

EP-PV12
Pentium Main Board
User's Manual

Order Number 41010000

April 1997

EC-CONFORMITY DECLARATION

(EC conformity marking)

FOR THE FOLLOWING EQUIPMENT:

Product Name : MOTHERBOARD
MODEL : EP-PV12
MANUFACTURER : ENPC TECHNOLOGY CORP.
MANUFACTURER ADDRESS : 6FL., No. 19, Wu Chuan 6 Rd.,
WU-KU INDUSTRIAL PARK, TAIPEI, TAIWAN. R.O.C.

IS HEREWITH CONFIRMED TO COMPLY WITH THE EQUIPMENTS SET UP IN THE COUNCIL DIRECTIVE ON THE APPROXIMATION OF THE LAW OF MEMBER STATES RELATING TO ELECTROMAGNETIC COMPATIBILITY (89/336/EEC) AND LOW VOLTAGE DIRECTIVE 78/28/EEC. FOR THE EVALUATION REGARDING THE ELECTROMAGNETIC COMPATIBILITY AND SAFETY, THE FOLLOWING STANDARDS WERE APPLIED:

- * EN50081-1 (1992) : GENERIC EMISSION STANDARDS
 - EN550022 (1994) : EMISSION
 - EN60555-2 (1987) : HARMONICS
 - EN60555-3 (1987) : VOLTAGE FLUCTUATIONS
- * EN50082-1 (1992) : GENERIC IMMUNITY STANDARD
 - IEC 801-2 (1984) : ELECTROSTATIC DISCHARGE IMMUNITY
 - IEC 801-3 (1984) : RADIATED IMMUNITY
 - IEC 801-4 (1988) : ELECTRICAL FAST TRANSIENT

The manufacturer also declares the conformity of above mentioned product with the actual required safety standards in accordance with LVD 73/23 EEC.

Manufacturer/Importer

Signature: _____

Date: April 01, 1997

Name: Peter Chen

EP-PV12
Pentium Mainboard
for
Compatible PC

User Manual Rev 1.0
Related Motherboard: EP-PV12 P.C.B. Rev 1.0 and up
Related BIOS: # (EP-PV12) BIOS ROM Ver. 1.0 – 04/07/1997
or up (# appears in upper left-hand corner of screen at
beginning of Power-On Boot-up)
Date: April 1997

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FCC & DOC COMPLIANCE

Federal communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out the Radio Interference Regulations for the Canadian Department of Communications.

1. INTRODUCTION

1-1 About this Manual

This manual is arranged to help you set up and run this Pentium motherboard as soon as possible.

Information is presented in the following three chapters:

Chapter 1.

Introduction: presents what you should receive in your motherboard on the features and specifications of the product. This chapter enclosed with a diagram showing the layout out of the motherboard.

Chapter 2.

Installation: Motherboard's installation, includes detailed information on how to install and configure the motherboard.

Chapter 3.

BIOS Software: presents AWARD BIOS software setup information.

1. INTRODUCTION

1-2 Item Checklist

This product comes with the following components:

- √ Motherboard x 1
- √ Bracket with 9-pin serial port and PS/2 Keyboard/Mouse cables x 1
- √ Bracket with 25-pin parallel port flat cable and 9-pin serial cable x 1
- √ 40-pin IDE connector flat cable x 1
- √ 34-pin floppy disk drive flat cable x 1
- √ User's Manual x 1
- √ Warranty Card x 1
- Bus Master IDE Drivers Diskette x 1 (option)
- USB Connection Cable with Bracket x 1 (option)
- IrDA Module x 1 (option)

1. INTRODUCTION

1-3 Specifications

- Processor
 - ZIF socket 7 support INTEL® Pentium with MMX™ up to 200MHz + INTEL® Pentium P54C/P55C series + Cyrix 6x86 series + AMD K5 series
- Switching Voltage Regulator
 - Stepping voltage regulator from 2.8V~3.52V
 - Support current and future CPU
- Chipset
 - INTEL® 82430VX System Controller (TVX)
 - INTEL® 82371SB PCI/ISA IDE Accelerator
 - INTEL® 82438VX Data path (TDX) EDS
 - ITE 8680/8687 (Giga I/O Controller)
- On Board Multi-I/O
 - 1 x FDD Port support up to 2.88MB FDD Capacity
 - 1 x Parallel Port (LPT) support ECP/EPP
 - 2 x High Speed Serial (16C550 UART) Ports
 - 2 x Universal Serial Bus (USB) Ports
 - 1 x AT Keyboard
 - 1 x PS/2 Mouse/Keyboard
 - 1 x Keyboard Controller
 - 2 x IrDA
- Cache
 - 256/512KB SRAM

1. INTRODUCTION

1-3 Specifications (Continue...)

- Expansion Slots
 - 4 x 32-bit PCI Bus Master Slots
 - 3 x 16-bit ISA Slots

- On-board PCI IDE
 - 2 x Bus Master IDE Controller
 - Support PIO Mode 3/4 EIDE Devices (HDD, CD-ROM, LS-120 FDD, etc.)
 - Support HDD Auto-Detect

- BIOS
 - AWARD BIOS support DMI
 - 1MB Flash ROM with Green PC, Plug-and-Play Function

- Dimension
 - 220mm x 235mm

- Form Factor
 - Baby AT Form Factor

2. INSTALLATION

2-1 Motherboard Layout

The motherboard is designed with Intel 82430VX, PCI chipset which is developed by Intel Corporation to fully support Pentium Processor PCI/ISA system. The chipset provides an integrated IDE controller with two high performance IDE interfaces for up to four IDE devices (hard disk driver, LS-120 floppy driver, CD-ROM device, etc). The ITE 8680/8687 Giga I/O controller provides the standard PC I/O function: floppy interface, two 16Byte FIFO serial ports and EPP/ECP capable parallel port. Care must be taken when inserting memory modules, inserting CPU or even plugging PCI card into associated slots to avoid damaging any circuits or sockets on board. A cooling fan is strongly recommended when installing P54C/P54CTB/P55C/K5/6x86 due to possible overheat.

The motherboard supports minimum of 8MB of system memory and a maximum of 128MB.

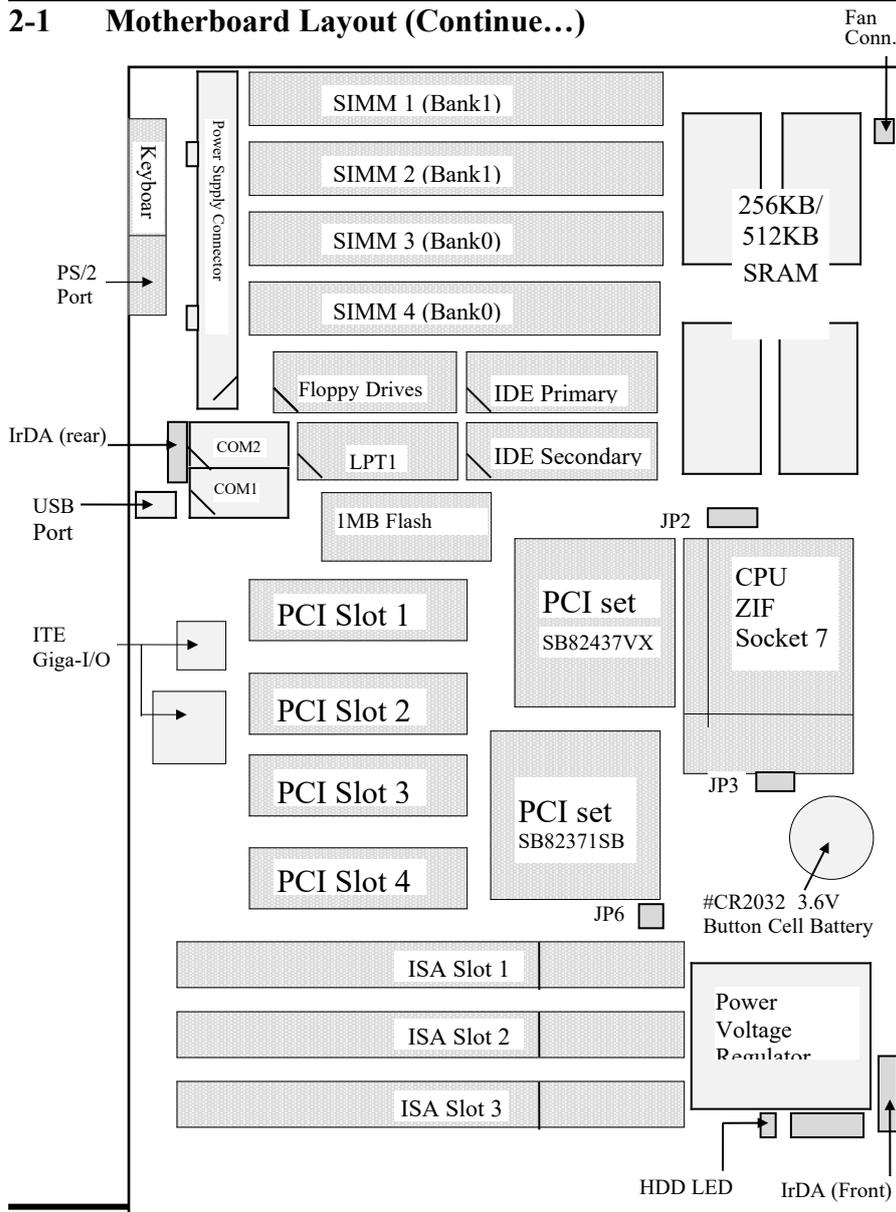
L2 Cache can be 256KB/512KB Pipelined Burst SRAM onboard to increase system performance.

The motherboard supports standard Fast Page(FP), EDO(Extended Data Out). The motherboard provides four 72-pins SIMM. The socket supports 4MB, 8MB, 16MB, 32MB, mixed each bank of memory upto 128MB. The memory timing requires 70ns Fast Page devices or 60ns EDO RAM. Memory parity generation and checking is not supported. (DRAM Modules may be parity (x36) or non-parity (x32).

The board also supports Onboard two PCI IDE connectors, and detects IDE hard disk type by BIOS utility automatic. The system also supports Award Plug & Play BIOS for the ISA and PCI cards.

2. INSTALLATION

2-1 Motherboard Layout (Continue...)



2. INSTALLATION

2-2 Installation Steps		<u>Page</u>
1.	Set Jumpers on the Motherboard	8
2.	Install DRAM Memory Modules	9, 10
3.	Install the Central Processing Unit (CPU)	11
4.	Install the Expansion Cards	12~14
5.	Install the External Connectors	15~22
6.	Power Up Procedures	23
7.	Setup the BIOS software	24

2. INSTALLATION

2-3 Jumpers

Use the diagrams in this manual instead of following the pin layout on the board. Settings with two jumper numbers require that both jumpers be moved together. To connect the pins, simply place a plastic jumper cap over the two pins as depicted.

1. CPU External Clock Frequency Selection (JP3)
2. CPU Internal Frequency Ratio (JP2)
3. Voltage Regulator Output of CPU Vcore Selection (JP6)

2. INSTALLATION

2-4 System Memories

This motherboard supports four 72-pin SIMMs (Single Inline Memory Modules) of 4MB, 8MB, 16MB, 32MB, 64MB to form a memory size between 8MB to 128MB. The DRAM can be either 60ns or 70ns Fast Page Mode (FPM, Asymmetric or Symmetric), or Extended Data Output (EDO). SIMMs must be installed in pairs so that each bank contains two of the same size memory modules.

Install memory in any or all of the banks an any combination as follows:

Bank	Memory Module		Total Memory
Bank0 SIMM Slots 1&2	4/8/16/32MB 72-pin FPM, EDO SIMMs	x 2	
Bank1 SIMM Slots 3&4	4/8/16/32MB 72-pin FPM, EDO SIMMs	x 2	
	Total System Memory	=	

NOTE: Each bank must have the same size and type (FPM, EDO, BEDO) of memory installed in pairs. Memory setup is required “Auto Configuration” in Chipset Features Setup of the BIOS Software section.

2. INSTALLATION

2-4 System Memories (Continue...)

DRAM Memory Installation Procedures:

1. The SIMM memory modules will only fit in one orientation as shown because of a “Plastic Safety Tab” on one end of the SIMM sockets which requires the “Notched End” of the SIMM memory modules.
2. Press the memory module firmly into place starting from a 45 degree angle making sure that all the contacts are aligned with the socket.
3. With your finger tips, rock the memory module into a vertical position so that it clicks into place.
4. The plastic guides should go through the two “Mounting Holes” on the sides and the “Metal Clips” should snap on the other side.
5. To release the memory module, squeeze both “Metal Clips” outwards and rock the module out of the “Metal Clips”.

2. INSTALLATION

2-5 Central Processing Unit (CPU)

The motherboard provides a 321-pin ZIF Socket 7. The CPU that came with the motherboard should have a fan attached to it to prevent overheating. If this is not the case then purchase a fan before you turn on your system. Apply thermal jelly to the CPU top and then install the fan onto the CPU.

NOTE: Without a fan, the CPU may overheat and cause damage to both the CPU and the motherboard

To install a CPU, locate the ZIF socket and open it by first pulling the lever sideways away from the socket's "Lock" then upwards to a 90-degree right angle to insert the CPU with the correct orientation. You should have a CPU fan that will cover the surface of the CPU. With the added weight of the CPU fan, no force is required to insert the CPU. Once completely inserted, hold down the fan and close the socket's lever.

NOTE: You must set the CPU External Clock Frequency Selection" and "CPU Internal Frequency Ratio" depending on the CPU that you install.

Jumper Settings: Note:- O-Open, S-Short, X-Don't Care

JP6			JP3				JP2			
JP6	1-2	3-4	1-2	3-4	5-6	MHz	JP2	1-2	3-4	5-6
3.52V	O	O	S	S	X	50	2.5	X	S	S
3.38V	O	S	O	O	X	55	3	X	S	O
2.90V	S	O	S	O	X	60	2	X	O	S
2.80V	S	S	O	S	X	66	1.5	X	O	O

2. INSTALLATION

2-6 Expansion Cards

Expansion Card Installation Procedures:

1. Read the documentation for your expansion card.
2. Set any necessary jumpers on your expansion card.
3. Remove your computer system's cover.
4. Remove the bracket on the slot you intend to use. Keep the bracket for possible future use.
5. Carefully align the card's connectors and press firmly.
6. Secure the card on the slot with the screw you removed in step 4.
7. Replace the computer's system cover.
8. Setup the BIOS if necessary
9. Install the necessary software drivers for your expansion card.

Assigning IRQs for Expansion Cards

Some expansion cards need to use IRQ to operate. Generally an IRQ must be exclusively assigned to one use. In a standard design there are 16 IRQs available but most of them are already in use by parts of the system which leaves 6 free for expansion cards.

2. INSTALLATION

2-6 Expansion Cards (continue...)

Both ISA and PCI expansion cards may need to IRQs. System IRQs are available to cards installed in the ISA expansion bus first, and any remaining IRQs are then used by PCI cards. Currently, there are two types of ISA cards. The original ISA expansion card design, now referred to as “Legacy” ISA cards, requires that you configure the card’s jumpers manually and then install it in any available slot on the ISA bus. You may use Microsoft’s Diagnostic (MSD.EXE) utility included in Windows directory to see a map of your used and free IRQs. For Windows 95 users, the “Control Panel” icon in “My Computer”, contains a “System” icon which gives you a “Device Manager” tab. Double clicking on a specific device give you “Resource” tab which shows the Interrupt number and address. Make sure that no two devices use the same IRQs or your computer will experience problems when those two devices are in use at the same time. To simplify this process this motherboard has complied with the Plug and Play (PnP specification which was developed to allow automatic system configuration whenever a PnP-compliant card is added to the system. For PnP cards, IRQs are assigned automatically from those available. If the system has both Legacy and PnP ISA card installed, IRQs are assigned to PnP cards from those not used by Legacy cards. The PCI and PnP configuration of the BIOS setup utility can be used to indicate which IRQs are being used by Legacy cards. For older Legacy cards that does not work with the BIOS, you can contact your vendor for an ISA Configuration Utility. An IRQ number is automatically assigned to PCI expansion cards after those used by Legacy and PnP ISA cards. In the PCI bus design, the BIOS automatically assigns an IRQ to a PCI slot that has a card in it that requires an IRQ. To install a PCI card, you need to set something called the INT (interrupt) assignment. Since all the PCI slots on this motherboard use an INTA#, be sure that the jumpers on your PCI cards are set to INTA.

2. INSTALLATION

2-6 Expansion Cards (continue...)

Assigning DMA Channels for ISA Cards

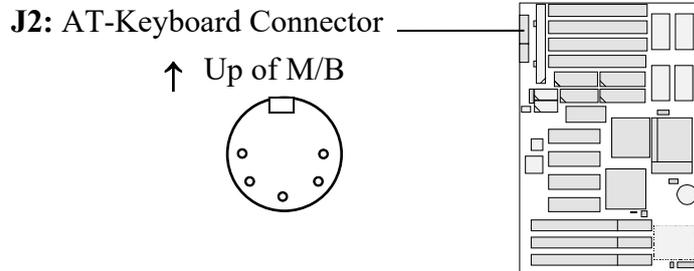
Some ISA cards, both Legacy and PnP may also need to use a DMA (Direct Memory Access) channel. DMA assignments for this motherboard are handled the same way as the IRQ assignment process described above. You can select a DMA channel in the PCI and PnP configuration section of the BIOS Setup utility.

NOTE: Choose “Yes” for those IRQ’s and DMA’s you wish to reserve for Legacy (Non-PnP) ISA expansion cards in “IRQ xx Used by ISA” and “DMA x Used By ISA” of the PnP and PCI Setup in the BIOS Software section, otherwise conflicts may occur.

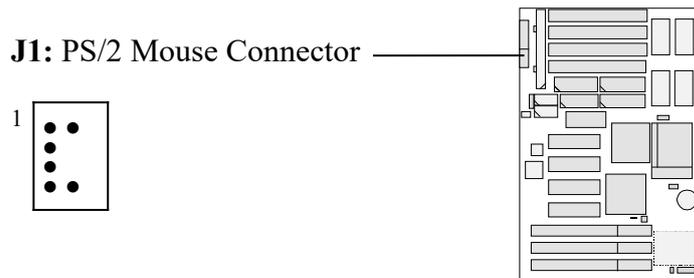
2. INSTALLATION

2-7 External Connectors

1. AT-Keyboard Connector (5-pin Female)



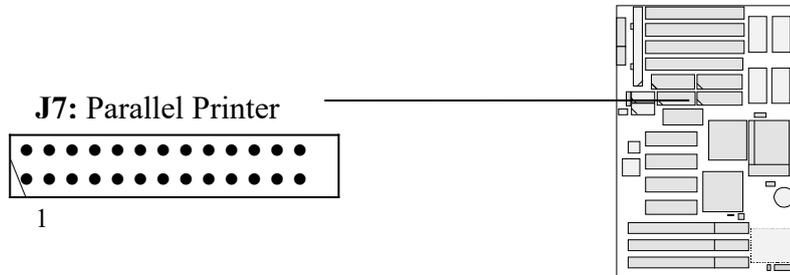
2. PS/2 Mouse/Keyboard Connector (6-pin Female)
The system will direct IRQ12 to the PS/2 mouse if one is detected. If not detected, expansion cards can use IRQ12. See "PS/2 Mouse Control" in BIOS Features Setup of the BIOS Software.



2. INSTALLATION

2-7 External Connectors (Continue...)

3. Parallel Printer Connector (25-pin Male)
You can enable the parallel port and choose the IRQ through BIOS Setup on “Onboard Parallel Port” in “INTEGRATED PERIPHERALS”



4. Serial Port COM1 and COM2 Connectors
(Two 9-pin Male, J5 & J4).

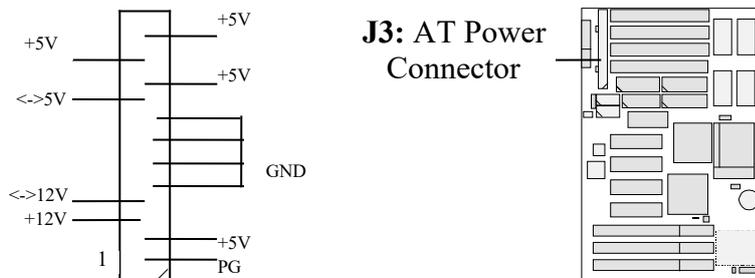
The two serial ports can be used for pointing devices or other serial devices. See “Onboard Serial Port” in Chipset Features Setup of the BIOS Software.



2-7 External Connectors (Continue...)

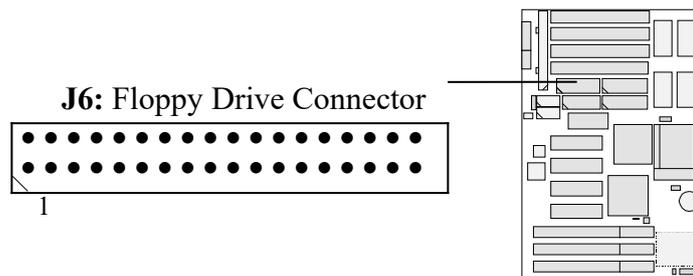
5. AT Power Connector (12-pin block, J3)

NOTE: To prevent electrical spikes, make sure that the power supply is not connected to an outlet when making or removing connections. Power supplies contain power reserves which can damage electrical components.



6. Floppy Drive Connector (34-pin block, J6)

This connector supports the provided floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to one or two floppy drives.



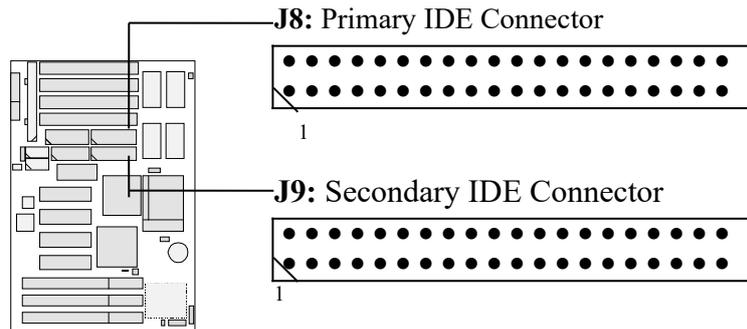
2. INSTALLATION

2-7 External Connectors (Continue...)

7. Primary/Secondary IDE connectors

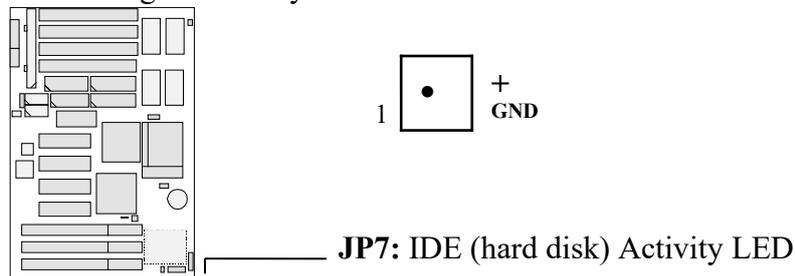
(Two 40-pin Block, J8 & J9)

These connectors support the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs at the other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Please refer to the documentation of your hard disk for the jumper settings. BIOS now supports IDE CD-ROM bootup (see “Boot Sequence” in the BIOS Features Setup of the BIOS Software)



8. IDE (hard disk) Activity LED (JP7)

This connector connects to the IDE (hard disk) activity indicator light on the system cabinet.

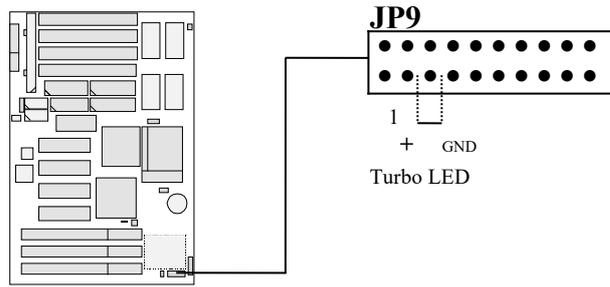


2. INSTALLATION

2-7 External Connectors (Continue...)

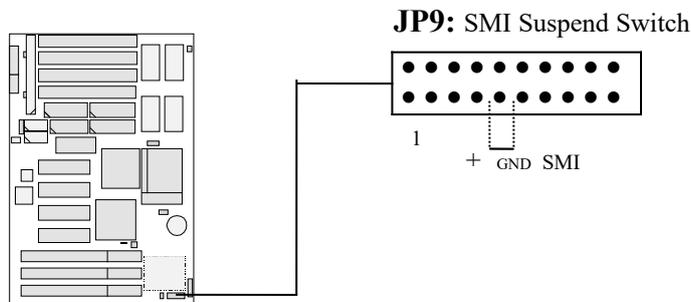
9. a) Turbo LED (JP9, pin3 and pin5)

This 2-pin connector lights the Turbo LED when the motherboard has power.



9. b) SMI Suspend Switch Lead (SMI, pin7 and pin9)

This allows the user to manually place the system into a suspend mode or “Green” mode where system activity will be instantly decreased to save electricity and expand the life of certain components when the system is not in use.



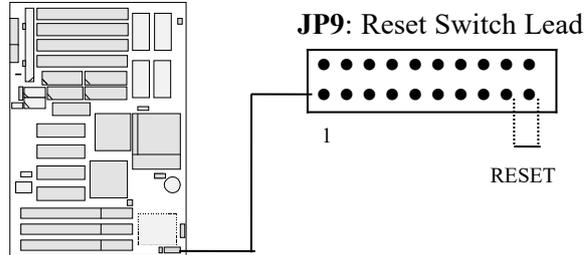
2. INSTALLATION

2-7 External Connectors (Continue...)

9. c) Reset Switch Lead

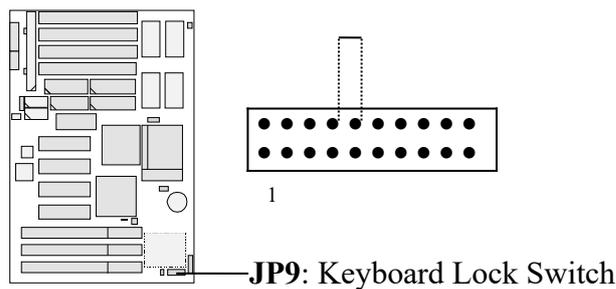
(JP9: Short pin17 & pin19, To RESET,)

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to extend the life of the system's power supply.



9. d) Keyboard Lock Switch Lead
(JP9: pin8, pin10, KEYLOCK,)

This 5-pin connector connects to the case-mounted keyboard lock switch for locking the keyboard and also to connect the system power LED. The system power LED lights when the system is powered on.

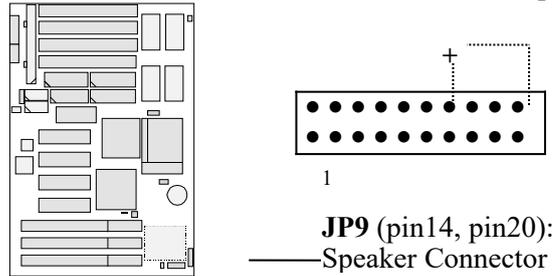


2. INSTALLATION

2-7 External Connectors (Continue...)

9. e) Speaker Connector
(JP9: pin14 and pin20, SPEAKER)

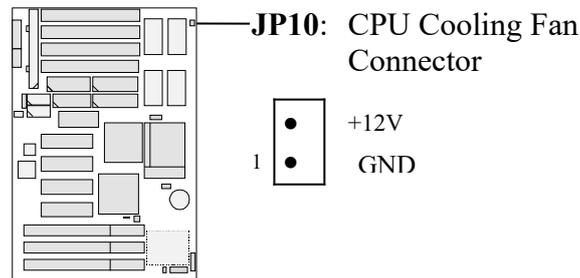
This 2-pin connector connects to the case-mounted speaker.



10. CPU Cooling Fan Connector (JP10)

This connector supports a CPU cooling fan of 500mA (6Watt) or less. Orient the fan so that the heat sink fins allow airflow to go across the onboard heat sink(s) instead of the expansion slots. Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of the connector.

NOTE: The CPU and/or motherboard will overheat if there is no airflow across the CPU and onboard heat sinks. Damage may occur to the motherboard and/or the CPU fan if these pins are incorrectly used. These are not jumpers, do not place jumper caps over these pins.



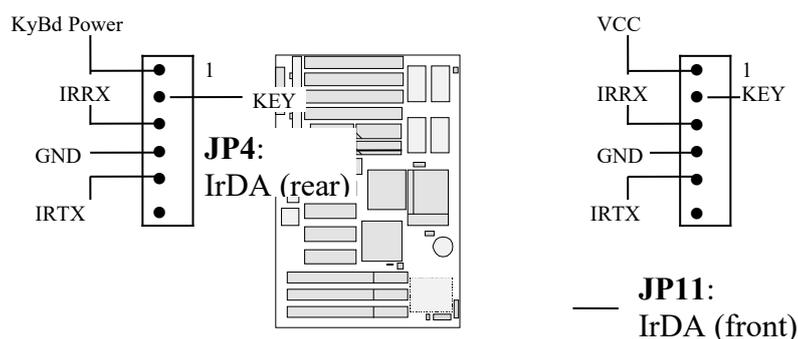
2. INSTALLATION

2-7 External Connectors (Continue...)

11. IrDA-Compliant Infrared Module Connector

(JP4, JP11)

This connector supports the optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system cases that support this feature. You must also configure UART 2 Use Infrared in Chipset Features Setup to select whether UART2 is directed for use with COM2 or IrDA. When IrDA is selected in BIOS, COM2 will be disabled. Use the six pins as shown on the Back View and connect a ribbon cable from the module to the motherboard to the pin definitions.



2. INSTALLATION

2-8 Power Up Procedures

1. After jumpers and connections are made, close the system case cover.

2. Make sure that all switches are in the off position.
 3. Connect the power supply cord into the supply located on the back of your system case as instructed by your system user's manual.
 4. Connect the power cord outlet that is equipped by a surge protector.
 5. You may turn on your devices in the following order:
 - a. Your monitor
 - b. Your system power. For power supplies, you need to switch on the power supply as well as press the power switch on the front of the case.
 6. During power-on, hold down the key to enter BIOS setup. Follow the next section "BIOS" SOFTWARE" for instructions.
- Powering Off your computer: You must first exit or shut down your operating system before switching off the power switch.

3. BIOS SOFTWARE

3-1 Introduction

AWARD BIOS ROM provides a built-in setup program that allows users to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS RAM so data will be retained even when

the power is turned off. In general, the information saved in the CMOS RAM stay unchanged unless there is configuration change in the system, such as hard drive replacement or new equipment change.

It is possible that CMOS had a battery failure which cause data lose in CMOS RAM. If so, re-enter system configuration parameters become necessary.

The Award BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control to the operating system.

While the BIOS is in control, the Setup program can be activated in one of the two ways:

1. By pressing immediately after switching system on, or
2. by pressing the key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test). Press to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again asked to ...

PRESS <F1> TO CONTINUE, TO ENTER SETUP

3. BIOS SOFTWARE

3-2 AWARD BIOS Setup Program

To turn on (or reboot) the system and press the [Del] key to enter the AWARD BIOS setup screen as following:

drive, floppy disk drive, display and memory. When a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

ROM PCI/ISA BIOS (2A59GECA)								
STANDARD SETUP UTILITY								
AWARD SOFTWARE, INC								
Date (mm: dd: yy): Fri, Jan 31 1997								
Time (hh:mm:ss) : 9 : 15 : 41								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: Auto	0	0	0	0	0	0	LBA
Primary Slave	: Auto	0	0	0	0	0	0	AUTO
Secondary Master	: Auto	0	0	0	0	0	0	AUTO
Secondary Slave	: Auto	0	0	0	0	0	0	AUTO
Drive A : 1.44M, 3.5in.					Base Memory: 640K			
Drive B : None					Extended Memory: 31744K			
Video : EGA/VGA					Other Memory: 384K			
Halt On : All Errors					Total Memory: 32768K			
ESC : Quit ↑↓→← : Select Item PU/PD/+/- : Modify								
F1 : Help (Shift) F2 : Change Color								

Figure 3-2 Standard CMOS Setup Screen

Hard Disk Mode: Install hard disk (such as MFM, ESDI or IDE) to your system, **you need to have their specifications recorded here.** The SCSI drives operate using device drivers and are not supported directly by BIOS.

For IDE hard drives, the BIOS provides three modes to support both normal IDE hard disks and also drives larger than 528MB.

3. BIOS SOFTWARE

3-3 Standard CMOS SETUP (Continue..)

Normal Mode - for IDE drives smaller than 528MB.

LBA Mode - provide LBA (Large Block Addressing) function for mass capacity hard disk that is larger than 528MB and up to

8.4GB (Giga-Bytes).

Large Mode - doesn't use LBA function for above mass capacity hard disk. Large mode is new specifications which may not be fully supported by all operational systems (MS-DOS is OK right now, but is uncommon).

*Write Pre-Compensation - The size of a sector gets progressively smaller as the track diameter diminishes. Yet each sector must still hold 512 bytes. Write pre-compensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current sectors on inner track.

* Landing Zone - The cylinder location where the heads will normally park when the system is shut down.

* Capacity = (Number of heads) x (Number of cylinders) x (Number of sectors per track) x (512 Bytes per sector)

3. BIOS SOFTWARE

3-4 BIOS Features Setup

By choosing the "BIOS FEATURES SETUP" option from the CMOS SETUP UTILITY Menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the motherboard.

ROM PCI/ISA BIOS (2A59GECA) BIOS FEATURES SETUP AWARD SOFTWARE, INC					
Virus Warning	:	Disabled	Video BIOS Shadow	:	Enabled
CPU Internal Cache	:	Enabled	C8000 - CBFFF Shadow	:	Disabled
External Cache	:	Enabled	CC000 - CFFFF Shadow	:	Disabled
Quick Power On Self Test	:	Disabled	D0000 - D3FFF Shadow	:	Disabled
Boot Sequence	:	A,C,SCSI	D4000 - D7FFF Shadow	:	Disabled
Swap Floppy Drive	:	Disabled	D8000 - DBFFF Shadow	:	Disabled
Boot Up Floppy Seek	:	Enabled	DC000 - DFFFF Shadow	:	Disabled
Boot Up NumLock Status	:	ON			
Boot Up System Speed	:	High			
Gate A20 Option	:	Fast			
Typematic Rate Setting	:	Disabled			
Typematic Rate (Chars/Sec)	:	6			
Typematic Delay (Msec)	:	250			
Security Option	:	Setup			
PCI/VGA Palette Snoop	:	Disabled	ESC : Quit		↑↓→← : Select Item
OS Select For DRAM>64MB	:	Non-OS2	F1 : Help		PU/PD/+/- : Modify
Report No FDD for WIN95	:	Yes	F5 : Old Values		(Shift) F2 : Color
			F6 : Load BIOS Defaults		
			F7 : Load Setup Defaults		

Figure 3-3 BIOS Feature Setup Screen

a. **Virus Warning**

When enabled, BIOS warns the user when any program attempts to write or format the boot sector and allows the user to intervene.

b. **Cache Control**

CPU Internal Cache/External Cache: These two categories speed up memory access. The default value is enable.

3. BIOS SOFTWARE

3-4 BIOS Features Setup (Continue...)

c. **Boot Up Features**

After power on the system, BIOS will perform a series of device initializations and diagnostic tests.

Quick Power On Self Test: If it set to Enabled, BIOS will skip some check items during POST.

d. **Boot Sequence**

This option sets the sequence of boot drives (either floppy drive A: or hard disk drive C that BIOS attempts to boot from after POST completes.

ⓘ CD-ROM driver is becoming a standard device on computer systems. It has a large storage capacity advantage to store different operating system on it and will need boot-up of the system via CD-ROM. Now, we provides CD-ROM boot-up function that allows the user to select booting from drive A, C, or CD-ROM. No matter if the CD-ROM is IDE or SCSI, the system will look for the first available bootable device for the operating system.

Swap Floppy Drive: Enabled - The system will swap the floppy drive assignment so that drive A will function as drive B, drive B will function as drive A.

Boot Up Floppy Seek: During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. (360K type drive is 40 tracks and the 720K, 1.2M and 1.44M are 80 tracks).

Boot Up NumLock Status: Define the keyboard as number keys or arrow keys.

Boot-Up System Speed: This option selects the speed of CPU at system boot time.

e. **Keyboard Interface**

Typematic Rate Setting: When enabled, you can set the two typematic controls listed next, default setting is “Disabled”.

3. BIOS SOFTWARE

3-4 BIOS Features Setup (Continue...)

Typematic Rate (chars/sec): The typematic rate is set at the rate at which characters on the screen repeat when a key is pressed and held down.

Typematic Delay (msec): Choose how long after you press a

key that a character begins repeating.

f. Security Option

System: When entering wrong password, the system will not boot and deny to access the BIOS setup.

Setup: When entering wrong password, the system can boot, but deny any access to the BIOS Setup.

g. PCI/VGA Palette Snoop

A system may have two display devices present in the system: a VGA-compatible interface and another graphics controller. In this case, both devices implement the color palette registers at the same I/O addresses. The configuration software must program one of the devices to actively act as the target, while the other device is programmed to quietly “snarf” the write data from the bus as it flies by on its way to the other device.

ⓘ Some non-standard VGA cards or MPEG video cards may not show colors properly. You can leave this setting to **Enable** that could correct this problem.

h. OS Select (For DRAM > 64MB)

If your system DRAM is larger than 64MB and running OS/2, please select “OS/2” as the item value. If running other operating system, please set the item value to “non-OS/2”.

i. Report No FDD for Win95

Under Win95 system, allow the releasing of FDD port’s IRQ for other usage.

j. Shadow Memory

BIOS can copy adapter’s ROM from address C0000h through DFFFFh to RAM for faster execution. Shadow setting are chipset specific and dependent on system hardware.

3. BIOS SOFTWARE

3-5 Chipset Features Setup

By choosing the “CHIPSET FEATURES SETUP” option from

the CMOS SETUP UTILITY Menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the motherboard.

ROM PCI/ISA BIOS (2A59GECA)			
CHIPSET FEATURES SETUP			
AWARD SOFTWARE, INC			
AUTO Configuration	: Enabled	Delay Transaction	: Disabled
DRAM Timing	: 70ns		
DRAM RAS# Precharge Time	: 4		
DRAM R/W Leadoff Timing	: 6		
Fast RAS to CAS Delay	: 3		
DRAM Read Burst (EDO/FPM)	: x333/x444		
DRAM Write Burst Timing	: x333		
Fast MA to RAS# Delay Clk	: 1		
Fast EDO Path Select	: Disabled		
Refresh RAS# Assertion	: 5 Clks		
ISA Bus Clock	: PCICLK/4		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
8 Bit I/O Recovery Time	: N/A	ESC : Quit	↑↓→← : Select Item
16 Bit I/O Recovery Time	: 1	F1 : Help	PU/PD/+/- : Modify
Memory Hole At 15M-16M	: Disabled	F5 : Old Values	(Shift) F2 : Color
Peer Concurrency	: Enabled	F6 : Load BIOS Defaults	
Passive release	: Enabled	F7 : Load Setup Defaults	

Figure 3-4 BIOS Chipset Features Setup Screen

- a. **8-bit I/O Recovery Time & 16-bit I/O Recovery Time**
This category is used to add additional recovery delay between CPU or PCI master 8-bit (or 16-bit) I/O cycles to the ISA Bus. The options are 1 to 8 and N/A.
- b. **IDE HDD Block Mode: Enabled/Disabled**
Specifies the maximum number of sectors that can be transferred at a time.
- c. **Memory Hole at 15MB-16MB: Enabled/Disabled**
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.

3. BIOS SOFTWARE

3-6 Power Management Setup

This section provides information of functioning the Green PC power management features. For enabling the power management function, please select “POWER MANAGEMENT SETUP” option from the “CMOS SETUP UTILITY” Menu.

ROM PCI/ISA BIOS (2A59GECA)		
POWER MANAGEMENT SETUP		
AWARD SOFTWARE, INC		
Power Management	: Disabled	** Power Down & Resume Events **
PM Control by APM	: Yes	IRQ3 (COM2) : On
Video Off Method	: V/H SYNC+Blank	IRQ4 (COM1) : On
Modem use IRQ	: 3	IRQ5 (LPT2) : Off
Doze Mode	: Disabled.	IRQ6 (Floppy Disk) : Off
Standby Mode	: Disabled	IRQ7 (LPT1) : Off
Suspend Mode	: Disabled	IRQ8 (RTC Alarm) : Off
HDD Power Down	: Disabled	IRQ9 (IRQ2 Redir) : Off
** Wake up Events In Doze & Standby **		IRQ10 (Reserved) : Off
IRQ3 (Wake-Up Event)	:On	IRQ11(Reserved) : Off
IRQ4(Wake-Up Event)	:On	IRQ12 (PS/2 Mouse) : Off
IRQ8(Wake-Up Event)	:On	IRQ13(Coprocessor) : Off
IRQ12 (Wake-Up Event)	:On	IRQ14(Hard Disk) : On
		IRQ15(Reserved) : Off
		ESC : Quit ↑↓→← :Select Item
		F1 : Help PU/PD/+/- : Modify
		F5 : Old Values (Shift) F2 : Color
		F6 : Load BIOS Defaults
		F7 : Load Setup Defaults

Figure 3-5 Power Management Setup Screen

a. **Selecting “Power Management” Mode**

Power Management

User Define - User can configure their own power management function.

Disabled - Disable the power management features.

Minimum Saving - All timers are in their minimum value.

Doze - One hour; Standby, One hour; Suspend, One hour.

Maximum Saving - All timers are in their maximum value.

Doze - One hour; Standby, One hour; Suspend, One hour.

3. BIOS SOFTWARE

3-6 Power Management Setup (Continue...)

PM Control by APM

Support the Intel and Microsoft INT 15h Advanced Power Management BIOS function which creates and interface to allow the OS to communicate with the SIMM code. If APM is not installed, this option has no effect.

- ⦿ APM(Advanced Power Management) should be installed to keep the time updated when the computer enters suspend mode activated by the BIOS Power Management, For DOS environments, you need to add DEVICE=C:\DOS\POWER.EXE. For Windows 3.1x and Windows 95, you need to install Windows using the APM feature.

Video Off Method

Blank - BIOS will only blanks off the screen when disabling video.

V/H SYNC+Blank - BIOS will blank off the screen and turn off V/H SYNC signals to turn off the V-SYNC and H-SYNC signals from VGA cards to monitor.

- ⦿ If Green monitors detect the V/H-SYNC signals turned off, it cuts off the electron gun to save power consumption.

b. PM Time Setting

Doze Mode: If no PM events happened and the Doze timer expires, system will enter CPU's Doze mode.

Standby Mode: If system runs into Doze mode and the Standby timer expires, system will enter CPU's Standby mode (CPU speed = CPUCLK / 3 MHz) from Doze mode.

- ⦿ The CPUCLK (external CPU clock) means system clock mentioned in the manual.

Suspend Mode: If there is no any activity continued and the Suspend is time-out, the system will stop the CPU clock (CPU speed = 0 MHz).

- ⦿ Within Standby or Suspend, system may also turn off the video signal and power down the hard disk driver (depend on "HDD Power Down" setting).

3. BIOS SOFTWARE

3-6 Power Management Setup (Continue...)

HDD Power Down: When the HDD idle time has elapsed, the

BIOS sends a command to the hard disk to enter sleep mode (turn off the motor). This function is only valid for IDE HDDs that support power saving function.

c. PM Events Mask Control

Individual IRQ Wake-Up Event: If an interrupt request is generated by using a device, it will wake up the system to normal mode (support by any green modes).

Power Down Activities:

The system runs at Doze at Suspend Mode:

If any event happened, the system will return to normal mode.

The system runs at Doze or Standby mode:

If any event happened, the timer will recounting from zero.

- ⦿ APM(Advanced Power Management) should be installed to keep the time updated when the computer enters suspend mode activated by the BIOS Power Management, For DOS environments, you need to add DEVICE=C:\DOS\POWER.EXE. For Windows 3.1x and Windows 95, you need to install Windows using the APM feature.

Video Off Method

Blank - BIOS will only blanks off the screen when disabling video.

V/H SYNC+Blank - BIOS will blank off the screen and turn off V/H SYNC signals to turn off the V-SYNC and H-SYNC signals from VGA cards to monitor.

- ⦿ If Green monitors detect the V/H-SYNC signals turned off, it cuts off the electron gun to save power consumption.

3. BIOS SOFTWARE

The PNP/PCI configuration program is for the user to modify the PCI/ISA IRQ signals when various PCI/ISA cards are inserted in the PCI or ISA slots.

WARNING: Any misplacing IRQ could cause system can't pick out the resources.

ROM PCI/ISA BIOS (2A59GECA) PNP/PCI CONFIGURATION AWARD SOFTWARE, INC	
Resources Controlled by : Manual Reset Configuration Data : Disabled	PCI IRQ Activated by : Level PCI IDE IRQ Map To : PCI-AUTO Primary IDE INT# : A Secondary IDE INT# : B Used MEM Base Addr : N/A
IRQ-3 Assigned to : Legacy ISA IRQ-4 Assigned to : Legacy ISA IRQ-5 Assigned to : PCI/ISA PnP IRQ-7 Assigned to : PCI/ISA PnP IRQ-9 Assigned to : PCI/ISA PnP IRQ-10 Assigned to : PCI/ISA PnP IRQ-11 Assigned to : PCI/ISA PnP IRQ-12 Assigned to : PCI/ISA PnP IRQ-14 Assigned to : PCI/ISA PnP IRQ-15 Assigned to : PCI/ISA PnP DMA-0 Assigned to : PCI/ISA PnP DMA-1 Assigned to : PCI/ISA PnP DMA-3 Assigned to : PCI/ISA PnP DMA-5 Assigned to : PCI/ISA PnP DMA-6 Assigned to : PCI/ISA PnP DMA-7 Assigned to : PCI/ISA PnP	ESC : Quit ↑↓→← : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

Figure 3-6 PNP/PCI Configuration Setup Screen

- a. **Resource Controlled By:** The default value is Manual.
Manual: The field defines that the PnP card's resource is controlled by manual . You can set which IRQ-X and DMA-X assigned to PCI/ISA PnP or Legacy ISA cards.
Auto: If your ISA card and PCI card are all PnP cards. To set this field code. If Advanced Power Management (APM) is not installed, this option has no effect.

3. BIOS SOFTWARE

3-7 PCI/PnP & Onboard I/O Setup (Continue..)

- b. Reset Configuration Data: The default value is Disabled.
 Disabled: Normal Setting.
 Enabled: If you have plugged some Legacy cards in the system and there were recorded into ESCD (Extended System Configuration Data). You can set this field to Enabled and to clear ESCD one time. When some Legacy cards were removed.
- c. PCI IDE IRQ Map To: The default value is PCI-AUTO.
 When you have true PCI card(s) plugged into the system, you will not need to change anything here in the SETUP program. However, if you do not know whether you have true PCI card or not, please refer to your PCI card user's manual for the detail.

When you have Legacy card plugged into the system, a proper setting is extremely important or it may cause the system to hang up. The diagram below shows how the Rotating Priority Mechanism is designed.

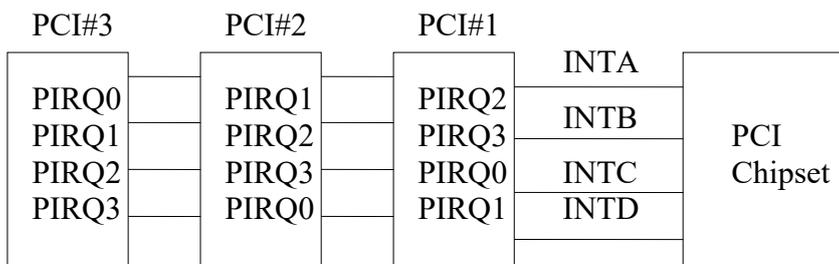


Figure 3-7 The Combination of PCI INT# Lines

3. BIOS SOFTWARE

3-8 Integrated Peripherals

Note: If you don't use the Onboard IDE connector, than use On-card (PCI or ISA card) IDE connector, you will set

Onboard Primary PCI IDE: Disabled and Onboard Secondary PCI IDE: Disabled from CHIPSET FEATURES SETUP UTILITY. The Onboard PCI IDE cable should be equal to or less than 18 inches (45cm).

ROM PCI/ISA BIOS (2A59GECA) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC		
IDE HDD Block Mode	:Enabled	
IDE Primary Master PIO	:Auto	
IDE Primary Slave PIO	:Auto	
IDE Secondary Master PIO	:Auto	
IDE Secondary Slave PIO	:Auto	
On-Chip Primary PCI IDE	: Enabled	
On-Chip Secondary PCI IDE	: Enabled	
PCI Slot IDE 2 nd Channel	: Enabled	
USB Controller	: Enabled	
USB Keyboard Support	: Disabled	
KBC Input Clock	: 12MHz	
Onboard FDC Controller	: Enabled	
Onboard Serial Port1	: Auto	ESC : Quit ↑↓→← : Select Item
Onboard Serial Port2	: Auto	F1 : Help PU/PD/+/- : Modify
UR2 Mode	: Standard	F5 : Old Values (Shift) F2 : Color
Onboard Parallel Port	:378/IRQ7	F6 : Load BIOS Defaults
Parallel Port Mode	: SPP	F7 : Load Setup Defaults

Figure 3-8 Integrated Peripherals Setup Screen

- a. **Resource Controlled By:** The default value is Manual.
Manual: The field defines that the PnP card's resource is controlled by manual . You can set which IRQ-X and DMA-X assigned to PCI/ISA PnP or Legacy ISA cards.
Auto: If your ISA card and PCI card are all PnP cards. To set this field code. If APM is not installed, this option has no effect.

3. BIOS SOFTWARE

3-8 Integrated Peripherals (Continue...)

- b. **Onboard Primary PCI IDE:** The default value is Enabled.

Enabled: Enable Onboard 1st channel IDE port.
Disabled: Disable Onboard 1st channel IDE port. When use On-card (PCI or ISA card) IDE connector.

c. **Onboard Primary PCI IDE:** The default value is Enabled.

Enabled: Enable Onboard 1st channel IDE port.

Disabled: Disable Onboard 1st channel IDE port. When use On-card (PCI or ISA card) IDE connector.

d. **IDE Primary Master PIO:** The default value is Auto.

Auto: BIOS will automatically detect the Onboard Primary Master PCI IDE HDD Accessing mode.

Mode 0-4: Manually set the IDE Accessing mode.

e. **IDE Primary Slave PIO:** The default value is Auto.

Auto: BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD Accessing mode.

Mode 0-4: Manually set the IDE Accessing mode.

f. **IDE Secondary Master PIO:** The default value is Auto.

Auto: BIOS will automatically detect the Onboard Secondary Master PCI IDE HDD Accessing mode.

Mode 0-4: Manually set the IDE Accessing mode.

g. **IDE Secondary Slave PIO:** The default value is Auto.

Auto: BIOS will automatically detect the Onboard Secondary Slave PCI IDE HDD Accessing mode.

Mode 0-4: Manually set the IDE Accessing mode.

3. BIOS SOFTWARE

3-8 Integrated Peripherals (Continue...)

h. **Onboard FDC Controller:** The default value is Enabled.

Enabled: Enable the Onboard I/O CHIP's floppy drive interface controller.

Disabled: Disable the Onboard I/O CHIP's floppy drive interface controller. When use On-card ISA card FDC's controller.

i. **Onboard UART 1:**

This field allows the user to select the serial port. The default value is 3F8H/IRQ4.

COM1: Enable Onboard Serial Port 1 and address is 3F8H/IRQ4.

COM2: Enable Onboard Serial Port 1 and address is 2F8H/IRQ3.

COM3: Enable Onboard Serial Port 1 and address is 3E8H/IRQ4.

COM4: Enable Onboard Serial Port 1 and address is 2E8H/IRQ4.

Disabled: Disable Onboard I/O CHIP's serial port 1.

j. **Onboard UART 2:**

This field allows the user to select the serial port. The default value is 2F8H/IRQ3.

COM1: Enable Onboard Serial Port 2 and address is 3F8H/IRQ4.

COM2: Enable Onboard Serial Port 2 and address is 2F8H/IRQ3.

COM3: Enable Onboard Serial Port 2 and address is 3E8H/IRQ4.

COM4: Enable Onboard Serial Port 2 and address is 2E8H/IRQ4.

Disabled: Disable Onboard I/O CHIP's serial port 2.

k. **Onboard UART 2 Mode:** The default value is standard.

This field allows the user to select the COM2 port that can support a serial Infrared Interface.

HPSIR: Support a Serial Infrared Interface IrDA.

ASKIR: Support a HP Serial Infrared Interface formats.

l. **Onboard Parallel Port:** This field allows the user to select the LPT port. The default value is 378H/IRQ7.

378H: Enable Onboard LPT port and address is 378H and IRQ7.

278H: Enable Onboard LPT port and address is 278H and IRQ5.

3BCH: Enable Onboard LPT port and address is 3BCH and IRQ7.

Disabled: Disabled Onboard SMC CHIP's LPT port.

3. BIOS SOFTWARE

3-8 Integrated Peripherals (Continue...)

Note: Parallel Port address is 378H/3BCH that selects the routing of IRQ7 for LPT1. Parallel Port address is 278H that select the routing of IRQ5 for LPT1.

- n. **Parallel Port Mode:** This field allows the user to select the parallel port mode. The default value is ECP + EPP.
- Normal:** Standard mode. IBM PC/AT Compatible bi-directional parallel port.
 - EPP:** Enhanced Parallel Port mode.
 - ECP:** Extended Capabilities Port mode.
 - EPP+ECP:** ECP Mode & EPP Mode
- o. **ECP MODE USE DMA:**
This field allows the user to select DMA1 or DMA3 for the ECP mode. The default value is DMA 3.

3. BIOS SOFTWARE

3-9 Load Setup Defaults

This “Load Setup Defaults” option allows you to load the default values to the system configuration fields. These default values are the optimized configuration settings for the system. To load these default values, highlight “Load Setup Defaults” on the

main screen and then press the <Enter> key. The system displays a confirmation message on the screen. Press the <Y> key and then the <Enter> key to confirm. Press the <N> key and then the <Enter> key to abort. This feature does not affect the fields on the Standard CMOS Setup screen.

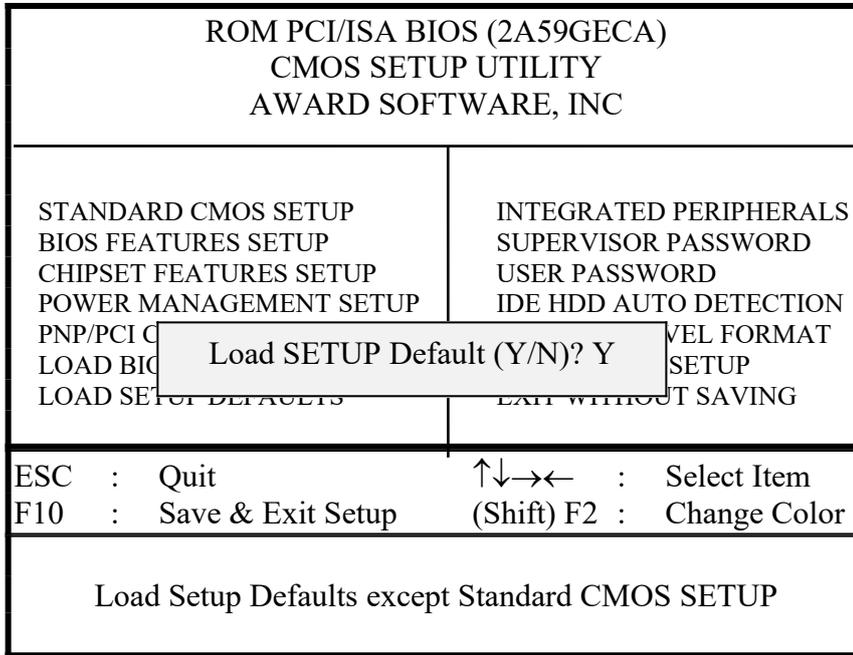


Figure 3-9 Load Setup Defaults Screen

3. BIOS SOFTWARE

3-10 Supervisor Password and User Password

These two options set the system passwords. “Supervisor Password” sets a password that will be used to protect the system and the Setup utility; “User Password” sets a password that will be used to exclusively on the system. By default, the system comes without any passwords. To specify a password, highlight the type you want and then press the <Enter> key. A

password prompt appears on the screen. Taking note that the password is case sensitive, and can be up to 8 alphanumeric characters long, type in your password by asking you to type it again. After setting a password, the screen automatically reverts to the main screen.

ROM PCI/ISA BIOS (2A59GECA) CMOS SETUP UTILITY AWARD SOFTWARE, INC	
STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI C LOAD SET LOAD SET OF DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION FORMAT UP EXIT WITHOUT SAVING
Enter Password: *****	
ESC :Quit F10 :Save & Exit Setup	↑↓→← : Select Item (Shift) F2 :Change Color
Change/Set/Disable Password	

Figure 3-10 Supervisor Password and User Password Screen

To implement the password protection, specify in the “Security Option” field of the BIOS Features Setup screen when the system will prompt for the password. If you want to disable either password, press the <Enter> key instead of entering a new password when the “Enter Password” prompt appears. A message confirms the password has been disabled.

Note: If you forget the password, see CMOS RAM section for procedures to clear the CMOS.

3. BIOS SOFTWARE

3-11 IDE HDD Auto Detection

The “IDE HDD AUTO DETECTION” utility is a very useful tool specially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically. But now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP. You don’t need the “IDE HDD

AUTO DETECTION” utility. The BIOS will auto-detect the hard disk size and model on display during POST.

ROM PCI/ISA BIOS (2A59GECA)							
CMOS SETUP UTILITY							
AWARD SOFTWARE, INC							
HEAD	DISK SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTOR	MODE
2	1754	850	64	0	3399	63	LBA
1	1754	3400	16	65535	3399	63	Normal
3	1754	1700	32	65535	3399	63	Large

Figure 3-11 IDE HDD AUTO DETECTION Screen

Note: HDD Modes -

The AWARD BIOS supports 3 HDD modes: Normal, LBA & LARGE.

Normal Mode - Generic access mode in which either the BIOS nor the IDE controller will make any transformations during accessing. The maximum number of cylinders, head, and sectors for Normal mode are 1024, 16, and 63.

No. of Cylinder (1024)
 x No. of Head (16)
 x No. of Sector (63)
 x No. per Sector (512)
 528 Megabytes

If user set his HDD to Normal mode, the maximum accessible HDD size will be 528 MB even though its physical size may be greater than that!

3. BIOS SOFTWARE

3-11 IDE HDD Auto Detection (Continue...)

LBA (Logical Block Addressing) Mode - A new HDD Accessing method to overcome the 528 MB bottleneck. The number of cylinders, heads, and sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the IDE controller will transform the

logical address by sector, head, and cylinder into its own physical address inside the HDD.
 The maximum HDD size supported by LBA mode is 8.4 Gigabytes which is obtained by the following formula:

$$\begin{array}{r}
 \text{No. of Cylinder} \quad (1024) \\
 \times \text{ No. of Head} \quad (255) \\
 \times \text{ No. of Sector} \quad (63) \\
 \underline{\times \text{ No. per Sector} \quad (512)} \\
 8.4 \text{ Gigabytes}
 \end{array}$$

LARGE Mode - Extended HDD access mode supported by AWARD software.

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The AWARD BIOS provides another alternative to support these kinds of LARGE mode:

<u>CYLS.</u>	<u>HEADS</u>	<u>SECTOR</u>	<u>MODE</u>
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse process will be made inside INT 12h in order to access the right HDD address the right HDD address!

$$\begin{array}{r}
 \text{No. of Cylinder} \quad (1024) \\
 \times \text{ No. of Head} \quad (32) \\
 \times \text{ No. of Sector} \quad (63) \\
 \underline{\times \text{ No. per Sector} \quad (512)} \\
 1 \text{ Gigabytes}
 \end{array}$$

3. BIOS SOFTWARE

3-11 IDE HDD Auto Detection (Continue...)

Note: To support LBA or LARGE mode of HDDs, there must be some softwares involved. All these softwares are located in the AWARD HDD Service Routine (INT 13h). It may be

failed to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h. UNIX operating systems do not support either LBA or LARGE and must utilize the Standard mode. UNIX can support drives larger than 528MB.

3-12 HDD Low-Level Format Utility

This Award Low-Level-Format Utility is designed as a tool to save your time formatting your hard disk. The Utility automatically looks for the necessary information of the drive you selected. The Utility also searches for bad tracks and lists them for your reference.

Shown below is the Menu screen after you enter into the Award Low-Level-Format Utility.

<table border="1"> <tr> <td colspan="2" style="text-align: center;">HARD DISK initializing Please wait a moment</td> </tr> </table>								HARD DISK initializing Please wait a moment	
HARD DISK initializing Please wait a moment									
Found CDROM : NEC				CD-ROM DRIVE: 282					
	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE		
Primary Master	: 1754	850	64	0	3399	63	LBA		
Primary Slave	: 849	823	32	0	1646	63	LBA		
Secondary Master	: 0	0	0	0	0	0	NORMAL		
Secondary Slave	: 0	0	0	0	0	0	NORMAL		

Figure 3-12 HDD LOW LEVEL FORMAT Screen

3-13 Save and Exit Setup

The “SAVE & EXIT SETUP” option will bring you back to boot up procedure with all the changes you just made which are recorded in the CMOS RAM.

ROM PCI/ISA BIOS (2A59GECA) CMOS SETUP UTILITY AWARD SOFTWARE, INC	
STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURATION LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION HDD LOW LEVEL FORMAT SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC :Quit	↑↓→← : Select Item
F10 :Save & Exit Setup	(Shift) F2 :Change Color
Time, Date, Hard Disk Type...	

Figure 3-13 Save and Exit Setup Screen

3-14 Exit Without Saving

The “EXIT WITHOUT SAVING” option will bring you back to normal boot up procedure without saving any data into CMOS RAM. All of the old data in the CMOS will not be destroyed.

On Board I/O Address & IRQ Maps

System Resource	IRQ No.	I/O Address
1. Timer	IRQ0	040~043
2. Keyboard	IRQ1	060~064
3. Programmable INT Controller	IRQ2	0020~0021 00A0~00A1
4. COM2(B)	IRQ3	2F8~2FF
5. COM1(A)	IRQ4	3F8~3FF
6. Floppy	IRQ6	3F0~3FF
7. LPT1	IRQ7	378~37F
8. Real Time Clock	IRQ8	070~071
9. PS/2 Mouse	IRQ12	
10. Math coprocessor	IRQ13	0F0~0FF
11. IDE 1	IRQ14	1F0~1F7
12. IDE 2	IRQ15	170~177

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**POST-CONSUMER
RECYCLED PAPER**

EP-PV12

User's Manual