PT-2012

MAINBOARD PRELIMINARY MANUAL

Date : 8, 1997

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Overview

Based on the new highly-integrated Intel 430TX PCIset, the PT-2012 combines blistering Pentium® processor performance with support for intelligent diagnostic and power management features like Hardware Monitoring, DMI (Desktop Management Interface) and ACPI (Advanced Configuration and Power Interface), to provide a powerful and versatile ATX-size platform for leading-edge PC '97 compliant systems.

With its switching voltage regulator, the PT-2012 runs a complete range of Intel Pentium® processors, including the Intel Pentium processor with MMX™ technology, as well as the AMD-K5™ and Cyrix/IBM 6x86™, and is easily upgradable to the Cyrix/IBM MX™ and the AMD-K6™. For added power and performance, the PT-2012 takes up to 512KB Pipeline Burst Level II cache and up to 256MB DRAM via three 168-pin DIMM sockets which accept high-speed 3.3 V EDO DRAM and lightning-fast SDRAM memory types.

The PT-2012 comes with a full set of I/O features conveniently integrated on the rear I/O panel, including two USB connectors. The board also has an integrated PCI Bus Master Enhanced IDE controller with support for the new Ultra DMA/33 protocol, which doubles ATA-2 Hard Disk Drive data transfer rates to 33MB/s while maintaining full backwards compatibility with existing PIO Mode 3, PIO Mode 4 and DMA Mode 2 devices.

Fully compliant with the Microsoft PC'97 standard at both the hardware and BIOS levels, the PT-2012 comes with support for intelligent Hardware Monitoring and DMI features which continuously check the thermal status of your system and reduce the cost of ownership through improved manageability. The mainboard also comes with the feature of LANDesk Client Manager (LDCM) that uses the DMI standard established by the Desktop Management Task (DMTF) so that the manageable components can be viewed across multiple platforms.

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

Main Features

The PT-2012 mainboard comes with the following high-performance features:

ν Easy Installation

Award BIOS with support for auto-detection of Hard Disk Drives, Plug and Play devices, and PS/2 keyboard and mouse, to facilitate the installation of HDDs, expansion cards and other peripheral devices.

ν Leading Edge Chipset

Intel 82430TX PCIset, a two-chip BGA solution with integrated DRAM and LII cache controllers as well as support for Intel's new Dynamic Power Management Architecture (DPMA), Concurrent PCI (PCI 2.0 and 2.1), and USB.

ν

ν Flexible Processor Support

Onboard 321-pin ZIF socket and switching voltage regulator support complete range of leading-edge processors:
Intel Pentium® MMX™ technology 166/200/233 MHz processors.
Intel Pentium® P54C/P54CS 90/100/120/133/150/166/200 MHz processors.
AMD-K6™-166 (166 MHz) / K6-200 (200 MHz) / K6-233 (233 MHz) processors.
AMD-K5™- PR90 (90 MHz) / K5-PR100 (100 MHz) / K5-PR120 (90 MHz) / K5-PR133 (100 MHz) / K5-PR150 (105 MHz) / K5-PR166 (116 MHz) / K5-PR200 (133 MHz) processors.
Cyrix 6x86MX™- PR166 (150 MHz) / 6x86MX-PR200 (166 MHz) / 6x86-MX-PR233 (200 MHz) / 6x86MX-PR266 (233 MHz) processors.
Cyrix 6x86™- PR133+ (110 MHz) / 6x86-PR150+ (120 MHz) / 6x86-PR166+ (133 MHz) processors.
IBM 6x86MX™- PR166 (150 MHz) / 6x86MX-PR200 (166 MHz) / 6x86-MX-PR233 (200 MHz) / 6x86MX-PR266 (233 MHz) processors.
IBM 6x86™- PR133+ (110 MHz) / 6x86-PR150+ (120 MHz) / 6x86-PR166+ (133 MHz) processors.

ν Various External Bus and CPU/Bus Frequency Ratio Support

The mainboard supports the Bus frequency of 55 / 60 / 66 MHz and the CPU/Bus frequency ratio of 1x / 1.5x / 1.75x / 2x / 2.5x / 3x / 3.5x / 4x. (Please refer to Sec. **Install the CPU** in Chapter 2 for more information).

- Ultra-fast Level II Cache
  Supports 512KB onboard Pipeline Burst Level II direct-mapped write-back cache.

- Versatile Main Memory Support
  Accepts up to 256MB using three DIMMs of 8, 16, 32, 64, 128MB with support for and 3.3V EDO DRAM and lightning-fast SDRAM.

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

- Enhanced PCI Bus Master IDE Controller with Ultra DMA/33 Support
  Integrated Enhanced PCI Bus Master IDE controller features two dual-channel connectors that accept up to four Enhanced IDE devices, including CD-ROM and Tape Backup Drives, as well as Hard Disk Drives supporting the new Ultra DMA/33 protocol which doubles data transfer rates to 33MB/sec. Standard PIO Mode 3, PIO Mode 4, and DMA Mode 2 devices are also supported.

- Super Multi I/O
  Integrated NS PC87309 Plug and Play multi-I/O chipset features two high-speed 16550A compatible serial ports, one EPP/ECP capable parallel port, and one FDD connector.
-
- USB Support
  Two USB ports integrated in the rear I/O panel allow convenient, high-speed Plug and Play connections to the growing number of USB compliant external peripheral devices on the market.
-
- Optional IrDA Connector
  An optional IrDA connector for wireless infrared connections is available.

- LDCM Support
  The onboard connector supports PCI LAN cards that equipped AMD PCnet-ISA II™ (79C961A) and PCnet-PCI II™ (79C9790A) chipsets for allowing remote waking-up (PT-2012 as a workstation) and supports LDCM 3.0 feature.

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Installation Procedures

The PT-2012 has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

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

- Step 1 -
  - Set system jumpers
-
- Step 2 -
  - Install RAM modules

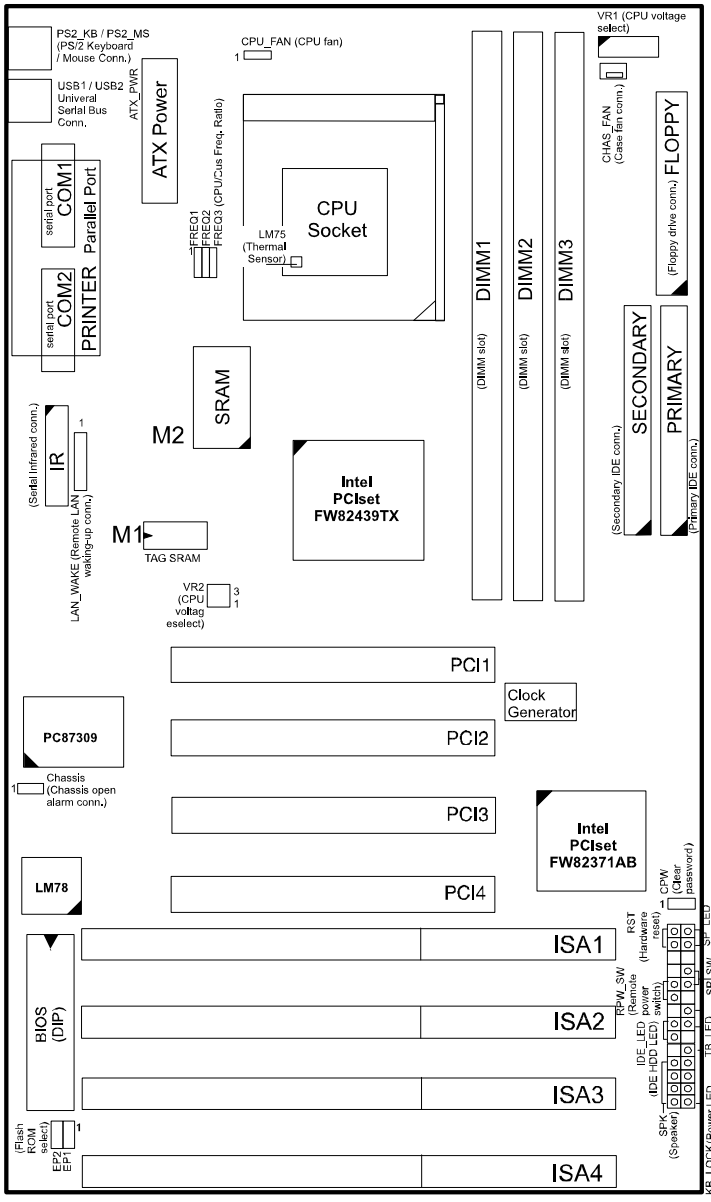
- Step 3 -
- Install the CPU

- Step 4 -
- Install expansion cards

- Step 5 -
- Connect cables and power supply
-

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

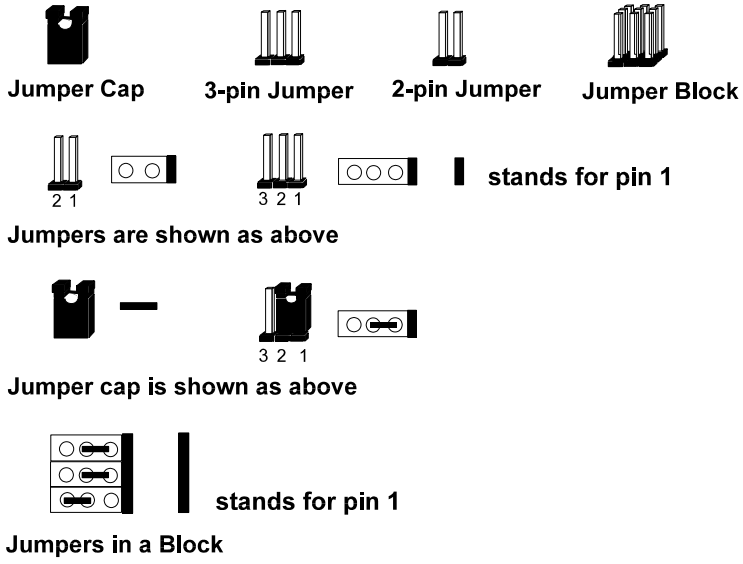
Mainboard Layout


PS2_KB / PS2_MS
(PS/2 Keyboard / Mouse Conn.)
USB1 / USB2
Univeral Serial Bus Conn.
ATX_PWR
ATX Power
CPU_FAN (CPU fan)
VR1 (CPU voltage select)
CHAS_FAN (Case fan conn.)
FLOPPY
(Floppy drive conn.)
FREQ1
FREQ2
FREQ3 (CPU/Cus Freq. Ratio)
CPU Socket
LM75 (Thermal Sensor)
DIMM1
DIMM2
DIMM3
(DIMM slot)
serial port
COM1
Parallel Port
serial port
COM2
PRINTER
SRAM
M2
IR
(Serial Infrared conn.)
LAN_WAKE (Remote LAN waking-up conn.)
M1
TAG SRAM
Intel PCIset FW82439TX
VR2 (CPU voltag eselect)
SECONDARY
PRIMARY
(Secondary IDE conn.)
(Primary IDE conn.)
PCI1
PCI2
PCI3
PCI4
Clock Generator
PC87309
Chassis (Chassis open alarm conn.)
Intel PCIset FW82371AB
LM78
CPW (Clear password)
RST (Hardware reset)
RPW_SW (Remote power switch)
IDE_LED (HDD LED)
TB_LED (Turbo LED)
SPKSW (Suspend mode switch)
SP_LED (Suspend mode LED)
SPK (Speaker)
KB_LOCK (Power LED & keyboard)
BIOS (DIP)
ISA1
ISA2
ISA3
ISA4
(Flash ROM select)
EP2
EP1

1). Set System Jumpers

Jumpers

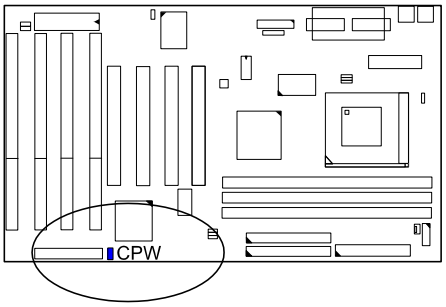
Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. To set a jumper, a black cap containing metal contacts is placed over the jumper pins according to the required configuration. A jumper is said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

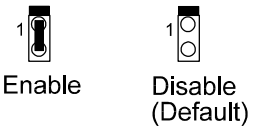


NOTE : Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.

Clear Password: CPW

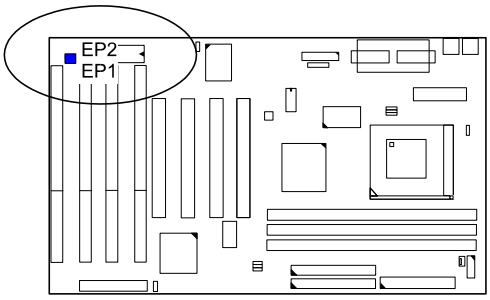
This jumper allows you to set the password configuration to Enabled or Disabled. You may need to enable this jumper if you forget your password.





Flash ROM Type Selection: EP1, EP2

These two jumpers allow you to select the flash ROM type.



Model	EP1	EP2
Intel 28F001	1	1
SST 29EE010	1	1
MXIC MX28F2000	1	1
SST 29EE020	1	1
ATMEL AT29C020	1	1
AMD 28F020	1	1

2). Install System RAM Modules

SDRAM

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

The PT-2012's RAM is comprised of three 168-pin Dual In-line Memory Modules (DIMMs). SDRAM is an advanced new memory technology that boosts overall system performance with its ability to synchronize all operations with the processor clock signal. This makes the implementation of control interfaces easier, and speeds up column access time. SDRAM features an on-chip burst counter that can be utilized to increment column addresses for very fast burst access, which means that SDRAM allows new memory access to be initiated before the preceding access has been finished.

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

RAM Module Configuration

All possibilities are listed in the following table.

(Unit : MB)

TOTAL MEMORY	DIMM1 (Bank 1)	DIMM2 (Bank 2)	DIMM3 (Bank 3)
8	8	0	0
	0	8	0
	0	0	8
16	16	0	0
	0	16	0
	0	0	16
	8	8	0
	8	0	8
	0	8	8
24	8	8	8
32	32	0	0
	0	32	0
	0	0	32
	16	16	0
	16	0	16
	0	16	16
48	16	16	16

(to be continued on next page)

(Unit : MB)

TOTAL MEMORY	DIMM1 (Bank 1)	DIMM2 (Bank 2)	DIMM3 (Bank 3)
64	64*	0	0
	0	64*	0
	32	32	0
	32	0	32
	0	32	32
96	32	32	32
128	64*	64*	0
256*	128*	128*	0

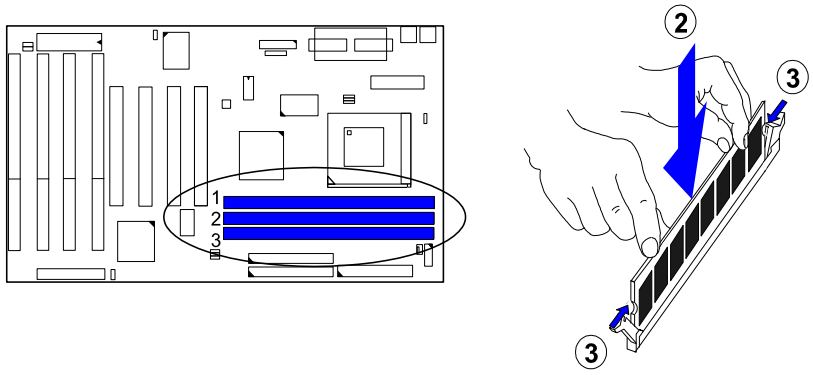
NOTE :

1. * A RAM module of this size was not available for testing at press time.
2. DIM1, DIM2, and DIM3 only support 3.3V (unbuffered) EDO DRAM and SDRAM modules.
3. This mainboard allows (without ECC support or parity check) the DIMMs which latency time are 10ns, 12ns, 15ns.
4. DIMM3 slot does not support 64MB and 128MB SDRAMS. If DIMM1 slot and (or) DIMM2 slot has 64MB or 128MB SDRAM on it, leave DIMM3 slot empty.

Install DIMMs

Complete the following procedures to install DIMMs:

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



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

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

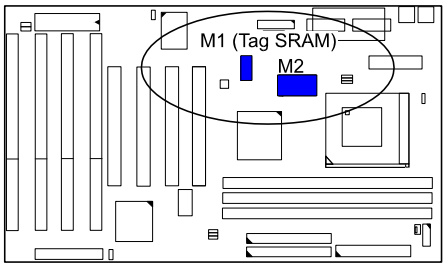
Remove DIMMs

Press the clips with both hands to remove the DIMM.

Cache Memory

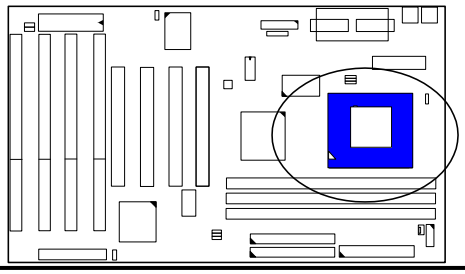
The PT-2012 comes with onboard 512KB synchronous 3V Pipeline Burst SRAMs. Cache memory access is very fast compared to main memory access. The cache holds data for imminent use. Since cache memory is from five to more than ten times faster than main memory, the CPU's access time is reduced, giving you better system performance.

Socket 7 mainboards may implement various types of L2 cache SRAMs. Pipeline Burst SRAM is one of them, delivering the best price performance ratio. They perform much better than asynchronous SRAMs.



3). Install the CPU

The CPU module resides in the Zero Insertion Force (ZIF) socket on the mainboard.



CAUTION :

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

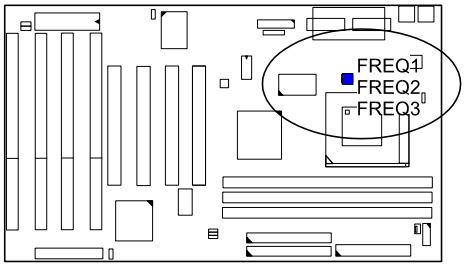
To install the CPU, do the following:

1. Lift the lever on the side of the CPU socket.
2. Handle the chip by its edges and try not to touch any of the pins.
3. Place the CPU in the socket. The chip has a notch to correctly orientate the chip. Align the notch with pin one of the socket. Pin one is located in the blank triangular area. Do not force the chip. The CPU should slide easily into the socket.
4. Swing the lever to the down position to lock the CPU in place.
5. See the following sections for information on the CPU jumpers settings.

CPU to Bus Frequency Ratio: FREQ1, FREQ2, FREQ3

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

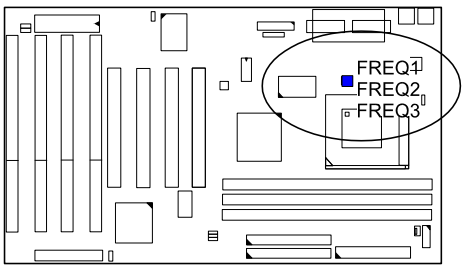
RATIO				FREQ1	FREQ2	FREQ3
P54C	P55C K6 / M2	K5	M1			
3 x	3 x	2 x	4 x			
2.5 x	2.5 x	1.75 x	1 x			
2 x	2 x	------	2 x			
1.5 x	3.5 x	1.5 x	3 x			
-----	4 x	-----	-----			
------	4.5 x	-----	-----			



Intel Pentium/Pentium MMX CPUs

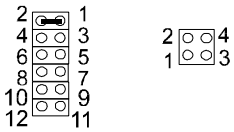
Frequency

Type	*CPU Speed*	*Bus Clock*	*Ratio*	*FREQ1*	*FREQ2*	*FREQ3*
Penitum MMX	233MHz	66MHz	3.5 x	1	1	1
	200MHz	66MHz	3 x	1	1	1
	166MHz	66MHz	2.5 x	1	1	1
Penitum	200MHz	66MHz	3 x	1	1	1
	166MHz	66MHz	2.5 x	1	1	1
	150MHz	60MHz	2.5 x	1	1	1
	133MHz	66MHz	2 x	1	1	1
	120MHz	60MHz	2 x	1	1	1
	100MHz	66MHz	1.5 x	1	1	1
	90MHz	60MHz	1.5 x	1	1	1

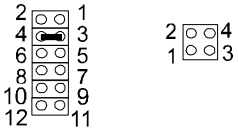


Voltage

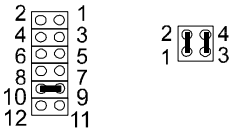
VR1 VR2



Core : 3.5V
IO : Same
Pentium VRE

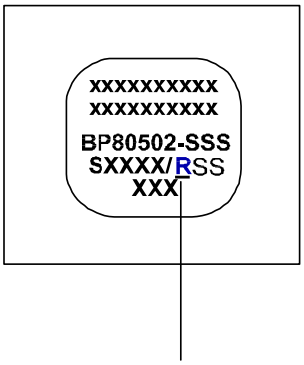


Core : 3.3V
IO : Same
Pentium STD



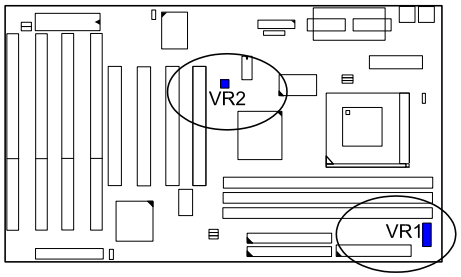
Core : 2.8V
IO : 3.3V
Pentium MMX

Intel Pentium CPU
Bottom Side Marking



R (Identifier for Voltage Range) :

V for VRE Voltage Range
or
S for Standard Voltage Range



AMD-K5/K6 CPUs

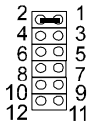
Frequency

Model	*CPU Speed*	*Bus Clock*	*Ratio*	*FREQ1*	*FREQ2*	*FREQ3*
K6-300 *	300MHz	66MHz	4.5 x			
K6-266 *	266MHz	66MHz	4 x			
K6-233	233MHz	66MHz	3.5 x			
K6-200	200MHz	66MHz	3 x			
K6-166	166MHz	66MHz	2.5 x			
K5-PR200	133MHz	66MHz	2 x			
K5-PR166	116MHz	66MHz	1.75 x			
K5-PR150	105MHz	60MHz	1.75 x			
K5-PR133	100MHz	66MHz	1.5 x			
K5-PR120	90MHz	60MHz	1.5 x			
K5-PR100	100MHz	66MHz	1.5 x			
K5-PR90	90MHz	60MHz	1.5 x			

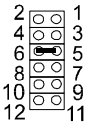
NOTE : * This CPU had not been tested when this manual was printed.

Voltage

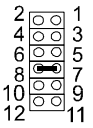
VR1 VR2



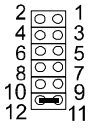
Core : 3.5V
IO : Same
AMD-K5 - B



Core : 3.2V
IO : 3.3V
AMD-K6 (233 MHz)

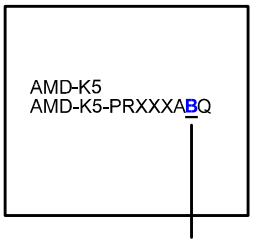


Core : 2.9V
IO : 3.3V
AMD-K6 (166, 200 MHz)



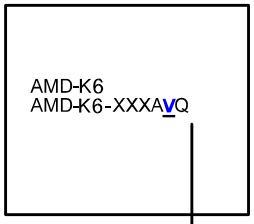
Core : 2.1V
IO : 3.3V
AMD-K6 (266, 300 MHz)

AMD-K5 CPU
Top Side Marking

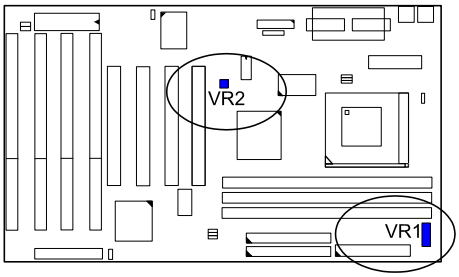


V (Identifier for Operation Voltage)

AMD-K6 CPU
Top Side Marking



V (Identifier for Operation Voltage) :
N 3.1-3.3V Core/3.135-3.6V I/O
L 2.755-3.045V Core/3.135-3.6V I/O

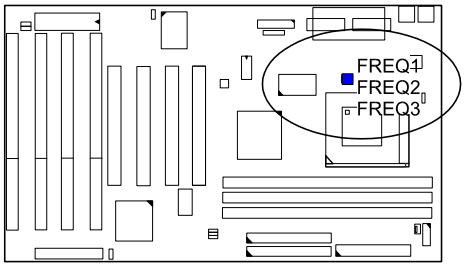

VR2
VR1

Cyrix 6x86/6x86MX CPUs

Frequency

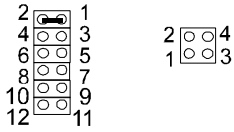
Model	*CPU Speed*	*Bus Clock*	*Ratio*	*FREQ1*	*FREQ2*	*FREQ3*
6x86MX-PR233*	200MHz	66MHz	3 x	1	1	1
6x86MX-PR233*	180MHz	60MHz	3 x	1	1	1
6x86MX-PR200	166MHz	66MHz	2.5 x	1	1	1
6x86MX-PR166	150MHz	60MHz	2.5 x	1	1	1
6x86-PR166+ 6X86L-PR166+	133MHz	66MHz	2 x	1	1	1
6x86-PR150+ 6X86L-PR150+	120MHz	60MHz	2 x	1	1	1
6x86-PR133+ 6X86L-PR133+	110MHz	55MHz	2 x	1	1	1

NOTE : * This CPU had not been tested when this manual was printed.

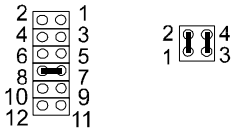


Voltage

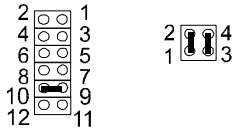
VR1 VR2



Core : 3.5V
IO : Same
Cryix 6x86-028



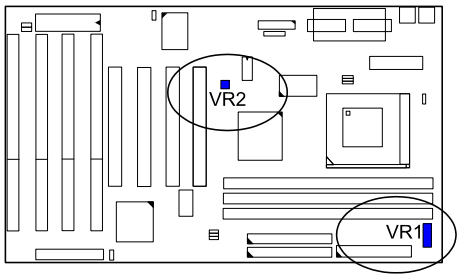
Core : 2.9V
IO : 3.3V
Cyrix 6x86MX



Core : 2.8V
IO : 3.3V
Cyrix 6x86L

Cyrix 6x86 CPU
Top Side Marking

.

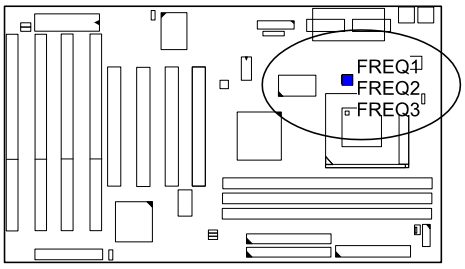

VR2
VR1

IBM 6x86/6x86MX CPUs

Frequency

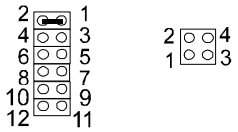
Model	*CPU Speed*	*Bus Clock*	*Ratio*	*FREQ1*	*FREQ2*	*FREQ3*
6x86MX-PR233*	200MHz	66MHz	3 x	1	1	1
6x86MX-PR233*	180MHz	60MHz	3 x	1	1	1
6x86MX-PR200	166MHz	66MHz	2.5 x	1	1	1
6x86MX-PR166	150MHz	60MHz	2.5 x	1	1	1
6x86-PR166+ 6X86L-PR166+	133MHz	66MHz	2 x	1	1	1
6x86-PR150+ 6X86L-PR150+	120MHz	60MHz	2 x	1	1	1
6x86-PR133+ 6X86L-PR133+	110MHz	55MHz	2 x	1	1	1

NOTE : * This CPU had not been tested when this manual was printed.

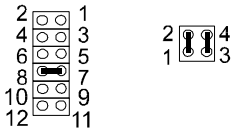


Voltage

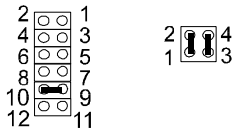
VR1 VR2



Core : 3.5V
IO : Same
IBM 6x86-028

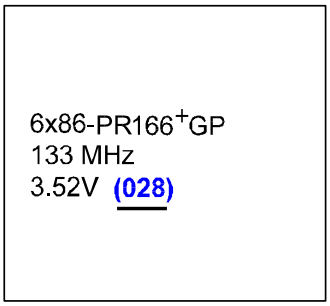


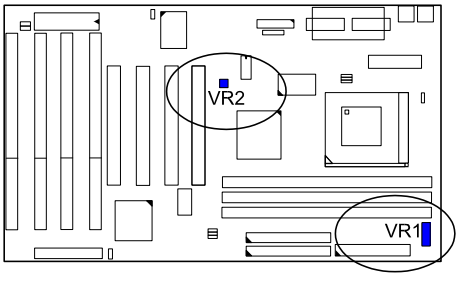
Core : 2.9V
IO : 3.3V
IBM 6x86MX



Core : 2.8V
IO : 3.3V
IBM 6x86L

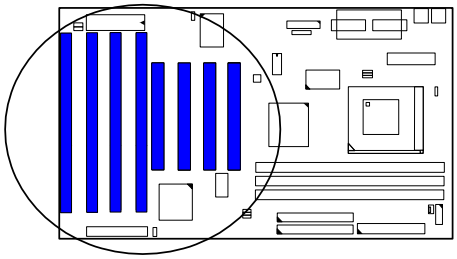
IBM 6x86 CPU
Top Side Marking





4). Install Expansion Cards

Your PT-2012 features four 16-bit ISA Bus and four 32-bit PCI Bus expansion slots.



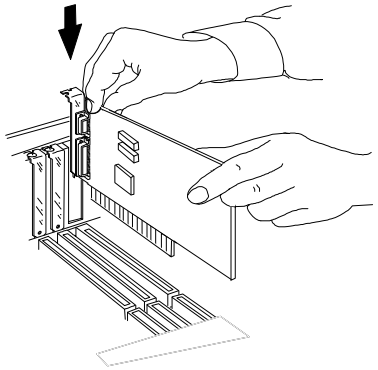
This section describes how to connect an expansion card to one of your system's expansion slots. Expansion cards are printed circuit boards that, when connected to the mainboard, increase the capabilities of your system. For example, expansion cards can provide video and sound capabilities.

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

To install an expansion card, do the following:

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

3. Holding the edge of the peripheral card, carefully align the edge connector with the expansion slot. (See figure below.)

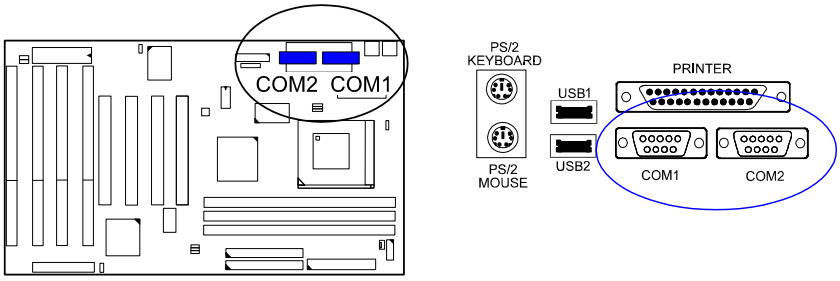


4. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this “rocking” motion until the add-in card is firmly seated inside the slot.
5. Secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely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

5). Connector Cables and Power Supply

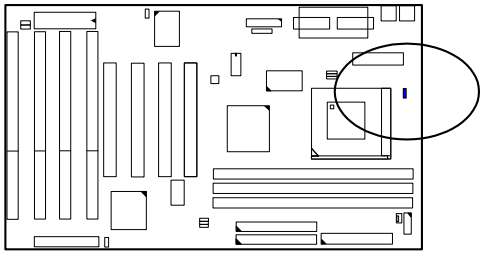
Serial Port Connectors: COM1, COM2

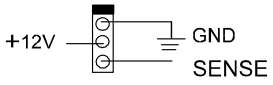
These two 9-pin D-Sub male connectors allow you to connect with your devices that use serial ports, such as a serial mouse or a modem. The COM2 port on the PT-2012 mainboard can also be used as another IR Port. Usually, your serial mouse is attached to COM1. Your modem is linked to COM2. When you do not use the modem, you can set the BIOS to let COM2 be an IR port to save a dedicated SIR port.



CPU Fan Connector: CPU_FAN

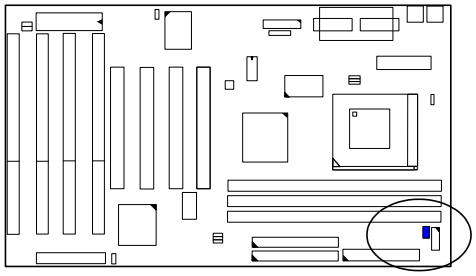
This connector is linked to the CPU fan. When the system in Suspend mode, the CPU fan will turn off; when it back to full on mode, the fan will turn on.

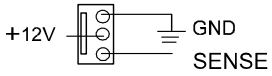




System Case Fan Connector: CHAS_FAN

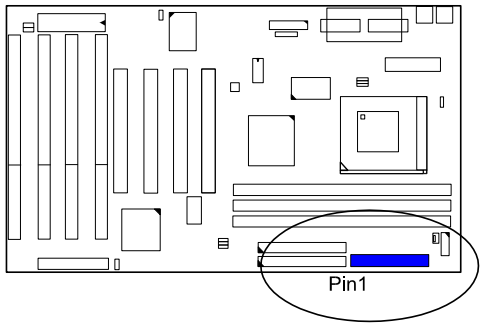
This 3-pin connector links to your cooling fan on the system case to lower the system temperature.





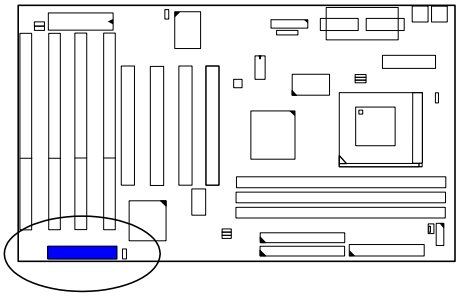
Floppy Diskette Drive Connector: FLOPPY

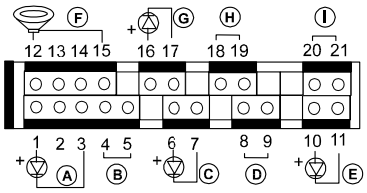
This 34-pin block connector connects to your floppy disk drive using the cable that is provided with this mainboard.


Pin1

Front Panel Block Connector: F_PNL

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

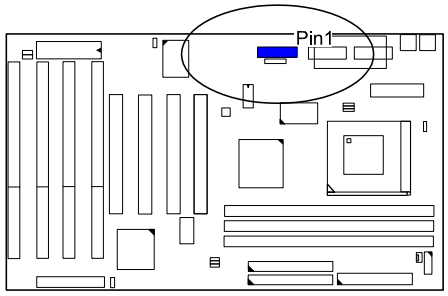




Item	Connector	Pin Type	Feature
A	PW_LED	2-pin male	indicates the system power status
B	KB_LOCK	2-pin male	allows the keyboard to access the system
C	TB_LED	2-pin male	indicates the system speed is in normal or turbo speed
D	SP_SW	2-pin male	Suspend Mode switch
E	SP_LED	2-pin male	indicates the system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

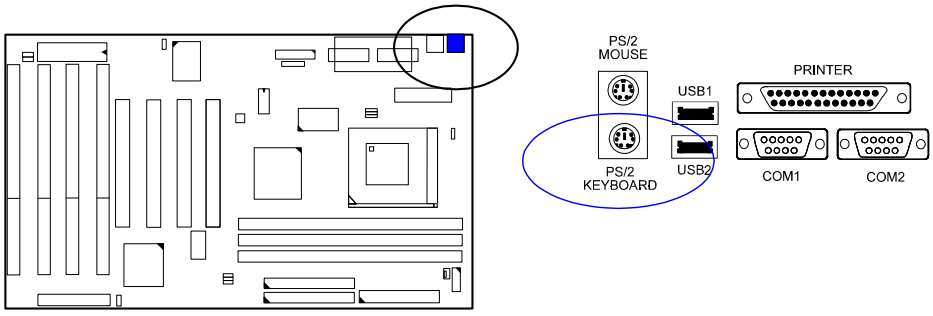
Infrared Connector: IR

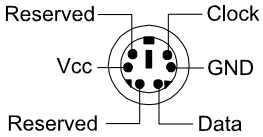
This 10-pin male connector is used for connecting to the infrared (SIR) port and allows transmission of data to another system which also supports the SIR feature.



PS/2 Keyboard Connector: K/B

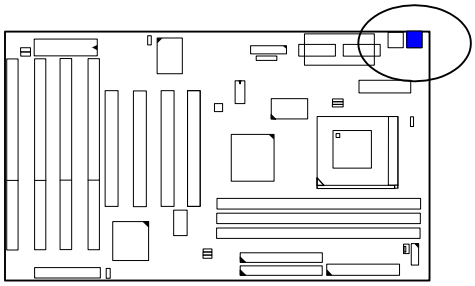
This 5-pin female connector is used for your PS/2 keyboard.

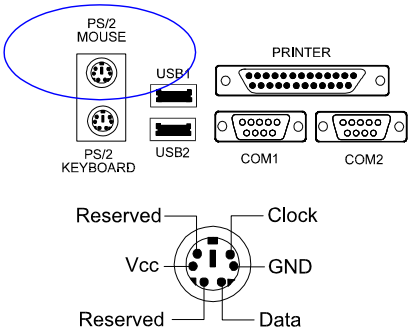

PS/2
MOUSE
USB1
PRINTER
PS/2
KEYBOARD
USB2
COM1
COM2


Reserved
Clock
Vcc
GND
Reserved
Data

PS/2 Mouse Connector: M/S

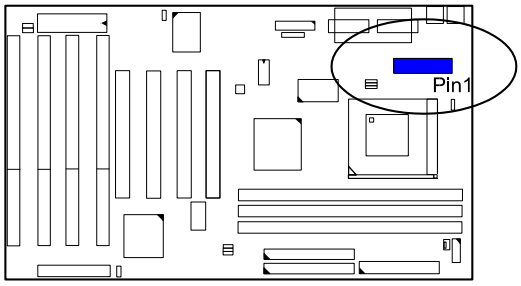
This connector is connected to the PS/2 mouse.





ATX Power Connector: ATX_PWR

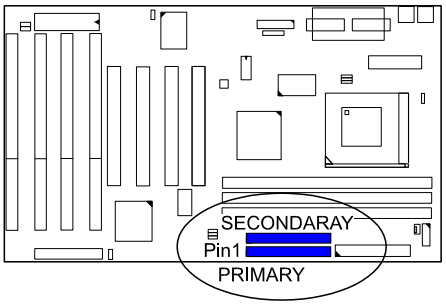
This 20-pin male block connector is connected to the ATX power supply.



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

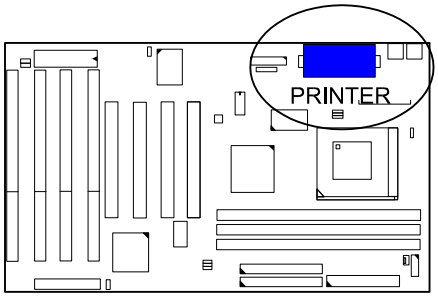
IDE HDD Device Connectors: PRIMARY, SECONDARY

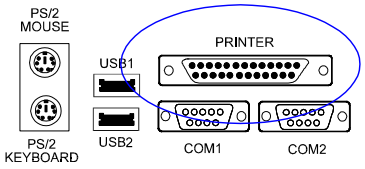
These two 40-pin block connectors are used for your IDE hard disks. It you have one IDE hard disk, connect it to the PRIMARY connector using the IDE HDD flat cable provided with the mainboard. The BIOS auto detection sets it to be a "Primary Master" disk. If you want to install another IDE hard disk or CD-ROM, please use the SECONDARY connector. If two hard disks are connected to the PRIMARY connector using the same cable, one of them is the master drive, the other one is the slave drive. You may need to set jumpers for the slave drive; please refer to the HDD manual for details.



Printer Connector: PRINTER

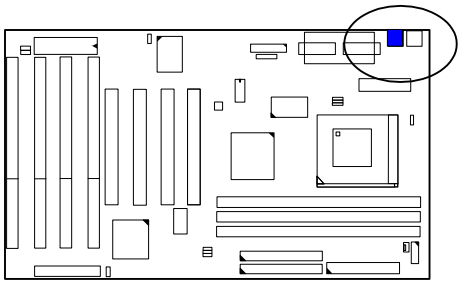
This 25-pin D-Sub female connector is attached to your printer.

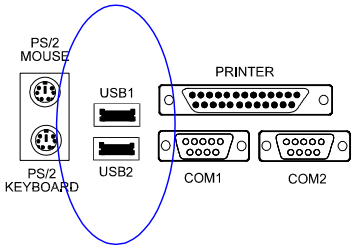




Universal Serial Bus Connectors: USB1, USB2

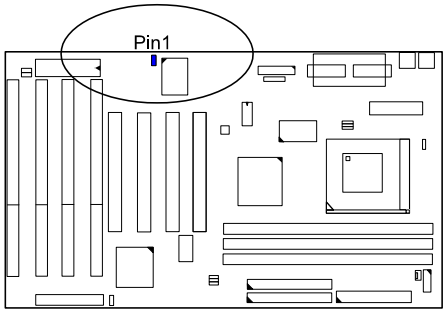
These two connectors are used for linking with USB peripheral devices.

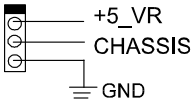




Chassis Open Alarm Connector: CHASSIS

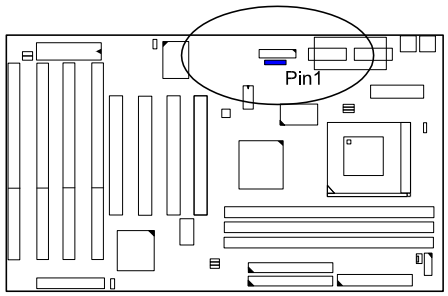
This 3-pin pinhead connector allows the LAN server to detect if the chassis is open via LDCM.

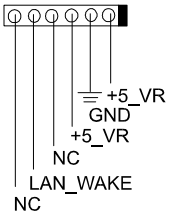




LAN Waking-Up Connector: LAN_WAKE

This 6-pin pinhead connector allows the LAN server to wake up your system via LDCM.





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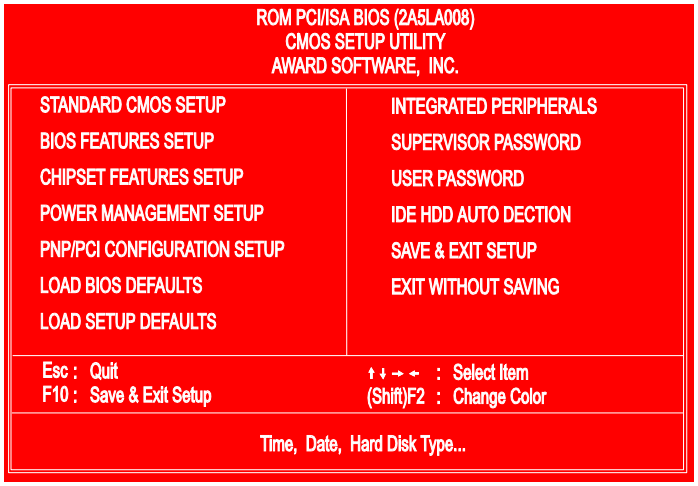
BIOS Setup

Award BIOS Setup

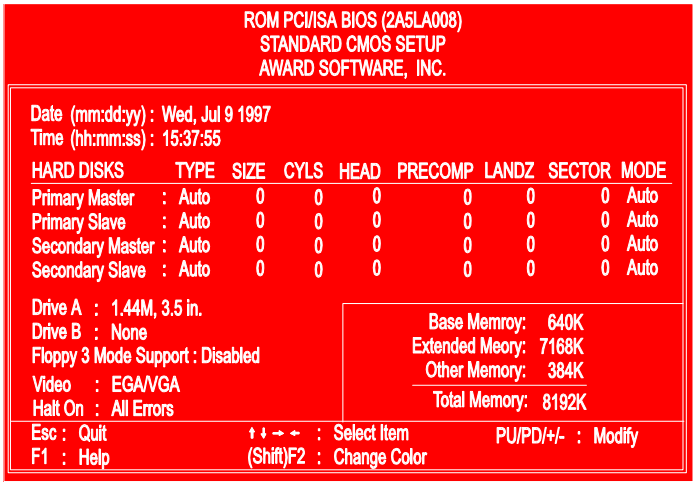
The mainboard comes with the Award BIOS chip that contains the ROM Setup information of your system. This chip serves as an interface between the processor and the rest of the mainboard's components. This section explains the information contained in the Setup program and tells you how to modify the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

CMOS Setup Utility



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

Standard CMOS Setup



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

Hard Disk Configurations

TYPE:
Select from 1 to 45 to fill remaining fields with predefined values of disk drives. Select User to fill the remaining fields. Select Auto to detect the HDD type automatically.

SIZE:
The hard disk size. The unit is Mega Bytes.

CYLS:
The cylinder number of the hard disk.

HEAD:
The read/write head number of hard disk.

PRECOMP:
The cylinder number at which the disk drive changes the write timing.

LANDZ:
The cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.

SECTOR:
The sector number of each track defined on the hard disk.

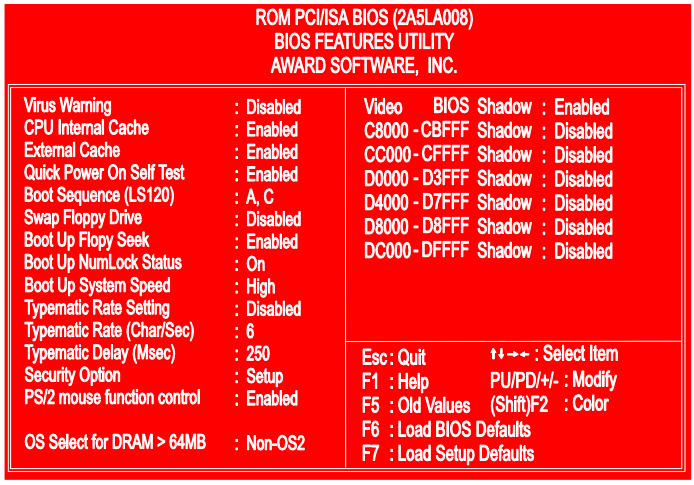
MODE:
Select Auto to detect the mode type automatically. If your hard disk supports the LBA mode, select LBA or Large. However, if your hard disk cylinder is more than 1024 and does not support the LBA function, you have to set at Large. Select Normal if your hard disk supporting cylinders is below 1024.

Software Turbo Speed

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

BIOS Features Setup

Virus



Warning

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

CPU Internal Cache

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

External Cache

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

Quick Power On Self Test

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

Boot Sequence (LS120)

Allows the system BIOS to first try to boot the operating system from the selected disk drive. The options are: A, C (Default); C, A; C, CDROM, A; CDROM, C, A; C Only; LZ120, C.

Swap Floppy Drive

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

Boot Up Floppy Seek

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

Boot Up Numlock Status

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

Boot Up System Speed

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

Typematic Rate Setting

The term typematic means that when a keyboard key is held down, the character is repeatedly entered until the key is released. When this item is enabled, you may change the typematic repeat rate. The options are: Disabled (Default), Enabled.

Typematic Rate (Chars/Sec)

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

Typematic Delay (Msec)

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

Security Option

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

PS/2 Mouse Function Control

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

OS Select For DRAM > 64MB

If your operating system (OS) is OS2, MS Windows NT, or MS Windows 95, select the option OS2. Otherwise, stay with the default setting Non-OS2.
The options are: Non-OS2 (Default), OS2.

Video BIOS Shadow

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

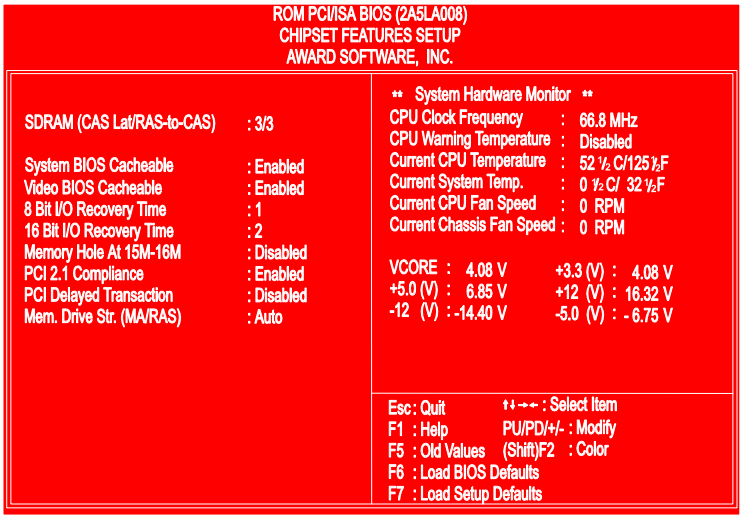
C8000-CBFFF to DC000-DFFFF Shadow

Allows the BIOS to copy the BIOS ROM code of the add-on card to system memory for faster access. It may improve the performance of the add-on card.

Some add-on cards will not function properly if its BIOS ROM code is shadowed. To use these options correctly, you need to know the memory address range used by the BIOS ROM of each add-on card.

The options are: Enabled, Disabled (Default).

Chipset Features Setup



SDRAM (CAS Lat/RAS-to-CAS)

If you install a DIMM, this feature allows you to select the ratio of CAS Latency to RAS-to-CAS.

The options are: 3/3 (Default), 2/2.

System BIOS Cacheable

When enabled, allows the ROM area F000H-FFFFH to be cacheable when cache controller is activated.

The options are: Disabled, Enabled (Default).

Video BIOS Cacheable

When enabled, allows the system to use the video BIOS codes from SRAMs, instead of the slower DRAMs or ROMs.

The options are: Enabled (Default), Disabled.

8 Bit I/O Recovery Time

Allows you to set the 8-bit ISA I/O recovery time.

The options are: 1 (Default), 2, 3, 4, 5, 6, 7, 8, NA. Unit: Bus clock.

16 Bit I/O Recovery Time

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

Memory Hole At 15M-16M

When enabled, the memory hole at the 15MB address will be relocated to the 15~16MB address range of the ISA cycle when the processor accesses the 15~16MB address area.
When disabled, the memory hole at the 15MB address will be treated as a DRAM cycle when the processor accesses the 15~16MB address area.
The options are: Enabled, Disabled (Default).

PCI 2.1 Compliance

This feature allows your system to meet the PCI Bus spec. 2.1.
The options are: Enabled (Default), Disabled.

PCI Delayed Transaction

Enable this feature to abort the current CPI master cycle and to accept the new PCI master request, it reaccepts the original PCI master and returns the PCI data phase to the original PCI master. It will enhance the system performance.
The options are: Disabled (Default), Enabled.

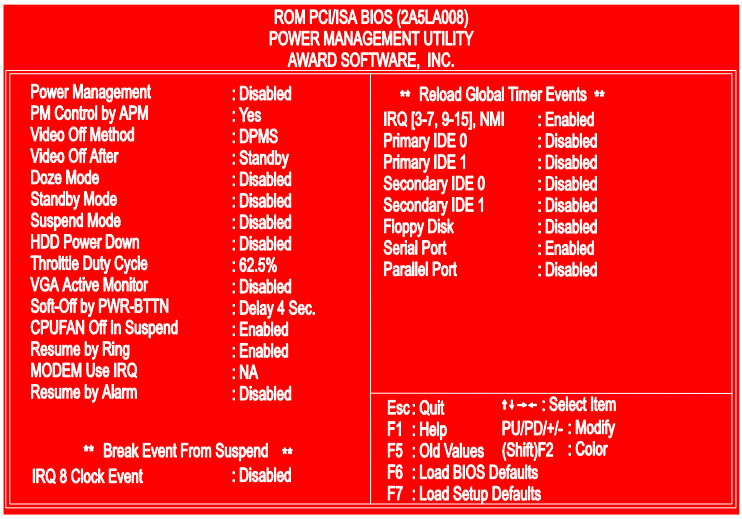
Mem. Drive Str. (MA/RAS)

This feature allows technicians to adjust the DRAM driving current strength.
The options are: Auto (Default), 10mA/10mA, 10mA/16mA, 16mA/10mA, 16mA/16mA.

System Hardware Monitor
(CPU Clock Frequency, CPU Warning Temperature, Current CPU Temperature, Current CPU Fan Speed, Current Chassis Fan Speed, VCORE)

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

Power Management Setup



Power Management

This item allows you to adjust the power management features. Select Disable for disabling global power management features. Select User Defined for configuring your own power management features. MIN Saving initiates all predefined timers in their minimum values. MAX Saving, on the other hand, initiates maximum values.

The options are: Disable (Default), User Defined, MIN Saving, MAX Saving.

PM Control by APM

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

The options are: No, Yes (Default).

Video Off Method

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

Video Off After

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

Doze Mode

When disabled, the system will not enter Doze mode. The specified time option defines the idle time the system takes before it enters Doze mode.
The options are: Disabled (Default), 1, 2, 4, 8, 12, 20, 30, 40 Min, 1 Hr.

Standby Mode

When disabled, the system will not enter the Standby mode. The specified time option defines the idle time before enters Standby mode.
The options are: Disabled (Default), 1, 2, 4, 8, 12, 20, 30, 40 Min, 1 Hr.

Suspend Mode

When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode.
The options are: Disabled (Default), 1, 2, 4, 8, 12, 20, 30, 40 Min, 1 Hr.

HDD Power Down

Selecting Disable will turn off the hard disk drive (HDD) motor. Selecting 1 Min..15 Min allows you define the HDD idle time before the HDD enters the Power Saving Mode. The option When Suspend lets the BIOS turn the HDD motor off when system is in Suspend mode.
The options 1 Min..15 Min and When Suspend will not work concurrently. When HDD is in the Power Saving Mode, any access to the HDD will wake the HDD up.
The options are: Disable (Default), 1 Min..15 Min, When Suspend.

Throttle Duty Cycle

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

VGA Active Monitor

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

Soft-Off by PWR-BTTN

This feature is designed for the case when you use an ATX power supply. The selection Delay 4 Sec. will allow the system shut down after 4 seconds after the power button is pressed. The selection Instant-Off will allow the system shut down immediately once the power button is pressed.
The settings are Delay 4 Sec. (Default) or Instant-Off.

CPUFAN Off In Suspend

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

Resume by Ring

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

MODEM Use IRQ

This feature allows you to select the IRQ# of the system that is the same IRQ# as the modem use.
The options are: NA (Default), 3, 4, 5, 7, 9, 10, 11.

Resume by Alarm

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

IRQ 8 Clock Event

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

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

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

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

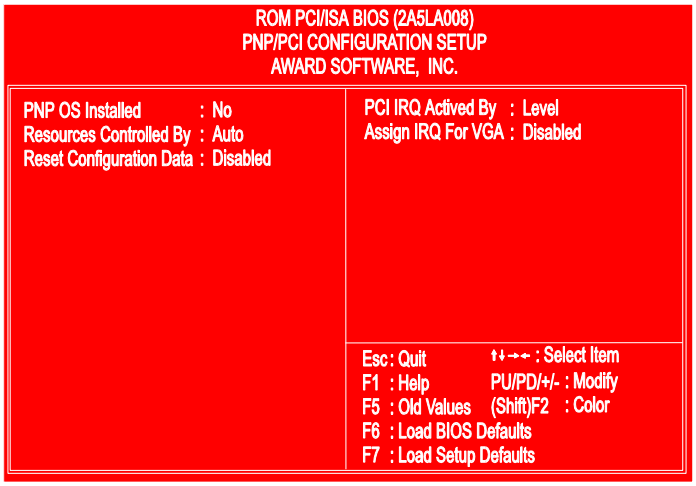
Primary IDE 0, Primary IDE 1, Secondary IDE 0, Secondary IDE 1, Floppy Disk, Serial Port, Parallel Port

Enable this feature will keep the system not in the Suspend mode when the selected device is active.

The settings are Disabled or Enabled. The default setting is Disabled, except Serial Port.

PNP/PCI Configuration Setup

PNP OS



Installed

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

Resources Controlled By

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

Reset Configuration Data

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

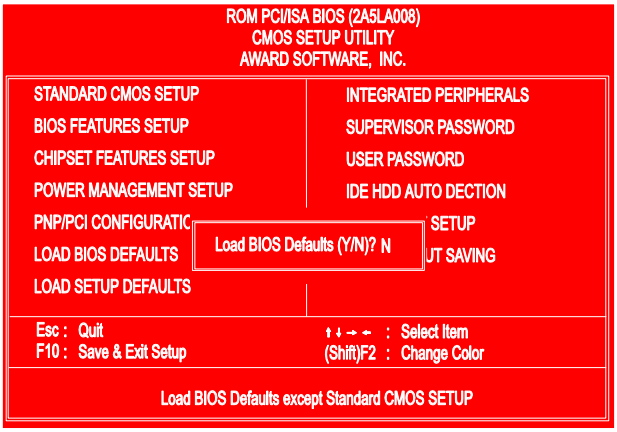
PCI IRQ Actived By

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

Assign IRQ For VGA

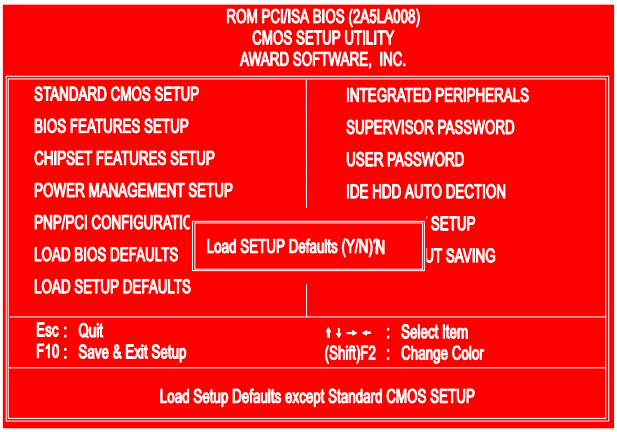
If your PCI VGA card does not need an IRQ, select Disabled; therefore, an IRQ can be released for the system use. The options are: Enabled, Disabled (Default).

Load BIOS Defaults



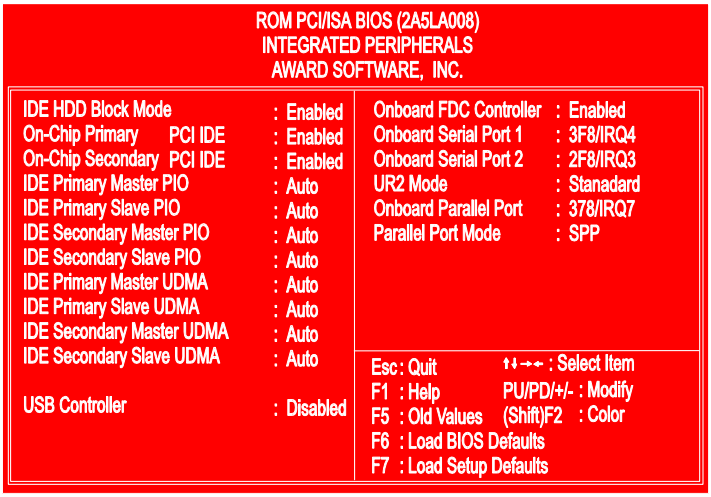
BIOS defaults contain the most appropriate values of the system parameters that allow minimum system performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burns into the ROM.

Load Setup Defaults



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

Integrated Peripherals



IDE HDD Block Mode

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

On-Chip Primary PCI IDE

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

On-Chip Secondary PCI IDE

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

IDE Primary Master PIO

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

IDE Primary Slave PIO

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

IDE Secondary Master PIO

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

IDE Secondary Slave PIO

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

IDE Primary Master UDMA

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

IDE Primary Slave UDMA

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

IDE Secondary Master UDMA

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

IDE Secondary Slave UDMA

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

USB Controller

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

BIOS Support USB Keyboard

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

Onboard FDC Controller

When enabled, the floppy diskette drive (FDD) controller is activated.
The options are: Enabled (Default), Disabled.

Onboard Serial Port 1

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

Onboard Serial Port 2

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

UR2 Mode

Allows you to select the IR modes if the serial port 2 is used as an IR port. Set at Standard, if you use COM2 as the serial port as the serial port, instead as an IR port. The options are: Sharp IR, IrDA SIR, Standard (Default).

Onboard Parallel Port

Allows you to select from a given set of parameters if the parallel port uses the onboard I/O controller.
The options are: 378/IRQ7 (Default), 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

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

ECP Mode Use DMA

If your select ECP mode to be the parallel port mode, this feature allows you to select Direct Memory Access (DMA) channel.
The options are: 3 (Default), 1.

Parallel Port EPP Type

If you select EPP/SPP mode to be the parallel port mode, this feature allows you to select the EPP type version.
The options are: EPP1.9, EPP1.7 (Default).

Supervisor/User Password

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

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

Clear Password

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

IDE HDD Auto Detection

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

Save and Exit Setup

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

SAVE to CMOS and EXIT (Y/N)?

Exit without Saving

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications:

Quit Without Saving (Y/N)?

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

BIOS Update Instruction

CAUTION : End users are not encouraged to flash the BIOS file; since it may adversely affect system performance.

Flash Process

The mainboard provides a Flash BIOS. If you have any question about the BIOS upgrade, please contact your local dealer for more information. The following instructions are introduced when the upgrade is needed.

1. Create a Bootable Floppy (in DOS) - with a non-formatted diskette, type **format a:/s**. With a formatted diskette, type **sys a:**

2. Download the BIOS File - Download the correct BIOS file via FTP, by clicking on the file name of the BIOS you wish to download. Save the BIOS file and the Flash Utility file in the boot disk you have created.

   Unzip the BIOS file and the Flash Utility file.
   There are two files after extraction: Flash BIOS utility, (e.g. flash531.exe), and BIOS file (e.g. 615J900.bin). Use the standard Flash BIOS utility (flash531.exe), unless otherwise specified. Place the bootable floppy disk containing the BIOS file and the Flash Utility in drive a:, and reboot the system in MS-DOS, preferably V. 6.22

   At the A: > prompt, type the corresponding Flash BIOS utility and the BIOS file with its extension. For example, **flash531 615j900.bin**

   From the Flash Memory Write menu, select **Y** to **Do you want to save BIOS?** If you want to save your current BIOS, then type the current BIOS name and the extension after **FILE NAME TO SAVE:**. e.g. 613J900.bin
   Alternatively, select **N** if you do not want to save your current BIOS.

   Select **Y** to **Are you sure to program?**
   Wait until it displays **Message: Power Off or Reset the system.**

Once the BIOS has been loaded successfully, remove the floppy diskette and reboot the system holding the END key prior to power on until you enter CMOS setup. If you do not do this the first time booting up after upgrading the BIOS, the system will hang.

NOTE : **Do not turn off or reset the computer during the flash process. It will corrupt the BIOS data.**