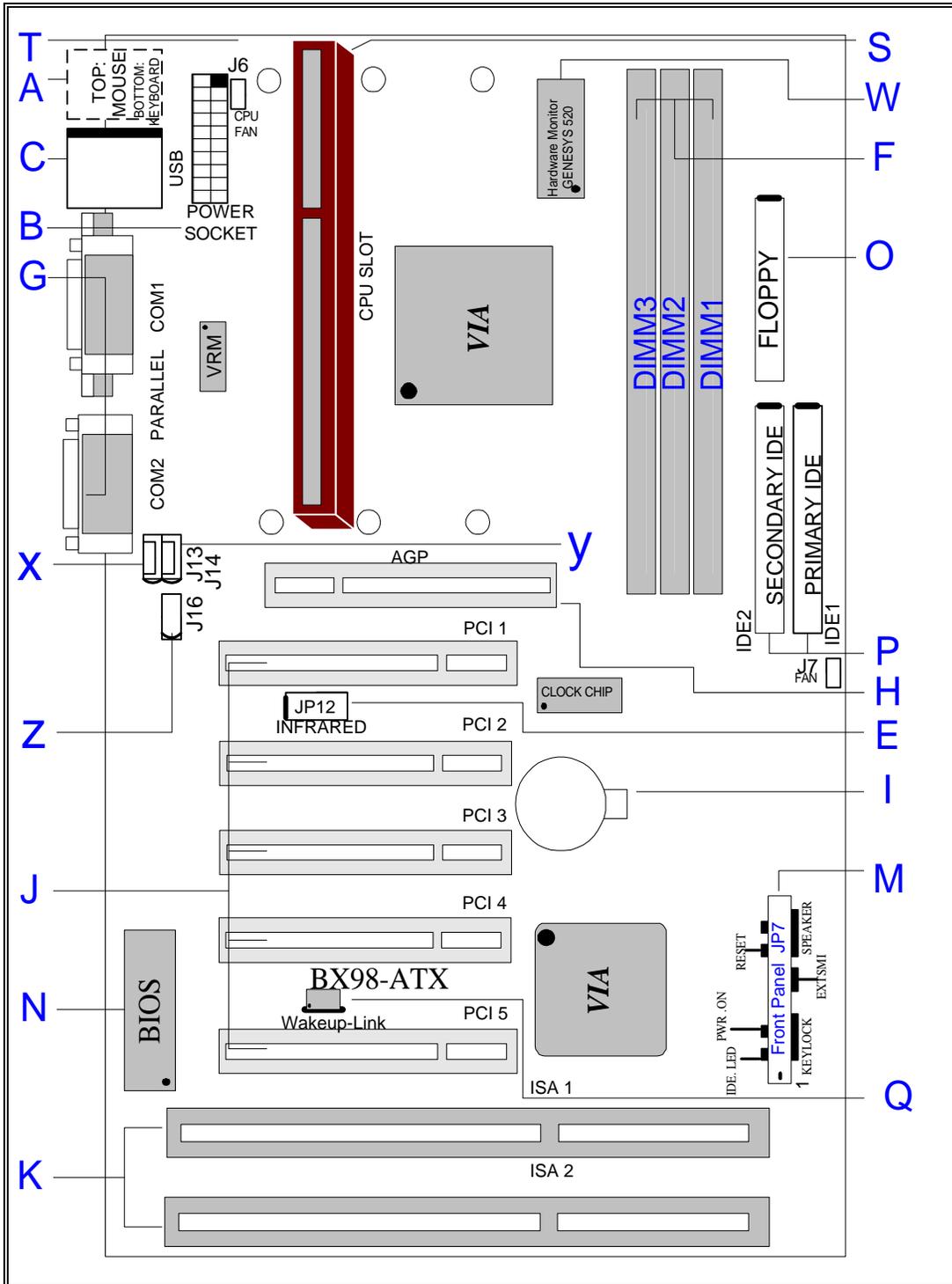
# Quick Installation Guide



# BX98

A. Power Supply Connector	K. ISA Add-in Board Connectors
B. ATX Power Supply Connector	
C. AT Keyboard Connector	M. Front Panel Function Connectors
D. Parallel (Printer) Port Header	N. Flash BIOS
E. Integrated Functions Connector	O. Floppy Drive Connector
F. 3.3v DIMM Sockets	P. IDE device connector
G. Serial (COM1 and 2) Port Headers	Q. WAKEUP-LINK Header
H. Accelerated Graphic Port (AGP)	
I. 3V Lithium Battery	S. SLOT 1 for PENTIUM II CPU Card
J. PCI Add-in Board Connectors	T. CPU FAN Connector
X. J4 is CD Audio Input ( 1,3:Ground,2:Right,4:Left ) Y. J5 is CD Audio input ( 1:Right,2,3:Ground,4:Left )	

# Quick Installation Guide



# BX98-ATX

## *System Health Monitor Onboard*

A. PS/2 Keyboard / Mouse Connectors	K. ISA Add-in Board Connectors
B. ATX Power Supply Connector	
C. Universal Serial Bus ( USB ) Connectors	M. Front Panel Function Connectors
	N. Flash BIOS
E. Infra-Red ( IR ) Connector	O. Floppy Drive Connector
F. 3.3v DIMM Sockets	P. IDE device connector
G. Serial COM1 , Serial COM2 and Parallel Port Connectors	Q. WAKEUP-LINK Header
H. Accelerated Graphic Port (AGP)	S. SLOT 1 for PENTIUM II CPU Card
I. 3V Lithium Battery	T. CPU FAN Connector
J. PCI Add-in Board Connectors	
W. GL520SM Hardware Monitor	
X. J23 is CD Audio Input ( 1,3:Ground,2:Right,4:Left )	
Y. J24 is CD Audio input ( 1:Right,2,3:Ground,4:Left )	
Z. J25 is Auxiliary input ( 1:Left,2,3:Ground,4:Right )	

### **BX98-ATX**

- fully supports three DIMM slots

# Award BIOS and CMOS Setup Utility

## GETTING START

All computer motherboards provide a Setup utility program for specifying the system configuration and settings. If your motherboard came in a computer system, the proper configuration entries may have already been made.

This motherboard has been programmed with Award BIOS setup utility. The setup utility program is stored inside the on-board programmable Flash ROM chip. This Setup program allows user to modify the basic system configuration. The system configuration is stored in the battery backup CMOS RAM (inside the real time clock chip) so that it retains the setup information when the power is turned off. This chapter explains the setup utility for the Award BIOS.

## ENTERING SETUP

When you turn on the computer, the system allows you an opportunity to enter the BIOS Setup utility. During the POST (**P**ower **O**n **S**elf **T**est), you can see the below message appears at the bottom of the screen, press <Del> key or simultaneously press <Ctrl>, <Alt> and <Esc> keys.

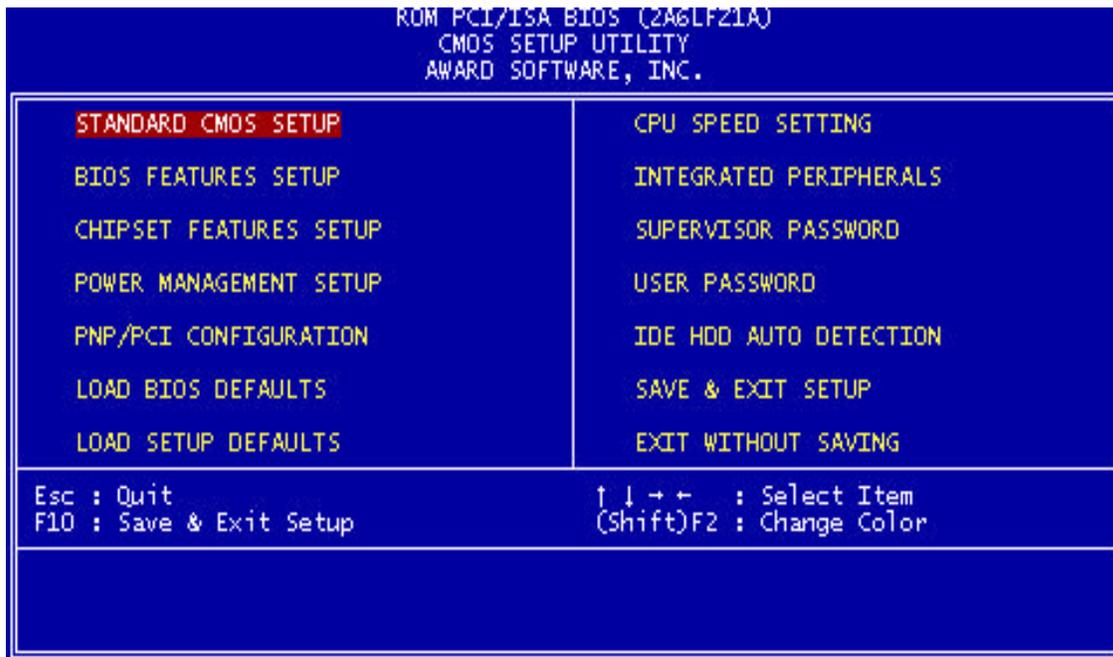
```
Press DEL to enter SETUP, ESC to skip memory test
```

If the message disappears before you respond, POST will continue with its test routines, thus preventing you from calling up the Setup utility. However, if you still want to enter Setup, restart the system to try again by turning it OFF and then ON or pressing the "RESET" button on the system case. You may also restart your system by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot up, and error message below may be displayed and you will again be asked to,

```
PRESS F1 TO CONTINUE, CTRL-ALT-DEL TO ENTER SETUP
```

## Summary of Control Keys

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift)F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Calendar, only for Status Page Setup Menu
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the setup default, only for Option Page Setup Menu
F10 key	Save all the CMOS changes, only for Main Menu



## *AWARD CMOS Setup*

### Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

### THE MAIN MENU

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

### **Standard CMOS Setup**

This setup page includes all the items in a standard compatible BIOS.

### **BIOS Features Setup**

This setup page includes all the items of Award special enhanced features.

### **Chipset Features Setup**

This setup page includes all the items of chipset special features.

### **Power Management Setup**

This setup page includes all the items of green features.

### **PnP/PCI Configuration**

This setup page includes all the items of PnP , PCI IRQ and ISA IRQ settings. You can allocate these resources for your system use in this menu.

### **Integrated Peripherals**

This setup page is used to configure the On-board multi I/O and IDE interface.

### **Load BIOS Defaults**

This function is for user to load the BIOS default settings. The BIOS defaults indicates the most appropriate value of the system parameter which the system would be in minimum performance.

### **Load SETUP Defaults**

This function is for user to load the SETUP default settings. SETUP defaults indicates the values required by the system for the maximum performance.

### **Supervisor/User Password**

This function is for Change, set, or disable the supervisor or user password. The supervisor password allows you to limit the user access to the system and Setup.

### **IDE HDD Auto Detection**

Automatically configure hard disk parameters.

### **HDD Low Level Format**

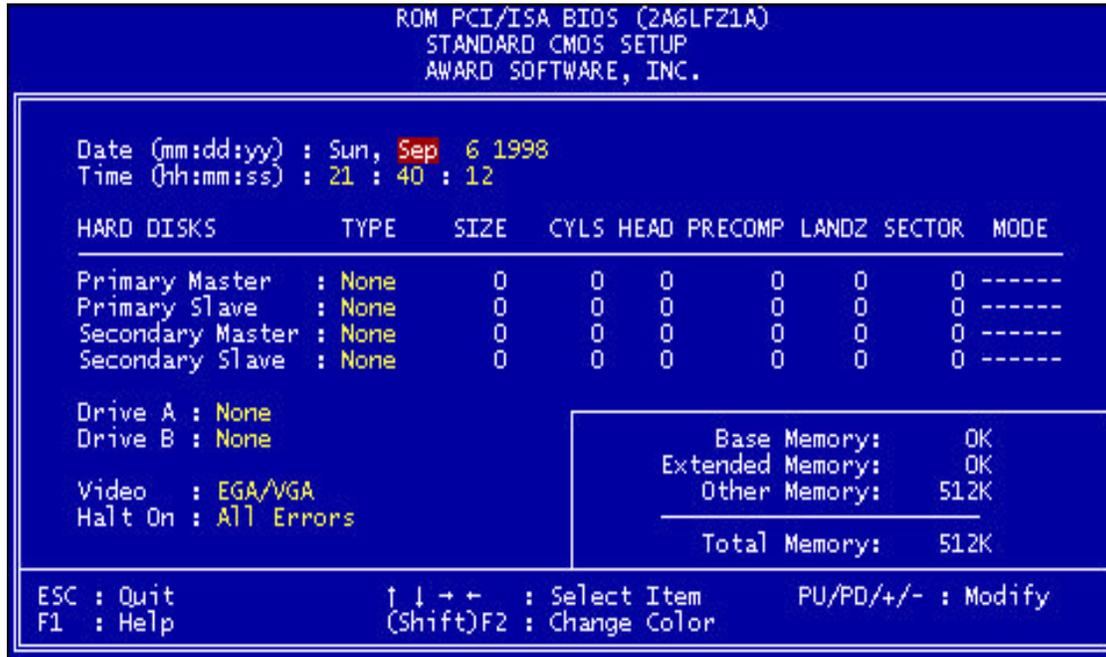
This Automatically configure hard disk parameters.

### **Save & Exit Setup**

Save CMOS value changes to CMOS and exit setup.

### **Exit Without Save**

Abandon all CMOS value changes and exit setup.



## Standard CMOS Setup

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

### Date & Time

Enter current Date & Time to set system clock. The date format is <month> <day> <year> and the time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock.

### Primary and Secondary Master / Slave

The categories identify the types of IDE hard disk on primary or secondary IDE channel that have been installed in the computer. There are 46 pre-defined types and a user definable type. Type “1” to Type “46”

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type “User”, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

There are the option of Type “AUTO” and Mode “AUTO” to auto detect the hard disk type and the hard disk mode (Normal, LBA and Large). If a hard disk has not been installed select NONE and press <Enter>.

### *Drive A / Drive B*

This category identifies the types of floppy disk drive A or drive B that have been installed in the computer.

### **Video**

This category selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

### **Halt On**

This category determines whether the computer will stop if an error is detected during power up. There are different types of error can be configured in this category.

### **Total Memory**

This category is display-only which is determined by POST (Power On Self Test) of the BIOS.

### **Base Memory**

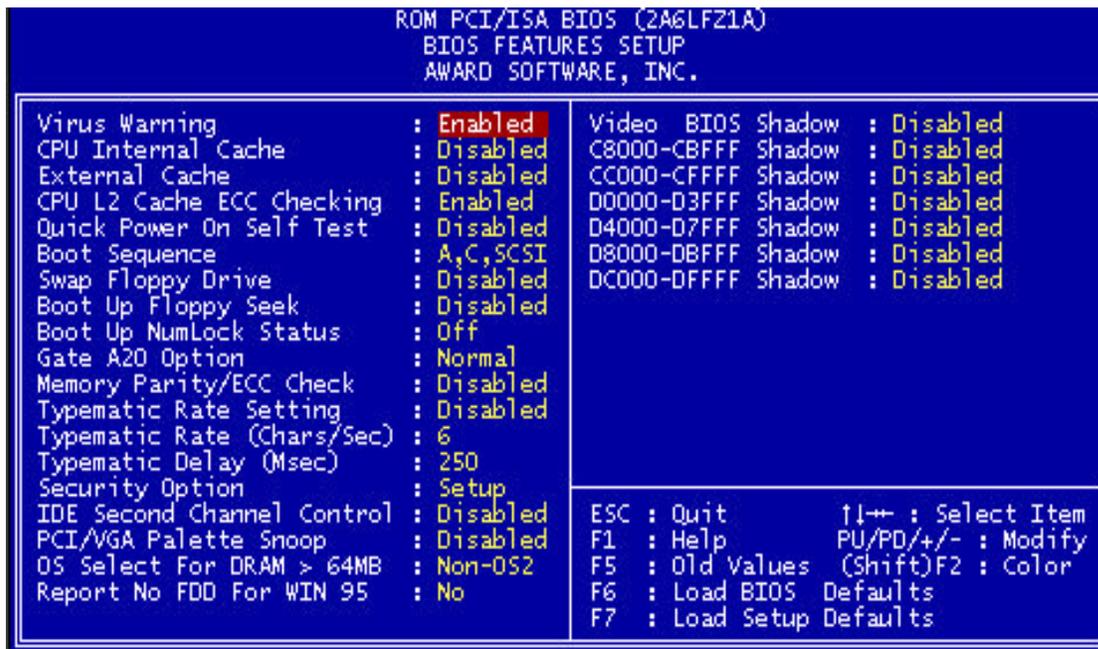
The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 640K for systems with 640K or more memory installed on the motherboard.

### **Extended Memory**

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

### **Other Memory**

This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. Generally, this area is used for Shadow RAM.



## *BIOS Features Setup*

The item BIOS Features Setup Menu is divided into 23 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

### Virus Warning

You can “Enable” or “Disable” this feature. When enabled, it will activate automatically if anything attempt to access the boot sector or hard disk partition table during system boot-up. The default value is “Disabled”.

### CPU Internal Cache

This category enables or disables the internal cache to speed up memory access. The default value is “Enabled”.

### External Cache

This category enables or disables the secondary (L2) cache to speed up memory access. The default value is “Enabled”.

### Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If it is set to “Enabled”, BIOS will shorten or skip some check items during POST. The default value is “Disabled”.

### **Boot Sequence**

This category determines which drive computer searches first for the disk operating system (i.e., DOS). The default setting is "A,C,SCSI", means that the system will determine the drive A before drive C.

### **Swap Floppy Drive**

This feature allows you to enable the system swap floppy function, the default is "Disabled". When this function enables, the system will assign the Drive A as Drive B, and vice versa.

### **Boot Up Floppy Seek**

The default setting is "Enabled", so that the BIOS will search for floppy disk drive to determine if it is 40 or 80 tracks. If disabled, BIOS will not search for the type of floppy disk drive by track number. Note that there will be no warning message if the drive installed is 360K.

### **Boot Up NumLock Status**

It determine the Num-Lock is turned on/off Num Lock. when the system is powered on so that the end user can use the arrow keys on both the numeric keypad and the keyboard. The default value is "On".

### **Boot Up System Speed**

It selects the default system speed - the speed that the system will run at immediately after power up. The default value is "High".

### **Gate A20 Option**

The A20 signal option specify A20 controlled by keyboard controller or chipset hardware. The default is "Fast", therefore, the A20 signal is controlled by chipset specific method.

### **Typematic Rate Setting**

Typematic Rate sets the rate at which characters on the screen at which characters on the screen repeat. The default setting is Disabled.

### **Typematic Rate (Chars/Sec)**

Typematic rate sets the rate at which characters on the screen repeat when a key is pressed and held down. You can select 6-30 characters per second. The default setting is "6".

### **Typematic Delay (M sec)**

When holding down a key, the time between the first and second character display. you specified numbers of times of character repeat on the screen. The default setting is "250".

### **Security Option**

This category allows you to limit access to the system and Setup or just to Setup. When you select system, the system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. If you select Setup, the system will boot but access to Setup will be denied if the correct password is not entered at the prompt. The default setting is "Setup".

### **PCI/VGA Palette Snoop**

This option controls the system to access the PCI VGA card palette register. In general, this option is "Disabled". However, you may need to enable this option for some VGA cards which have incorrect color displayed on some software application.

### **OS Select For DRAM > 64MB**

Some the OS/2 application access the memory in different mode. Enable this option to allow the system use another mode to access the main memory for OS/2 applications.

**Report No Floppy Disk For Windows 95**

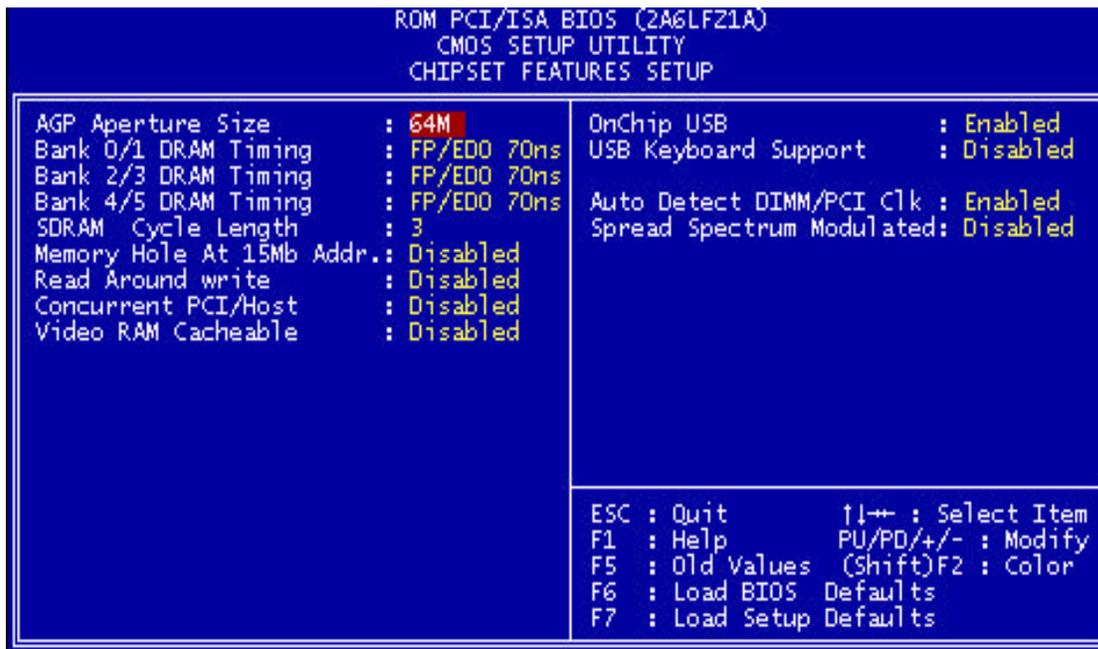
The system will report floppy disk status to Windows95 if setting is Yes.

**VIDEO BIOS Shadow**

The system BIOS is automatically shadowed. The default setting for the “Video BIOS Shadow” is “Enabled”. It determines whether video BIOS will be copied to RAM. However, it is optional from chipset design. Video Shadow will increase the video speed.

**C8000 - CFFFF Shadow/E8000 - EFFFF Shadow**

These categories determine whether optional ROM will be copied to RAM by 16K byte. You can enable the optional shadow or you can disable it. The default setting is disabled.



## Chipset Features Setup

This section describes features of the VIA Apollo Pro PCIset. If your system contains a different chipset, this section will bear little resemblance to what you see on your screen.

ADVANCED OPTIONS. The parameters in this screen are for system designers, service personnel, and technically competent users only. Do not reset these values unless you understand the consequences of your changes.

NOTE: This chapter describes all fields offered by Award Software in this screen. Your system board designer may omit or modify some fields.

### Bank 0/1, 2/3, 4/5, 6/7 DRAM Timing

The DRAM timing of Bank 0/1, 2/3, 4/5, 6/7 in this field is set by the system board manufacturer, depending on whether the board has fast paged DRAMs or EDO (extended data output) DRAMs.

The Choice: Normal, Medium, Fast, Turbo, FP/EDO 60ns, FP/EDO 70ns.

### SDRAM Cycle latency

This field sets the CAS latency timing.

The Choice: 2, 3.

**Memory Hole At 15M-16M**

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

**Read Around Write**

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM

The choice: Enabled, Disabled.

**Concurrent PCI/Host**

When disable, CPU bus will be occupied during the entire PCI operation period.

The choice: Enabled, Disabled.

**Video RAM Cacheable**

Select Enabled allows caching of the video RAM , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Enabled	Video RAM access cached
Disabled	Video RAM access not cached

**AGP Aperture Size (MB)**

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The choice: 4, 8, 16, 32, 64, 128, 256

**OnChip USB**

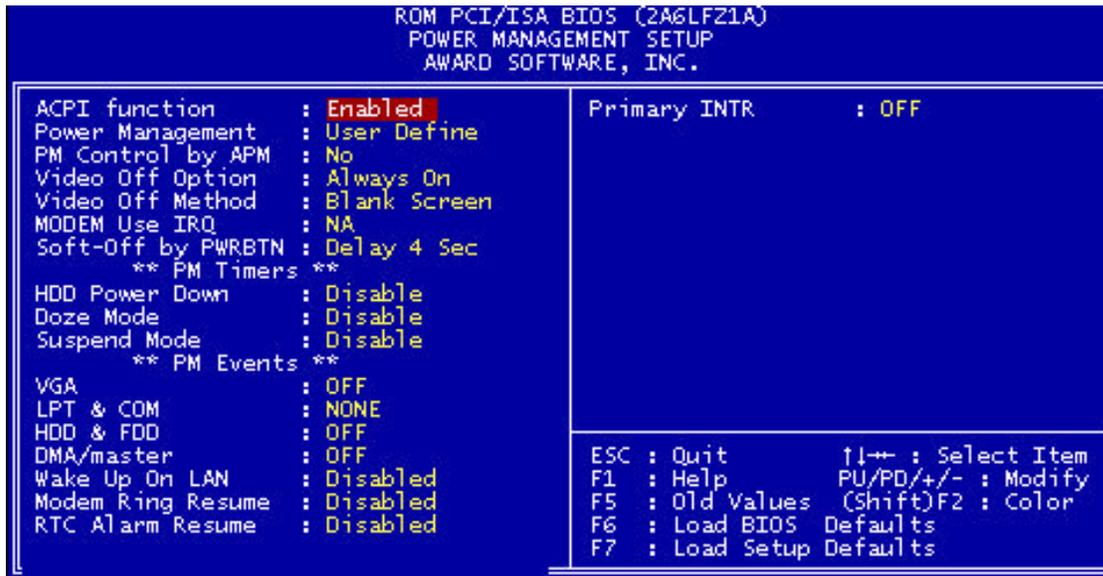
This should be enabled if your system has a USB installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

The choice: Enabled, Disabled.

**USB Keyboard Support**

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The choice: Enabled, Disabled.



## *Power Management Setup*

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

### ACPI function

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

The choice: Enabled, Disabled.

### Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

There are three selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- <b>ONLY AVAILABLE FOR SL CPU'S</b> . Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

### **PM Control APM**

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock.

If the Max. Power Saving is not enabled, this will be preset to *No*.

### **Video Off Option**

Selects the power-saving modes during which the monitor goes blank:

Always On	Monitor remains on during power-saving modes.
Suspend --> Off	Monitor blanked when system enters <i>Suspend</i> mode.
All Modes --> Off	Monitor blanked when system enters any power saving mode.

### **Video Off Method**

This determines the manner in which the monitor is blanked.

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

### **Soft-Off by PWRBTN**

When Enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

The Choice: Instant-Off, Delay 4 Sec.

### ***PM Timers***

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See above for available selections.

#### **HDD Power Down**

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

#### **Doze Mode**

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

#### **Suspend Mode**

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The Choice: Instant-Off, Delay 4 Sec.

### ***PM Events***

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *On*, even when the system is in a power down mode.

#### **VGA**

When set to *On* (default), any event occurring at a VGA port will awaken a system which has been powered down.

#### **LPT & COM**

When set to *On* (default), any event occurring at a COM(serial)/LPT (printer) port will awaken a system which has been powered down.

#### **HDD & FDD**

When set to *On* (default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down.

#### **DMA/master**

When set to *On* (default), any event occurring at will awaken a system which has been powered down.

#### **Modem Ring Resume**

When set to *Enabled* , any event occurring to the Modem Ring will awaken a system which has been powered down.

The Choice: Enabled, Disabled.

### **RTC Alarm Resume**

When *Enabled*, you can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode

The choice: Enabled, Disabled.

### **Date (of Month) / Timer (hh:mm:ss)**

You could set the date (of month) and timer (hh:mm:ss), any event occurring at will awaken a system which has been powered down.

### **Primary INTR**

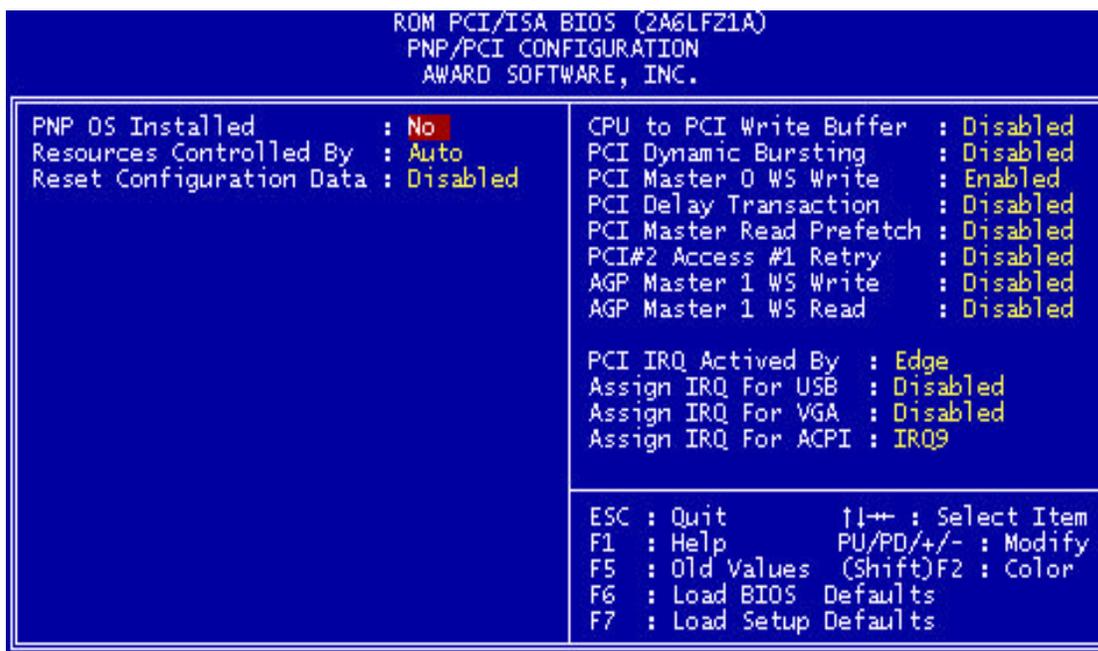
When set to *On* (default), any event occurring at will awaken a system which has been powered down.

The following is a list of IRQ's, **I**nterrupt **R**e**Q**uests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*. *Off* is the default.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- **IRQ3 (COM 2)**
- **IRQ4 (COM 1)**
- **IRQ5 (LPT 2)**
- **IRQ6 (Floppy Disk)**
- **IRQ7 (LPT 1)**
- **IRQ8 (RTC Alarm)**
- **IRQ9 (IRQ2 Redir)**
- **IRQ10 (Reserved)**
- **IRQ11 (Reserved)**
- **IRQ12 ( PS / 2 Mouse )**
- **IRQ13 (Coprocessor)**
- **IRQ14 (Reserved)**
- **IRQ15 (Reserved)**



## *PNP/PCI Configuration*

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

### PNP OS Installed

Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).

The Choice: Yes and No.

### Resource Controlled by

The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

The choice: *Auto* and Manual.

### **Reset Configuration Data**

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

The choice: *Enabled* and *Disabled*.

### **IRQ n Assigned to**

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

### **DMA n Assigned to**

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

### **CPU to PCI Write Buffer**

When enabled, up to four Dwords of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the data..

Choices are Enabled, Disabled.

### **PCI Dynamic Bursting**

When *Enabled*, every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and nonburstable transactions don't.

Choices are *Enabled*, *Disabled*.

### **PCI Master 0 WS Write**

When *Enabled*, writes to the PCI bus are executed with zero wait states.

Choices are *Enabled*, *Disabled*.

**PCI Delay Transaction**

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

The choice: Enabled, Disabled.

**PCI #2 Access #1 Retry**

This item allows you enable/disable the PCI #2 Access #1 Retry.

The choice: Enabled, Disabled.

**AGP Master 1 WS Write**

This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.

The choice: Enabled, Disabled.

**AGP Master 1 WS Read**

This implements a single delay when reading to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.

The choice: Enabled, Disabled.

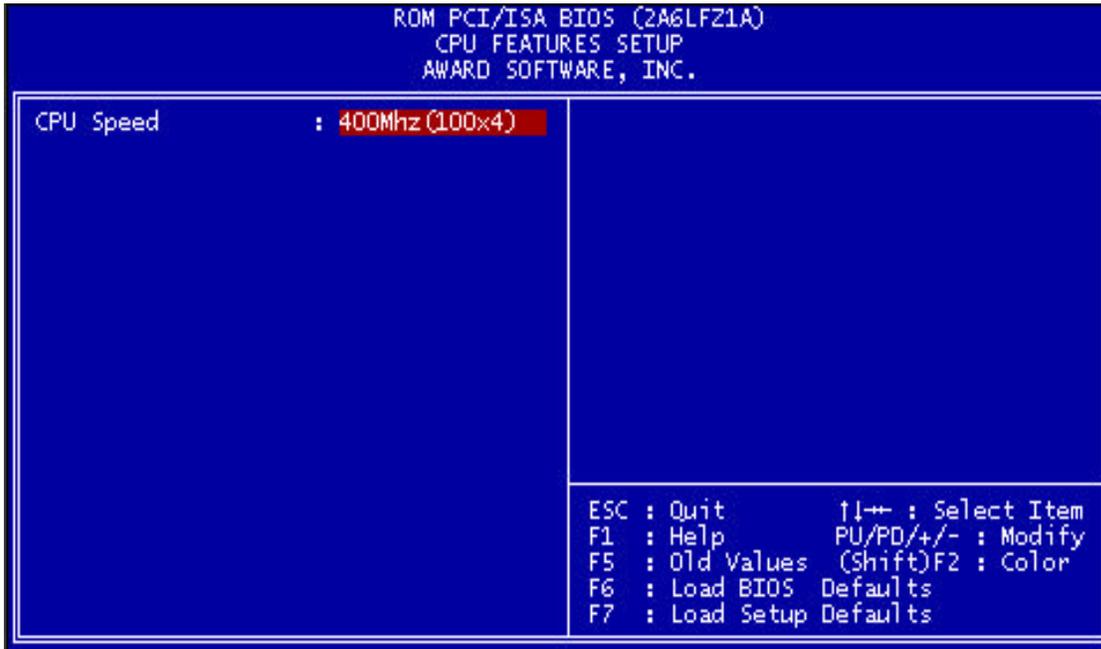
**PCI IRQ Activated by**

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

Choices are *Level* (default) and *Edge*.

**Assign IRQ For USB/VGA/ACPI**

Name the interrupt request (IRQ) line assigned to the USB/VGA/ACPI (if any) on your system. Activity of the selected IRQ always awakens the system.

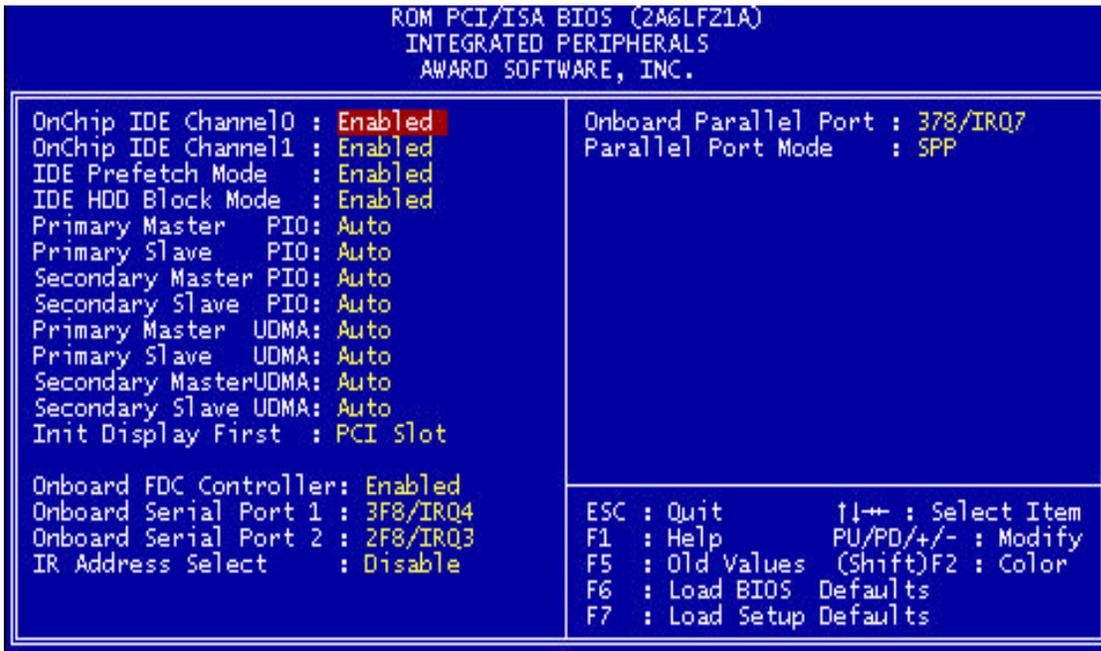


## *CPU Speed Setting*

The system BIOS is capable to detect the CPU type, say, Pentium II or Celeron. The user is only required to select the CPU speed. In addition, *Manual* option is provided for advanced users who prefer to run the CPU over the specified clock frequency.

### CPU SPEED AUTO SETTING

<b><i>66MHz</i></b>	<b><i>100MHz</i></b>
200 ( 66x3 )	300 ( 100x3 )
233 ( 66x3.5)	350 ( 100x3.5 )
266 ( 66x4 )	400 ( 100x4 )
300 ( 66x4.5)	450 ( 100x4.5 )
333 ( 66x5 )	500 ( 100x5 )
366 ( 66x5.5)	550 ( 100x5.5 )



## Integrated Peripherals

### OnChip IDE First/Secondary Channel

The chipset contains a PCI IDE interface with support for two IDE channels. Select *Enabled* to activate the first and/or second IDE interface. Select *Disabled* to deactivate an interface, if you install a primary and/or secondary add-in IDE interface.

The choice: Enabled, Disabled.

### IDE Prefetch Mode

The onboard IDE drive interfaces supports IDE prefetching, for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to *Disabled* if the interface does not support prefetching.

The choice: Enabled, Disabled.

### IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled	IDE controller uses block mode.
Disabled	IDE controller uses standard mode.

### IDE Primary/Secondary Master/Slave PIO

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

### **IDE Primary/Secondary Master/Slave UDMA**

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

The Choice: Auto, Disabled

### **Init Display First**

This item allows you to decide to active PCI Slot or AGP first

The choice: PCI Slot, AGP.

### **Onboard FDD Controller**

This should be enabled if your system has a floppy disk drive (FDD) installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

The Choice: Enabled, Disabled.

### **Onboard Serial Port 1/Port 2**

This item allows you to determine access onboard serial port 1/port 2 controller with which I/O address.

The Choice: 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

### **UART 2 Mode**

This item allows you to determine which Infra Red (IR) function of onboard I/O chip.

The Choice: Standard, ASKIR, HPSIR.

### **IR Function Duplex**

Select the value required by the IR device connected to the IR port. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time.

The Choice: Half, Full.

### **RxD, TxD Active**

This item allows you to determine the active of RxD, TxD.

The Choice: "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".

### **Onboard Parallel Port**

Select a logical LPT port name and matching address for the physical parallel (printer) port.

The choice: 378H/IRQ7, 278H/IRQ5, 3BCH/IRQ7, Disabled.

### **Onboard Parallel Mode**

Select an operating mode for the onboard parallel (printer) port. Normal EPP (Extended Parallel Port) ECP (Extended Capabilities Port) CEP+EPP PC AT parallel port Bidirectional port Fast, buffered port Fast, buffered, bidirectional port.

Select Normal unless you are certain your hardware and software both support EPP or ECP mode.

Choices are SPP, ECP/EPP, ECP, EPP/SPP.

### **ECP Mode Use DMA**

Select a DMA channel for the port.

Choices are 3, 1.

### **Parallel Port EPP Type**

Select EPP port type 1.7 or 1.9.

Choices are EPP1.7, EPP1.9

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## QUICK REFERENCE OF MOTHERBOARD

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### **AT Power Supply Connector**

According to the AT specification, one 12-pin power connector covers all the required power sources including  $\pm 5V$  and  $\pm 12V$ .

### **ATX Power Supply Connector**

According to the ATX specification, one 20-pin power connector covers all the required power sources including  $\pm 5V$ ,  $\pm 12V$  and  $3.3V$ , with soft-touch power on/off button feature.

### **AT Keyboard Connector**

This connection is used for a standard IBM-compatible keyboard, such as 101 enhanced keyboard.

### **Parallel (Printer) Port Connector**

One Parallel port with SPP, EPP and ECP capabilities.

### **Integrated Functions Connector**

- I) From Pin1 to Pin5 is the first USB device “USB1” and Pin11 to Pin15 is the second USB device “USB2” connector. Universal Serial Bus (USB) is new interface standard for any I/O device “Outside the Box”. USB makes your peripherals have a real plug and play (PnP) capabilities with up to 12MB/sec data speed In the coming soon, any external device connected to your computer will be standardized into USB standard which are all have a special 4-pin rectangle shape connector. Therefore, with the Intel chipset, this motherboard builds two USB headers on-board for you future investment. If you are using a USB device, you must purchase an optional USB connector.
- II) From Pin6-10 is the PS/2 device, likes some PS/2 keyboard and mouse, are all have a standard 6-pin round shape connector. However, it does not have a unique onboard standard. Therefore, please refer to the Chapter “Motherboard Installation”, in order to purchase an suitable PS/2 Mouse Connector.
- III) From Pin16-20 is a 5-pin interface on the front panel I/O connector is provided to allow connection to a Hewlett Packard HSDSL-1000 compatible Infra-red (IrDA) transmitter/receiver. Once the module is connected to the front panel I/O header, Serial port 2 can be re-directed to the IrDA module. When configured for IrDA, the user can transfer files to or from portable devices such as laptops, PDA’s and printers using application software such as LapLink. The IrDA specification provides for data transfers at 115kbps from a distance of 1 meter. Support for Consumer Infra Red (ASK-IR) is also included, please refer to your IR equipment for more detailed information.

### **DIMM Sockets**

Three 168 pins standard DIMM socket allows your system using either for 3.3V unbuffered SDRAM.

### **Serial (COM 1 and 2) Port Headers**

This motherboard provides two high-speed 16550 compatible UART serial ports.

### **Accelerated Graphic Port (AGP)**

The AGP is compatible with the Accelerated Graphics Port specification. The AGP offers a much higher throughput over the PCI bus does. PCI currently only supports 33Mhz can transport 133MB/s at peak rates over its 32bit data bus. AGP is clocked with 66Mhz, which enables a peak rate of 266 MB/s at the classic so called 'X1' mode. If using the 'X2' mode, it can transport up to 532MB/s at peak rate.

### **3V Lithium Battery**

An on-board battery holder is used to hold a 3 Volts CR-2032 Lithium battery which makes the battery's replacement more convenient. This battery is used to supply power for the RTC CMOS RAM in order to save your system setting and date/time counting during system power-off. In general, the battery's life is about 5 years. If you see a "BIOS checksum error" message happened while system turn-on, the battery low may cause it. You can try to fix it by simply replaced the battery.

### **PCI Add-in Board Connectors**

This motherboard provides PCI slots which allows expansion of PCI 2.1 compatible peripherals.

### **ISA Add-in Board Connectors**

This motherboard provides two 16 bit ISA slots which allows backward hardware compatibility.

### **Front Panel Function Connector**

For your convenience, all the front panel functions are integrated into a single connector, which included power LED and keyboard lock, turbo switch, reset switch, SMI switch and speaker.

### **Flash BIOS**

The flash BIOS allows user to have more flexibility to upgrade their motherboards. The flash BIOS can be programmed by software easily.

### **Floppy Disk Drive Connector**

A 34-pin connector on-board allows connection up to two 360K, 720K, 1.2M, 1.44, 2.88M floppy disk drives.

### **IDE Connectors**

This motherboard have two independent high performance bus-mastering PCI IDE interfaces capable of supporting up to Mode 4 and UltraDMA-33 devices. The system BIOS supports automatic detection of the IDE device data transfer rate and translation between different kinds of device mode such as Logical Block Addressing (LBA), Extended Cylinder Sector Head (ECSH) translation modes and ATAPI (e.g., CD-ROM) devices on both IDE interfaces.

In a true multi-tasking operating systems like Windows® 95 and Windows® NT, the IDE interface can operate as a PCI bus master capable of supporting PIO Mode 4 devices with transfer rates of up to 16 MB/sec.

### **Audio CD Connectors**

The Audio CD input connector for the On-Board Sound.

### **WAKEUP-LINK Interface**

This header is used to connect an add-in NIC (Network Interface Card) which has Wake-On-LAN capability to the motherboard.

### **PS/2 Keyboard / Mouse Connectors**

PS/2 device, like some PS/2 keyboard and mouse, are all have a standard 6-pin round shape connector. The benefit of PS/2 device is one [of the serial port may be free for other serial device such as writing table. On this motherboard, there are two on-board PS/2 connectors, one for keyboard and one for mouse, which saves your money to buy any optional PS/2 connector module. If you are using a PS/2 mouse or keyboard, you can simply plug into the corresponding connector without any jumper setting.

### **USB Connectors**

Universal Serial Bus (USB) is new interface standard for any I/O device “Outside the Box”. USB makes your peripherals have a real plug and play (PnP) capabilities with up to 12Mb/sec data speed. In the coming soon, any external device connected to your computer will be standardized into USB standard which are all have a special 4-pin rectangle shape connector. Therefore, with the Intel chipset, this motherboard builds two USB connectors on-board for your future investment.

### **External I/O Connectors**

Based on the ATX standard, two 9-pin serial ports and one 25-pin parallel port are now built on the motherboard back panel, too! This design makes your motherboard’s installation more easily. The parallel port can be BIOS configured into standard (SPP) mode, Enhanced Parallel Port (EPP) mode, and a high speed Extended Capabilities Port (ECP) compatible mode. EPP Mode requires a driver provided by the peripheral manufacturer in order to operate correctly.

### **Infra-Red (IR) Support**

A 5-pin interface on the front panel I/O connector is provided to allow connection to a Hewlett Packard HSDSL-1000 compatible Infrared (IrDA) transmitter/receiver. Once the module is connected to the front panel I/O header, Serial port 2 can be re-directed to the IrDA module. When configured for IrDA, the user can transfer files to or from portable devices such as laptops, PDA’s and printers using application software such as LapLink. The IrDA specification provides for data transfers at 115kbps from a distance of 1 meter. Support for Consumer infrared (ASK-IR) is also included, please refer to your IR equipment for more detailed information.

**PENTIUM II® Slot 1**

The slot 1 is a 242-pin slot design for PENTIUM II®, single edge contact cartridge, along with a programmable voltage regulator for the CPU core. It provides users with a performance upgrade path to PENTIUM II® technology. The motherboard includes a switching voltage regulator which supports core voltages from 1.8V to 3.5V PENTIUM II® processors running at 233, 266 MHz and higher frequencies. The regulator makes use of the VID capabilities to automatically adjust its voltage output to match that of the installed processor, which eliminated the traditional jumper settings.



**PENTIUM II® PROCESSOR CARD**

*The PENTIUM II<sup>0</sup> processor integrates second level cache and cache controller that was previously implemented on the motherboard. The internal non-blocking L2 cache on the 233, 266 MHz processors card is 512k KB cache.*

*The PENTIUM II® processor card maintains full backward compatibility with the 8086, 80286, Intel386™, Intel486™ and Pentium® processors. It also has a numeric coprocessor that significantly increases the speed of floating point operations, while maintaining backward compatibility with the i486DX math coprocessor and complying with ANSI/IEEE standard 754-1985.*

**CPU FAN Connector**

The CPU FAN connector connects to the power supply of the CPU fan.

**GL520SM Microprocessor System Hardware Monitor**

The GL520SM is a highly integrated circuit designed in CMOS technology which serves as a hardware monitor of any microprocessor based system. The GL520SM can be used to monitor temperatures, power supply voltages and fan speeds in a PC system. By connecting to an external thermistor for remote sensing applications, the GL520SM allows more flexibility in location of the sensor. The GL520SM will generate interrupts and drive different square-like wave which allows the speaker to sound the alarm when it detects the abnormal situation. Through the SMBus interface, the host can program the temperature trip points and query the GL520SM about the interrupt status, current temperature, voltage and fan speed.

