SC-5EA5

SURIA ETEQ 512Kb PB Cache Mainboard
User & Technical Reference Giude
Factory Part # 5EA5/A5C

Table of Contents

1   Introduction

The EQ82C661X PCI mainboard is a high-performance **AT form-factor** system board that supports P54C/P55C family CPUs. You can order 512K of external cache memory on the mainboard. The mainboard is fully compatible with industry standards, and adds many technical enhancements.

Key Features

- CPU
  - Supports P54C/P55C family CPUs running at 90~200 MHz speeds; Cyrix/IBM CPUs running at $PR120^+$~$PR200^+$ speeds; and AMD K5/K6 CPUs running at PR75 ~ PR233 speeds
  - Two kinds of mainboards are available: one is the Normal edition which supports above listed CPUs and the other is the IBM CPU attached edition which supports the IBM 6x86 $P200^+$ CPU only
  - **Supports SOCKET 7 for upgrade**
  - Supports P54C/P55C series SMM Mode and CPU Stop Clock
- L2 Cache Controller
  - Write Back Cache Modes and Direct Mapped Organization
  - On-board 512K Pipeline Burst SRAMs Cache
- DRAM Controller
  - Supports FPM/EDO/Burst EDO/Synchronous – DRAM
  - **Supports 1 stripsof 8/16/32 MB Unbuffered DIMMs**
  - On-board memory configurations from **4 to 256 Mbytes**
  - Supports "**Table-Free**" DRAM configuration in any SIMM bank
- BUS Controller
  - Compliant to PCI specifications v2.1
  - Three 32-bit PCI slots (Masters) and four ISA slots, 4-layer PCB
  - **Supports Universal Serial Bus — USB**
- Peripheral Controller
  - System BIOS built-in NCR805 SCSI Card BIOS and "Plug and Play" function
  - On-board built-in PCI Master IDE controller and floppy controller
  - On-board supports for two high speed UARTS (w/i 16550 FIFO), one ECP/EPP/SPP compatible parallel port, and one PS/2 mouse port
  - **On-board supports FLASH Memory for easy upgrade BIOS**

Unpacking the Mainboard

The mainboard package contains:
• The EQ82C661X Mainboard
• This User's Guide

Note: Do not unpack the mainboard until you are ready to install it.

Follow the precautions below while unpacking the mainboard.
1. Before handling the mainboard, ground yourself by grasping an unpainted portion of the system's metal chassis.
2. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.
3. Check the mainboard for damage. If any chip appears loose, press carefully to seat it firmly in its socket.

Do not apply power if the mainboard appears damaged. If there is damage to the board contact your dealer immediately.

Electrostatic Discharge Precautions

Make sure you ground yourself before handling the mainboard or other system components. Electrostatic discharge can easily damage the components. Note that you must take special precaution when handling the mainboard in dry or air-conditioned environments.

Take these precautions to protect your equipment from electrostatic discharge:
• Do not remove the anti-static packaging until you are ready to install the mainboard and other system components.
• Ground yourself before removing any system component from its protective anti-static packaging. To ground yourself grasp the expansion slot covers or other unpainted portions of the computer chassis.
• Frequently ground yourself while working, or use a grounding strap.
• Handle the mainboard by the edges and avoid touching its components.

Mainboard Layout w/ Default Settings
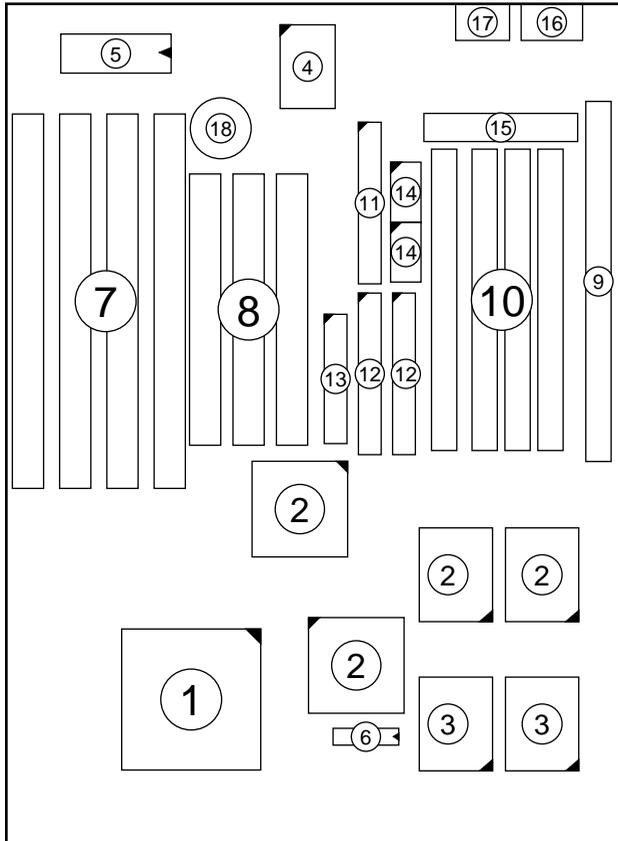
Figure 1–1. Mainboard Layout

1. ZIF socket 7 (for P54C/P55C)
2. EQ82C661X Chipset
3. Pipelined Burst SRAM
4. Super I/O Chip
5. PnP FLASH BIOS
6. TAG SRAM
7. ISA Slots
8. PCI Slots
9. Unbuffered DIMM Bank
10. SIMM Bank
11. Floppy Connector
12. IDE1/IDE2 Connector
13. Parallel Port Connector
14. COM1/COM2 Connector
15. AT Power Connector
16. KB Connector
17. PS/2 Mouse Connector
18. 3 Volt. Lithium Battery

Default settings are as follows: Pentium 133MHz (P54C) CPU , 512K Pipelined Burst cache , On - board PCI E - IDE Enabled , 2 high speed UARTS Enabled (w / 16550 FIFO), 1 EPP/ECP port (ECP + EPP mode), 5V DRAM/3.3V DIMM, and AT power supply.
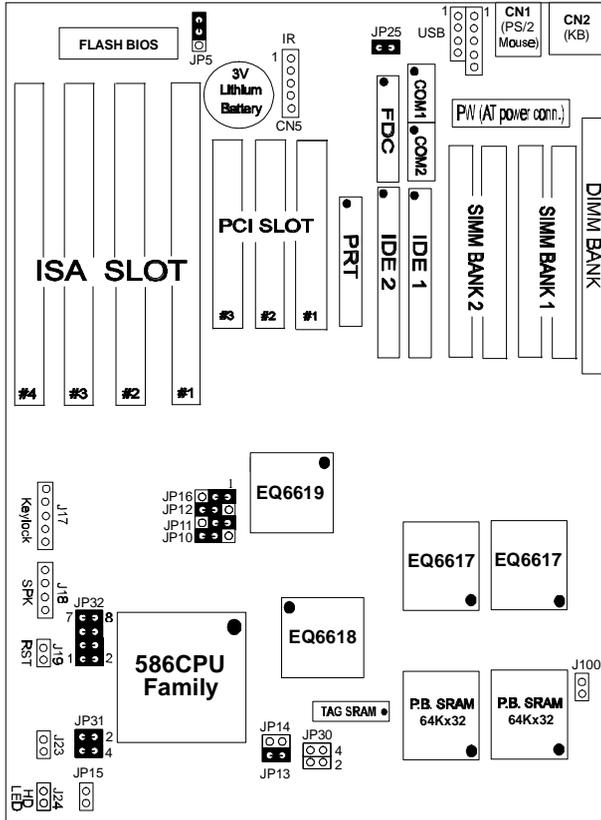
Figure 1-2. Mainboard Default Setting

| *Important:* | *Make sure the system is well ventilated to prevent overheating and ensure system stability.* |

Remarks on the Cyrix and IBM P200[+] CPUs

Please note that if you use a Cyrix or IBM P200[+] CPU, you will have to set the frequency to 75MHz. You will also have to set JP16, the PCI bus frequency jumper to asynchronous to have the PCI bus run on 32MHz, in order to avoid problems with add-on cards. If you choose to run the PCI bus on a higher frequency, please use only high-end add-on cards that are specified to function on higher bus frequencies. Please note that using a 75MHz bus clock also places higher demands on the DRAM main-memory, therefore only use high-end SIMM/DIMM modules when this is the case.

Voltage settings list

Jumpers 30, 31 and 32 set the processor voltage. If you are using a single voltage processor close jp31 and open jp30. Jp31 shorts the processor Vcore voltage pins to the Vio pins when closed. If you use a dual voltage CPU, open jp31 and close jp30.

Jp 32 sets the voltage, please refer to the following table:

voltage	JP32			
	1-2	3-4	5-6	7-8
3.5V	close	close	close	close
3.4V	close	close	close	open
3.3V	close	close	open	close
3.2V	close	close	open	open
3.1V	close	open	close	close
3.0V	close	open	close	open
2.9V	close	open	open	close
2.8V	close	open	open	open
2.7V	open	close	close	close
2.6V	open	close	close	open
2.5V	open	close	open	close
2.4V	open	close	open	open
2.3V	open	open	close	close
2.2V	open	open	close	open
2.1V	open	open	open	close
2.0V	open	open	open	open

2   Hardware Setup

This chapter is designed for Normal edition mainboard use only and it explains how to configure the mainboard's hardware. After you install the mainboard, you can set jumpers, install memory on the mainboard, and make case connections. Refer to this chapter whenever you upgrade or reconfigure your system.

CAUTION: *Turn off power to the mainboard, system chassis, and peripheral devices before performing any work on the mainboard or system.*

Jumpers

JP5: CMOS Clear Jumper

Clear the CMOS memory by momentarily shorting pin 2–3; then shorting pin 1–2 to retain new settings.

CMOS Setting	JP5
Retain CMOS data (default)	1
Clear CMOS data	1

J25: EMI Ground Pin

J25 is designed for eliminating the EMI signals. Short or open J25 when is needed.

JP16: PCI Bus Asynchronous/Synchronous Jumper

Asynchronous and synchronous (default) PCI bus frequency settings are available.

PCI Bus Setting	JP16
Asychronous	
Synchronous	

Divides the host bus by 2 to get the Asynchronous setting, and sets the PCI bus on 32MHz to get the synchronous setting. Set JP16 to Synchronous mode when the system is unstable.

Host Bus (CPU Bus)	PCI Bus Frequency (Synchronous)	PCI Bus Frequency (Asynchronous)
50 MHz*	25 MHz	32 MHz
55 MHz*	27.5 MHz	32 MHz
60 MHz	30 MHz	32 MHz
66 MHz	33.3 MHz	32 MHz
75 MHz**	37.5 MHz	32 MHz

*: Do not use Asynchronous setting when the host bus frequency is 50MHz or 55MHz.

**: Do not use Synchronous setting when the host bus frequency is 75 MHz.

CPU Type Configuration

This section is designed for normal edition manboard use only and also shows you how to configure your CPU step by step. Note that you need to check the CPU voltage before installation.

❑ Step 1: Frequency Setting

Pentium – 75/90/100 CPU Settings (1.5 x clock)
AMD K5 – PR75/PR90/PR100/PR120/PR133 (1.5 x clock)
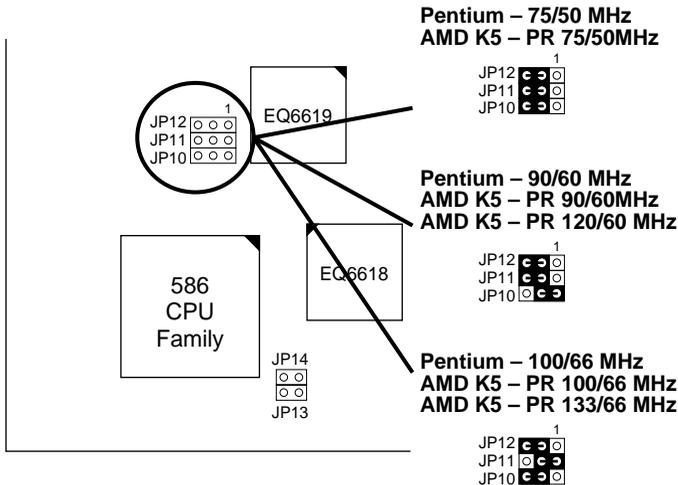
Figure 2–1–1. CPU Jumper Settings

Note: 1.   You must equip the CPU with a fan and heat sink for system stability.
*   2.   AMD K5–PR75/90= AMD $5_k86(SSA5)–P75/90$.*

P54C/P55C - 100/120/133 CPU Setting (2.0 clock)

Cyrix 6x86/6x86L - PR133+/PR150+/PR166+/PR200+ settings (2.0x clock)

AMD K5/K6 -PR150 CPU setting
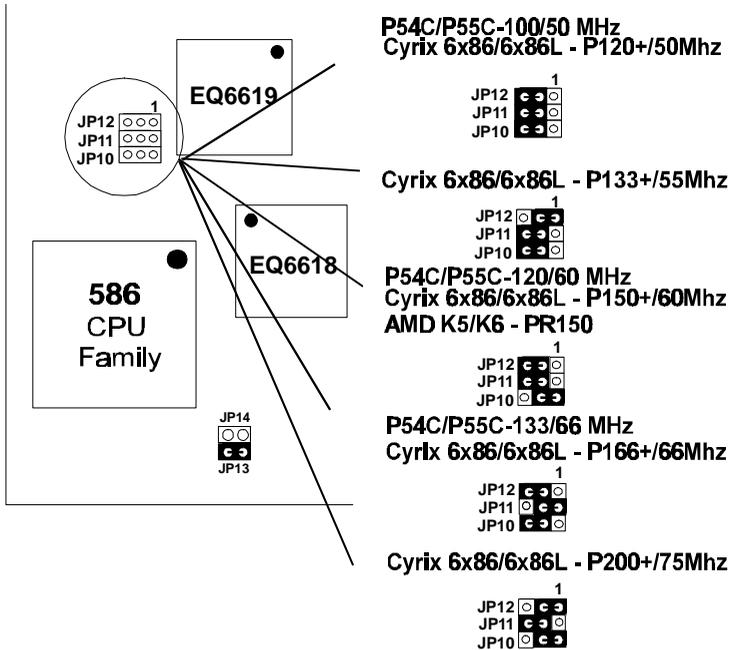
EQ6619

JP12
JP11
JP10

EQ6618

586
CPU
Family

JP14
JP13

P54C/P55C-100/50 MHz
Cyrix 6x86/6x86L - P120+/50Mhz

JP12
JP11
JP10

Cyrix 6x86/6x86L - P133+/55Mhz

JP12
JP11
JP10

P54C/P55C-120/60 MHz
Cyrix 6x86/6x86L - P150+/60Mhz
AMD K5/K6 - PR150

JP12
JP11
JP10

P54C/P55C-133/66 MHz
Cyrix 6x86/6x86L - P166+/66Mhz

JP12
JP11
JP10

Cyrix 6x86/6x86L - P200+/75Mhz

JP12
JP11
JP10

Figure 2-1-2. CPU Jumper Settings

Note: You must equip the CPU with a fan and heat sink for system stability.

Pentium– 150/166 CPU Settings (2.5 x clock)
AMD K5/K6 – PR166 CPU Setting
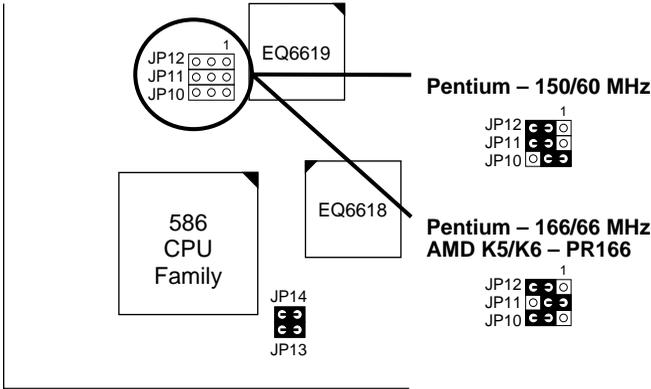
Figure 2–1–3. CPU Jumper Settings

Note: *You must equip the CPU with a fan and heat sink for system stability.*

Pentium – 180/200 CPU Settings (3.0 x clock)
AMD K6 – PR200 CPU Setting
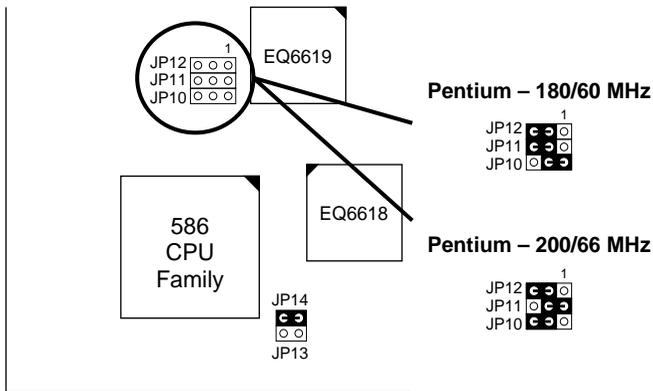
Figure 2–1–4. CPU Jumper Settings

Note: *You must equip the CPU with a fan and heat sink for system stability.*

< 3.5 x clock CPU Setting >

233 MHz CPU Setting
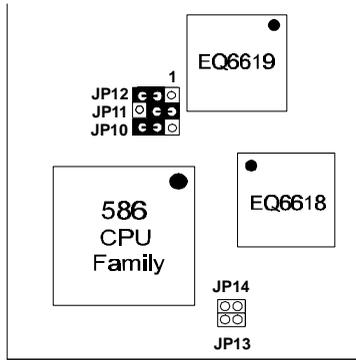
Figure 2-1-2. CPU Jumper Settings

Note: You must equip the CPU with a fan and heat sink for system stability.

<4.0 x clock CPU Setting >

266 MHz CPU Setting
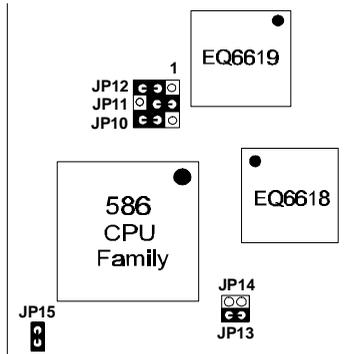
Figure 2-1-3. CPU Jumper Settings

Note: You must equip the CPU with a fan and heat sink for system stability.

☐ Step 2: CPU Single/Dual Voltage Setting

Single Voltage CPU Setting

Single voltage CPUs use the same voltage for both Vio and Vcore. The CPUs that fall into this category are : P54CX , AMD-K5 and the Cyrix 6x86. Refer to the following figures to set the voltage for these CPUs:
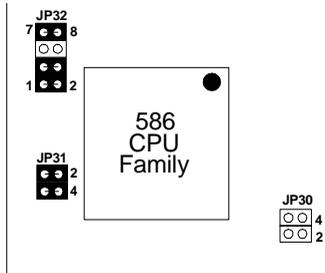
Figure 2-2-1. Single Voltage 3.3V CPU
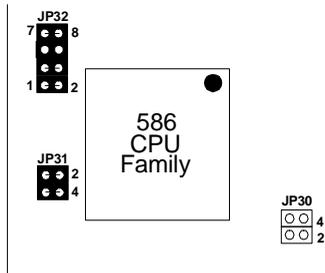
Figure 2-2-2. Single Voltage 3.5V CPU (Default)

Dual Voltage CPU Setting

Dual voltage CPUs are designed to use different voltages for Vio and Vc ore. They include P55CX and the Cyrix 6x86L / 6x86MX. Refer to the following figure to set the voltage for these CPUs:
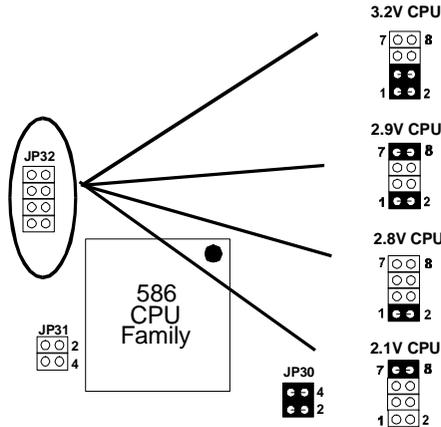
Figure 2-2-3 Dual Voltage CPU

Note: Due to varying desings, please ask your dealer for the correct voltage settings for your specific CPU.

Memory Configuration

The mainboard supports two banks of 72-pin FPM/EDO/Burst EDO DRAM (SIMM) and one 3.3V Unbuffered DIMM module. The mainboard requires SIMMs of at least 70ns access time.

The mainboard supports from 4 to 256 Mbytes of memory with no restrictions on memory configurations. You can install SIMMs in any combination without having to rely on a memory configuration table. Memory configurations are thus 'table-free' in any SIMM bank. You do however need to install two SIMM modules to complete a bank.

Memory Configuration Table

	SIMM Bank		DIMM Bank
	Bank 1	Bank 2	DIMM
RAM Type	FPM/EDO/BEDO (DRAM)	FPM/BEDO (DRAM)	FPM/EDO/ SDRAM
Single RAM Module Size (MB)	4/8/16/32	4/8/16/32	8/16/32

Note : Do not install FPM/EDO/BEDO SIMM when you already installed SDRAM type of DIMM.

RAM Bank Installation Notice

Due to the RAS line share architecture of ETEQ chipset, the possible combination of DIMM/SIMM in the mainboard are as one of the following :

1. In Bank 1
2. In Bank 2
3. In Bank 1 & Bank 2
4. In DIMM
5. In Bank 2& DIMM

Cache Configuration

The mainboard has a write-back caching scheme with built-in 512KB level - 2 Pipelined Burst Cache onboard to improve the system performance.

Cache Size and RAM Location

Cache Size	Cache RAM	TAG RAM	Cacheable Range
512KB	64K x 32, 2 pcs on U19,U20	16 K x 8 on U21	64 MB

Multi I/O Port Addresses

Default settings for multi I/O port addresses are shown in the table below.

Port	I/O Address	IRQ	Status
LPT1*	378H	7	ECP + EPP
COM1	3F8H	4	
COM2	2F8H	3	

If default I/O port addresses conflict with other I/O cards (e.g. sound cards or I/O cards) ,   you must adjust one of the I/O addresses to avoid address conflict. (You can adjust these I/O addresses from the BIOS)

Note: Some sound cards have a default IRQ setting for IRQ7, which may conflict with printing functions. If this occurs do not use sound card functions at the same time you print.

Connectors

Attach the mainboard to case devices via connectors on the mainboard. Refer to Figure 1-1 for connector locations and connector pin positions.

COM1, COM2 – COM1/COM2 Connectors
Attach COM1/COM2 device to these connectors.

FDC Connector
Attach floppy cable to this connector.

J19 – Hardware Reset Control
Attach the reset switch to J19. Closing the Reset switch restarts the system.

J24 – HDD LED Connector
Attach the cable of hard disk drive LED to this connector. The LED lights when an HDD is active.

CN5 - IR Connector
Attach a 5-pin infrared device cable to this connector for enabling the infrared transfer function. This mainboard meets the specification of ASKIR and HPSIR.

CN2 - Keyboard Connector
A 5-pin female DIN keyboard connector is located at the rear of the board. Plug the keyboard jack into this connector.

J17 - Keylock & Power LED Connector
J17 is a connector for a lock that may be installed on the system case for enabling or disabling the keyboard. J17 also attaches to the case's Power LED. (Pin 1,3 for power LED and pin 4,5 for keylock.)

IDE1/IDE2 - Onboard Primary/Secondary IDE HDD Connectors
Attach cable of hard disk drives to these connectors.

CN1 - PS/2 Mouse Connector
Attach PS/2 mouse cable to this connector.

PRT - Parallel Port Connector
Attach parallel port cable to this connector.

PW - AT Power Supply Connector
The mainboard requires a power supply with at least 200 watts and a "power good" signal. PW has two 6-pin male header connectors. Plug the dual connectors from the power directly onto the board connector while making sure the black leads are in the center.
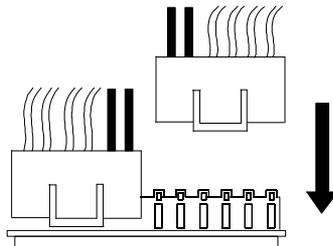
J23: Sleep Switch Connector Enable/Disable

Toggle this jumper to force the system into power saving (green) mode. Any hardware IRQ signal will cause the system to wake up.

CN3: Universal Serial Bus Connectors

Attach a 9 pin USB cable to these connectors to connect external USB devices to the mainboard.

J18: Speaker Connector

Attach the connector from the speaker in your case to this jumper.

3   BIOS Setup

The mainboard's BIOS setup program is the ROM PCI/ISA BIOS from Award Software Inc. Enter the Award BIOS program's Main Menu as follows:

1. Turn on or reboot the system. After a series of diagnostic checks, you are asked to press DEL to enter Setup.
2. Press the <DEL> key to enter the Award BIOS program and the main screen appears:

```
                         ROM PCI/ISA BIOS
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│    STANDARD CMOS SETUP            INTEGRATED PERIPHERALS           │
│                                                                   │
│    BIOS FEATURES SETUP            SUPERVISOR PASSWORD              │
│                                                                   │
│    CHIPSET FEATURES SETUP         USER PASSWORD                    │
│                                                                   │
│    POWER MANAGEMENT SETUP         IDE HDD AUTO DETECTION           │
│                                                                   │
│    PNP/PCI CONFIGURATION          SAVE & EXIT SETUP                │
│                                                                   │
│    LOAD SETUP DEFAULTS            EXIT WITHOUT SAVING              │
│                                                                   │
│    LOAD BIOS DEFAULTS                                              │
├─────────────────────────────────────────────────────────────────┤
│ Esc : Quit                     ↑ ↓ → ←  : Select Item             │
│ F10 : Save & Exit Setup        (Shift) F2 : Change Color          │
├─────────────────────────────────────────────────────────────────┤
│                   Time, Date, Hard Disk Type...                   │
└─────────────────────────────────────────────────────────────────┘
```

3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections.)
4. Press <ESC> at anytime to return to the Main Menu.
5. In the Main Menu, choose "SAVE AND EXIT SETUP" to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" ignores your changes and exits the program.

The Main Menu options of the Award BIOS are described in the sections that follow.

Standard CMOS Setup

Run the Standard CMOS Setup as follows.

1. Choose "STANDARD CMOS SETUP" from the Main Menu. A
   screen appears.

```
                        ROM PCI/ISA BIOS
                       STANDARD CMOS SETUP
                      AWARD SOFTWARE, INC.
```

```
┌──────────────────────────────────────────────────────────────────────┐
│                                                                        │
│   Date (mm:dd:yy) : Fri, Feb 1 1995                                    │
│   Time (hh:mm:ss) :  7 : 30 : 33                                       │
│                                                                        │
│   HARD DISKS       TYPE   SIZE   CYLS HEAD  PRECOMP  LANDZ  SECTOR  MODE│
│                                                                        │
│   Primary Master  : AUTO    0      0    0        0      0       0  AUTO │
│   Primary Slave   : None    0      0    0        0      0       0  ---- │
│   Secondary Master : None   0      0    0        0      0       0  ---- │
│   Secondary Slave  : None   0      0    0        0      0       0  ---- │
│                                                                        │
│   Drive A : 1.44M, 3.5 in.                                             │
│   Drive B : None                     Base Memory:     640K             │
│                                   Extended Memory:   3328K             │
│   Video  : EGA/VGA                   Other Memory:    128K             │
│   Halt On : All Errors            ──────────────────────              │
│                                     Total Memory:   4096K              │
│                                                                        │
│   Esc : Quit          ↑↓→←     : Select Item   PU/PD/+/- : Modify      │
│   F11 : Help          (Shift) F2 : Change Color    F3 : Toggle Calendar│
└──────────────────────────────────────────────────────────────────────┘
```

2. Use arrow keys to move between items and select values. Modify
   selected fields using PgUp/PgDn/+/– keys. Some fields let you enter
   values directly.

Date (mm/dd/yy)   Type the current date.

Time (hh:mm:ss)   Type the current time.

Primary   First, choose the type of hard disk that you
(Secondary)   already installed:
Master & Slave   Auto –   BIOS detects hard disk type
                                automatically (default)
                      1 ~ 46 – Selects standard hard disk type
                      User –   User defines the type of hard disk.

                      Next, choose hard disk mode:
                      Auto –   BIOS detects hard disk mode
                                automatically (default)
                      Normal – Normal IDE hard disk (smaller than
                                528MB)
                      LBA –   Enhanced–IDE hard disk (larger
                                than 528MB)

Primary (Secondary) Master & Slave (Continued)	Large –	Large IDE hard disk (for certain hard disk)
	Note:	*If you have any questions on your hard disk type or mode, ask your hard disk provider or previous user for details.*

Drive A & B   Choose 360KB , 5 1/4 **in**.,
                            1.2MB , 5 1/4 **in**.,
                            720KB , 3 1/2 **in**.,
                            1.44M , 3 1/2 **in**.(default),
                            2.88 MB, 3 1/2 **in**. or
                            Not installed

Video   Choose Monochrome, Color 40x25,
                    VGA/EGA (default), Color 80x25

Halt On   When BIOS detects system errors, this function
                    will stop the system. Choose one of the
                    following options to make system halt.

                    All Errors (default) | All, But Diskette
                    No Errors | All, But Keyboard
                                          | All, But Disk/Key

3.   When you finish, press the <ESC> key to return to the Main Menu.

BIOS Features Setup

Run the BIOS Features Setup as follows.

1. Choose "BIOS FEATURES SETUP" from the Main Menu and a screen with a list of items appears. (**The screen below shows the BIOS default settings.**)

```
                    ROM PCI/ISA BIOS
                  BIOS FEATURES SETUP
                 AWARD SOFTWARE, INC.

CPU Internal Cache       : Enabled  Video  BIOS Shadow  : Enabled
External Cache           : Enabled  C8000-CBFFF Shadow  : Disabled
Quick Power on Self Test : Enabled  CC000-CFFFF Shadow  : Disabled
Boot Sequence            : A,C,SCSI D0000-D3FFF Shadow  : Disabled
Swap Floppy Drive        : Disabled D4000-D7FFF Shadow  : Disabled
Boot Up NumLock Status   : On       D8000-DBFFF Shadow  : Disabled
Typematic Rate Setting   : Disabled DC000-DFFFF Shadow  : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec)   : 250
Security Option          : Setup    ESC : Quit      ↑ ↓ → ←: Select Item
IDE Second Channel Control : Enabled F1 : Help      PU/PD/+/- : Modify
PS/2 Mouse Function Control: Disabled F5 : Old Values (Shift)F2 : Color
PCI/VGA Palette Snoop    : Disabled F6  : Load BIOS Defaults
OS Select for DRAM >64MB : Non-OS2  F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/– keys. <F> keys are explained below:

    <F1>: "Help" gives options available for each item.

    Shift <F2>: Change color.

    <F5>: Get the old values. These values are the values with which the user started the current session.

    <F6>: Load all options with the BIOS Setup default values.

    <F7>: Load all options with the Power-On default values.

A short description of screen items follows:

CPU Internal Cache   This option enables/disables the CPU's internal cache. (The Default setting is Enabled.)

External Cache   This option enables/disables the external cache memory. (The Default setting is Enabled.)

Quick Power On Self Test   Enabled provides a fast POST at boot-up .

Boot Sequence	Choose the boot device sequence as your need. For example, "A, C, SCSI" means BIOS will look for an operating system first from drive A, drive C, then SCSI device. Options of this function are: A, C, SCSI C, A, SCSI C, CD–ROM, A CD–ROM, C, A D, A, SCSI E, A, SCSI F, A, SCSI SCSI, A, C SCSI, C, A C only.
Swap Floppy Drive	Enabled changes the sequence of the A: and B: drives. (The Default setting is Disabled.)
Boot Up Num Lock Status	Choose **On** or **Off**. On puts numeric keypad in Num Lock mode at boot-up. Off puts this keypad in arrow key mode at boot-up.
Typematic Rate Setting	Enable this option to adjust the keystroke repeat rate.
Typematic Rate (Chars/Sec)	Choose the rate a character keeps repeating.
Typematic Delay (Msec)	Choose how long after you press a key that a character begins repeating.
Security Option	Choose **Setup** or **System**. Use this feature to prevent unauthorized system boot-up or use of BIOS Setup. "System" – Each time the system is booted the password prompt appears. "Setup"– If a password is set, the password prompt only appears if you attempt to enter the Setup program.

IDE Second Channel Control	Default setting is Enabled. Choose Disabled when you need to turn off the onboard IDE second channel.
PS/2 Mouse Function Control	Default setting is Disabled. You need to enable this function when the PS/2 mouse is attached.
PCI/VGA Palette Snoop	Enabled: The color of the monitor may be incorrect if uses with MPEG card. Enable this option to make the monitor normal.
	Disabled: Default setting.
OS Select for DRAM >64MB	OS2 – Choosing this when you are using OS/2 operation system.
	Non-OS/2 – Choosing this when you are using no-OS/2 operation system.
Video or Adapter BIOS Shadow	BIOS shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM. These 16K segments can be shadowed from ROM to RAM. BIOS is shadowed in a 16K segment if it is enabled and it has BIOS present.

3. After you have finished with the BIOS Features Setup program, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Chipset Features Setup

The Chipset Features Setup option changes the values of the chipset registers. These registers control system options in the computer.

Note: Change these settings only if you are familiar with the Chipset.

Run the Chipset Features Setup as follows.

1.   Choose "CHIPSET FEATURES SETUP" from the Main Menu and the following screen appears. (The screen below shows default settings.)

```
                    ROM PCI/ISA BIOS
                  CHIPSET FEATURES SETUP
                   AWARD SOFTWARE, INC.
┌──────────────────────────────────┬────────────────────────────────┐
│ DRAM Auto Configuration : 60 ns  │                                │
│ DRAM Timing Control      : Auto   │                                │
│                                   │                                │
│ Read Pipeline           : Disabled│                                │
│ Write Pipeline          : Enabled │                                │
│                                   │                                │
│ Video BIOS Cacheable    : Disabled│                                │
│ System BIOS Cacheable   : Disabled│                                │
│ Memory Hole At 15Mb Addr.: Disabled│                               │
│                                   │                                │
│ OnChip USB              : Disabled│                                │
│                                   ├────────────────────────────────┤
│                                   │ ESC : Quit    ↑↓→←: Select Item│
│                                   │ F1  : Help    PU/PD/+/- : Modify│
│                                   │ F5  : Old Values (Shift)F2 : Color│
│                                   │ F6  : Load BIOS Defaults        │
│                                   │ F7  : Load Setup Defaults       │
└──────────────────────────────────┴────────────────────────────────┘
```

2.   Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

A short description of screen items follows:

DRAM Auto Configuration	Choose **60ns** (default) or **70ns** when the DRAM Timing Control needs to be set to Auto; and; when choose **Disabled**, the DRAM Timing Control can be set to Normal, Medium, Fast, or Turbo.
DRAM Timing Control	Choose Auto, Normal, Medium, Fast, or Turbo. BIOS sets the DRAM Timing automatically when this function is set to Auto. Normal is the slowest and you must check the system stability before you change to the Fast of Turbo setting, otherwise it should be on Auto.

SDRAM Cycle Length	2 (default). This function is shown only when uses SDRAM.
Read Pipeline	Use the default setting.
Write Pipeline	Use the default setting.

Video BIOS Cacheable

Disabled – The ROM area F0000H-FFFFFH is not cached.

Enabled – The ROM area F0000H-FFFFFH is cacheable if cache controller is enabled.

System BIOS Cacheable

Disabled – The video BIOS C0000H-C7FFFH is not cached.

Enabled – The video BIOS C0000H-C7FFFH is cacheable if cache controller is enabled.

Memory Hole At 15Mb Addr

Choose **Enabled** or **Disabled** (default). Some interface cards will map their ROM address to this area. If this occurs, you should select Enabled, otherwise use Disabled.

OnChip USB

Default is Disabled. Enable this function when you use the USB device.

USB Keyboard Support

Enable this function when you use the USB keyboard, but notice that you need to use the regular keyboard first before getting in the BIOS setup.

3. After you have finished with the Chipset Features Setup, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Power Management Setup

The Power Management Setup option sets the system's power saving functions.

Run the Power Management Setup as follows.

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of items appears.

```
                          ROM PCI/ISA BIOS
                         CMOS SETUP UTILITY
                       POWER MANAGEMENT SETUP
┌──────────────────────────────────────────────────────────────────────┐
│ Power Management     : Disabled    ** Power Down & Resume Events **     │
│ PM Control by APM    : Yes         IRQ 5  (LPT 2)       : Primary       │
│ Video Off Option     : Suspend -> Off IRQ 6 (Floppy Disk) : Primary    │
│ Video Off Method     : V/H SYNC+Blank IRQ 7 (LPT 1)     : Primary      │
│ Conserve Mode        : Disabled    IRQ 8  (RTC Alarm)   : Disabled      │
│                                    IRQ 9  (IRQ2 Redir)  : Secondary     │
│        ** PM Timers **             IRQ 10 (Reserved)    : Secondary     │
│ HDD Power Down       : Disabled    IRQ 11 (Reserved)    : Secondary     │
│ Doze Mode            : Disabled    IRQ 12 (PS/2 mouse)  : Primary       │
│ Suspend Mode         : Disabled    IRQ 13 (Coprocessor) : Primary       │
│                                    IRQ 14 (Hard Disk)   : Primary       │
│        ** PM Events **             IRQ 15 (Reserved)    : Disabled      │
│ VGA                  : OFF                                              │
│ LPT & COM            : LPT/COM                                          │
│ HDD & FDD            : ON          ESC : Quit      ↑↓→←: Select Item    │
│ DMA/master           : OFF         F1  : Help    PU/PD/+/- : Modify     │
│ Primary INTR         : ON          F5  : Old Values (Shift)F2 : Color   │
│ IRQ 3  (COM 2)       : Primary     F6  : Load BIOS Defaults             │
│ IRQ 4  (COM 1)       : Primary     F7  : Load Setup Defaults            │
└──────────────────────────────────────────────────────────────────────┘
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/- keys.

A short description of selected screen items follows:

Power Management	Options are as follows:	
	User Define –	Let's you define the HDD and system power down times.
	Disabled –	Disables the Green PC Features.
	Min Saving –	Doze timer = 1 Hour Suspend timer = 1 Hour HDD Power Down = 15 Min
	Max Saving –	Doze timer = 10 Sec Suspend timer = 10 Sec HDD Power Down = 1 Min

PM Control by APM	Choose **Yes** (default) or **No.** APM stands for Advanced Power Management. To use APM, you must run "power.exe" under DOS v6.0 or later version.
Video Off Option	Susp, Stby→off: Video off when the system runs into Suspend or Standby mode.
	All Modes→off: Video off in all modes.
	Always On: Video never off.
	Suspend→off: Video off when system runs into the suspend mode.
Video Off Method	Choose **V/H Sync+Blank** (default), **Blank screen**, or **DPMS** for the selected PM mode.
Conserve Mode	Use the default setting.
HDD Power Down	When the set time has elapsed, the BIOS sends a command to the HDD to power down, which turns off the motor. Time is adjustable from 1 to 15 minutes. The default setting is Disabled. Some older model HDDs may not support this advanced function.
Doze Mode	When the set time has elapsed, the BIOS sends a command to the system to enter doze mode (system clock drops to 33MHz). Time is adjustable from 10 seconds to 1 Hour.
Suspend Mode	The default is Disabled. Only an SL-Enhanced (or SMI) CPU can enter this mode. Time is adjustable from 10 seconds to 1 Hour. Under Suspend mode, the CPU stops completely (no instructions are executed.)
VGA	Choose **Off** (default) or **On** to disable or enable the power management.

LPT & COM   Choose LPT/COM (default) or LPT (COM) to enable the power management timer. Choose NONE to disable the power management timer.

HDD &FDD   Choose **On** (default) to enable the power management timer, or **Off** to disable the power management timer.

DMA/master   Choose **Off** (default) or **On**. If you choose the system "Off", will not monitor the signal of DMA/master; and when you choose "On", the system will not have SMI signal until the master is finished while the master is working.

Primary INTR   When **On** (default) is chosen, you can choose any IRQ #.

IRQ#   When set at "Primary" the processor will power down only after the BIOS detects a "no IRQ activity" during the time specified by the Suspend time. If set at "Secondary event" the system will distinguish whether an interrupt accesses and I/O address or not. If it does, the system enters the standby mode. If not, the system enters the dreaming mode; that is the system goes back full-on status but leaves the monitor blank. For instance, if the system connects to a LAN and receives an interrupt from its file server, the system will enter the dreaming mode to execute the corresponding calling routine.

3. After you have finished with the Power Management Setup, press the <ESC> key to return to the Main Menu.

PNP/PCI Configuration Setup

This option sets the mainboard's PCI Slots. Run this option as follows:

1. Choose "PNP/PCI CONFIGURATION SETUP" from the Main Menu and the following screen appears. (The screen below shows default settings.)

```
                       ROM PCI/ISA BIOS
                     PNP/PCI CONFIGURATION
                      AWARD SOFTWARE, INC.

 ┌─────────────────────────────────────┬──────────────────────────────────────┐
 │ Resources Controlled By  : Manual    │ PCI IRQ Actived By  : Level          │
 │ Reset Configuration Data : Disabled  │ PCI IDE IRQ Map To  : PCI-AUTO       │
 │                                      │  Primary   IDE INT# : A              │
 │ IRQ-3  assigned to : Legacy ISA*     │  Secondary IDE INT# : B              │
 │ 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*    │ ESC : Quit        ↑↓→←: Select Item  │
 │ DMA-1  assigned to : PCI/ISA PnP*    │ F1  : Help     PU/PD/+/- : Modify    │
 │ DMA-3  assigned to : PCI/ISA PnP*    │ F5  : Old Values (Shift)F2 : Color   │
 │ DMA-5  assigned to : PCI/ISA PnP*    │ F6  : Load BIOS Defaults             │
 │ DMA-6  assigned to : PCI/ISA PnP*    │ F7  : Load Setup Defaults            │
 │ DMA-7  assigned to : PCI/ISA PnP*    │                                      │
 └─────────────────────────────────────┴──────────────────────────────────────┘
```

*: These items will disappear when Resource Controlled. is Auto.

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

A short description of screen items follows:

Resources Controlled By	Manual –	BIOS doesn't manage PCI/ISA PnP card (i.e., IRQ) automatically.
	Auto –	BIOS auto manage PCI and ISA PnP card (recommended).
Reset Configuration Data	Disabled –	Retain PnP configuration data in BIOS.
	Enabled –	Reset PnP configuration data in BIOS.

IRQX and DMAX assigned to	Choose **PCI/ISA PnP** or **Legacy ISA**. If the first item is set to Manual, you could choose IRQX and DMAX assigned to PCI/ISA PnP card or ISA card.
PCI IRQ Activated By	Choose **Edge** or **Level**. Most PCI trigger signals are Level. This setting must match the PCI card.
PCI IDE IRQ Map To	Select **PCI-AUTO**, **ISA**, or **assign a PCI SLOT number** (depending on which slot the PCI IDE is inserted). The default setting is PCI-AUTO. If PCI-AUTO does not work, then assign an individual PCI SLOT number.
Primary IDE INT#	Choose INTA#, INTB#, INTC#, or INTD#. The default setting is INTA#.
Secondary IDE INT#	Choose INTA#, INTB#, INTC#, or INTD#. The default setting is INTB#.

3. After you have finished with the PCI Slot Configuration, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Load Setup Defaults

This item loads the system values you have previously saved. Choose this item and the following message appears:

"Load SETUP Defaults (Y/N)? N"

To use the SETUP defaults, change the prompt to "Y" and press <Enter>. This item is recommended if you need to reset the system setup.

Note: The SETUP Defaults are optimized for the most stabilized performance.

Load BIOS Defaults

Choose this item and the following message appears:

"Load BIOS Defaults (Y/N)?N"

To use the BIOS defaults, change the prompt to "Y" and press <Enter>.

Note: BIOS DEFAULTS values are adjusted for high performance. If you run into any problems after loading BIOS DEFAULTS, please load the SETUP DEFAULTS for the stable performance.

Integrated Peripherals

The Integrated Peripherals option changes the values of the chipset registers. These registers control system options in the computer.

Note: Change these settings only if you are familiar with the Chipset.

Run the Integrated Peripherals as follows.

1. Choose "Integrated Peripherals" from the Main Menu and the following screen appears. (The screen below shows default settings:)

```
                          ROM PCI/ISA BIOS
                       INTEGRATED PERIPHERALS
                        AWARD SOFTWARE, INC.

 ┌──────────────────────────────────────┬──────────────────────────────────────┐
 │ OnChip IDE First Channel : Enabled    │                                      │
 │ OnChip IDE Second Channel: Enabled    │                                      │
 │ IDE Prefetch Mode        : Enabled    │                                      │
 │ 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       │                                      │
 │ IDE Secondary Master UDMA: Auto       │                                      │
 │ IDE Secondary Slave  UDMA: Auto       │                                      │
 │                                       │                                      │
 │ Onboard FDC Controller   : Enabled    │                                      │
 │ Onboard UART 1           : 3F8/IRQ4   │                                      │
 │ Onboard UART 2           : 2F8/IRQ3   │                                      │
 │ Onboard UART 2 Mode      : Standard   │                                      │
 │                                       │ ESC : Quit      ↑↓→←: Select Item     │
 │ Onbaord Parallel Port    : 378/IRQ7   │ F1  : Help      PU/PD/+/- : Modify    │
 │ Parallel Port Mode       : ECP+EPP    │ F5  : Old Values (Shift)F2 : Color    │
 │ ECP Mode Use DMA         : 3          │ F6  : Load BIOS Defaults              │
 │ Parallel Port EPP Type   : EPP1.9     │ F7  : Load Setup Defaults             │
 └──────────────────────────────────────┴──────────────────────────────────────┘
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

A short description of screen items follows:

On-chip IDE First Channel/	Enabled –	Use the on-board IDE (default)
On-chip IDE Second Channel	Disabled –	Turn off the on-board IDE
IDE Prefetch Mode	Use the default setting.	
IDE HDD Block Mode	Choose **Enabled** (default) or **Disabled**. Enabled invokes multi-sector transfer instead of one sector per transfer. Not all HDDs support this function.	

IDE Primary Master PIO/ **IDE Primary Slave PIO/** **IDE Secondary Master PIO/** **IDE Secondary Slave PIO**	Choose **Auto** (default) or **mode 0~4**. Mode 0 is the slowest speed, and HDD mode 4 is the fastest speed. For better performance and stability, we suggest you use the Auto setting to set the HDD control timing.
IDE Secondary Master UDMA **IDE Secondary Slave UDMA**	Choose **Auto** (defautl) or **Disabled**. When Auto is selected, it supports Ultra DMA Mode.
Onboard FDC Controller	Enabled – Use the on-board floppy controller (default). Disabled – Turn off the on-board floppy controller.
Onboard UART 1/ **Onboard UART 2**	Choose serial port 1 & 2's I/O address. Do no set port 1 & 2 to the same value except for Disabled. COM 1/3F8H | COM3/3E8H COM 2/2F8H | COM4/2E8H (default)
Onboard UART 2 Mode	Standard – (default) supports a serial infrared IrDA. HPSIR – supports HP serial infrared interface format ASKIR – supports a Sharp serial interface format.
IR Duplex Mode	Use the default setting (Half). This function shows up only when either HPSIR or ASKIR is chosen in the previous function (Onboard UART 2 Mode).
Onboard Parallel Port	Choose the printer I/O address: 378H/IRQ7 (default), 3BCH/IRQ7, 278H/IRQ5

Parallel Port Mode	Choose **ECP + EPP** (default), **Normal** or **EPP**, **ECP** mode. The mode depends on your external device that connects to this port.
ECP Mode Use DMA	Choose **DMA3** (default) or **DMA1**. This setting only works when the Onboard Printer Mode is set at the ECP mode.
Parallel Port EPP Type	Choose EPP specification Ver. 1.7 or 1.9 (default).

Supervisor Password

Based on the setting you made in the "Security Option" of the "BIOS FEATURES SETUP", this Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose "SUPERVISOR PASSWORD" in the Main Menu and press <Enter>. The following message appears:

"Enter Password:"

2. Enter a password and press <Enter>.
    (If you do not wish to use the password function, you can just press <Enter> and a "Password disabled" message appears.)

3. After you enter your password, the following message appears prompting you to confirm the new password:

"Confirm Password:"

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.

Important: *If you forget or lose the password, the only way to access the system is to set jumper JP5 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.*

User Password

Based on the setting you made in the "Security Option" of the "BIOS FEATURES SETUP", this Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose "USER PASSWORD" in the Main Menu and press <Enter>. The following message appears:

<div align="center">

"Enter Password:"

</div>

2. Enter a password and press <Enter>.
   (If you do not wish to use the password function, you can just press <Enter> and a "Password disabled" message appears.)

3. After you enter your password, the following message appears prompting you to confirm the new password:

<div align="center">

"Confirm Password:"

</div>

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.

5. You are not allowed to change any setting in "CMOS SETUP UTILITY" except change user's password.

Important: *If you forget or lose the password, the only way to access the system is to set jumper JP5 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.*

IDE HDD Auto Detection

This Main Menu item automatically detects the hard disk type and configures the STANDARD CMOS SETUP accordingly.

*Note: This function is only valid for **IDE** hard disks.*

```
                  ROM PCI/ISA BIOS
                 CMOS SETUP UTILITY
                AWARD SOFTWARE, INC.

 HARD DISKS        TYPE   SIZE   CYLS HEAD  PRECOMP  LANDZ  SECTOR  MODE

 Primary Master  : None    0       0    0       0       0       0   ----
 Primary Slave   : None    0       0    0       0       0       0   ----
 Secondary Master: None    0       0    0       0       0       0   ----
 Secondary Slave : None    0       0    0       0       0       0   ----


            ┌──────────────────────────────────────────┐
            │  Do you accept this drive C (Y/N)? N      │
            └──────────────────────────────────────────┘

                        ESC : Skip
```

Appendix A

Jumper for Cyrix/IBM CPU (J100)

The SY-5EAS mainboard has a new jumper (J100) for better performance with Cyrix/IBM CPUs. Here is explaination for you on how to use this jumper correctly.

● Leave J100 open when you want to install a non-Cyrix /IBM CPU (default setting), or short J100 when you want to install a Cyrix CPU.

   If you use a Cyrix/IBM CPU, do the following steps :

(1) Press [DELETE] to enter BIOS setup menu during boot-up.
(2) Select " Chipset Features Setup "
(3) Set "Linear Burst" to "Enabled" then choose "SAVE & EXIT SETUP"
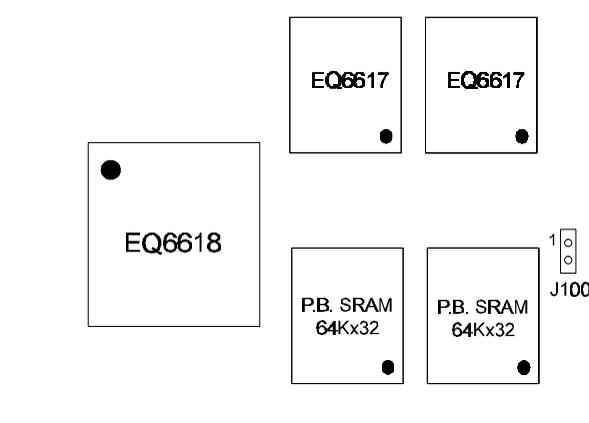

Figure 1   Location of J100

Appendix B : Quick Installation Guide

This leaflet is meant to help you set the jumpers for your 5EAS motherboard in order to boot the motherboard. Please refer to Diagram 1 for the location of the relevant jumpers:

Diagram 1: Board layout
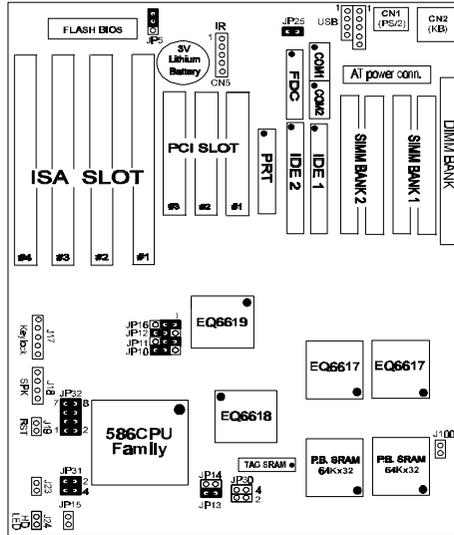
Table 1 : Jumper settings for CPU voltage and frequency

Voltage Settings: JP32 (JP30, JP31)							CPU frequency settings: JP10, 11, 12 / JP13, 14						
voltage	1-2	3-4	5-6	7-8	JP30	JP31	frequency:	JP10	JP11	JP12	multiplier	JP13	JP14
single 3.52V	close	close	close	close	open	close	50 Mhz	2-3	2-3	2-3	1.5 / 3.5x	open	open
single 3.3V	close	close	open	close	open	close	55 Mhz	2-3	2-3	1-2	2.0x	close	open
dual 3.2V	close	close	open	open	close	open	60 Mhz	1-2	2-3	2-3	2.5x	close	close
dual 2.9V	close	open	open	close	close	open	66 Mhz	2-3	1-2	2-3	3.0x	open	close
dual 2.8V	close	open	open	open	close	open	75 Mhz	1-2	2-3	1-2			

Table 2: Additional jumper settings

CMOS clear: J5		PCI bus synchronous / asynchronous: J16		Sleep Switch connector: J23	
Retain CMOS data (default)	1-2	PCI bus:	JP16	connect a switch to this jumper, Any IRQ will wake up the system.	
		synchronous	1-2		
Clear CMOS data	2-3	asynchronous	2-3	**Reset: J19**	**HDD Led: J24**
		note: Set JP16 to 2-3 when 75 Mhz bus clock is selected, for 50 and 55 set 1-2.		Connect the reset button to J19	connect the HDD led to J24
J100: Cyrix CPU linear burst enable				**Speaker: J18**	**Powerled: J17**
Close this jumper when using a Cyrix CPU. Set the 'linear burst' item in the BIOS under 'chipset features' to enabled as well when setting this jumper. (default setting is disabled)				connect the speaker to J18	connect keylock & power led to J17

Quick Installation Guide (continued)

Table 3 : **Settings for various processors**

SETTINGS	CPU Frequency JP10, 11, 12 / JP 13, 14						
processor	bus clock	multiplier	JP10	JP11	JP12	JP13	JP14
AMD K5 PR75	50 Mhz	1.5x	2-3	2-3	2-3	open	open
AMD K5 PR90	60 Mhz	1.5x	1-2	2-3	2-3	open	open
AMD K5 PR100	66 Mhz	1.5x	2-3	1-2	2-3	open	open
AMD K5 PR120	60 Mhz	1.5x	1-2	2-3	2-3	open	open
AMD K5 PR133	66 Mhz	1.5x	2-3	1-2	2-3	open	open
AMD K5 PR150	66 Mhz	1.5x	2-3	1-2	2-3	open	open
AMD K5 PR166	66 Mhz	2.5x	2-3	1-2	2-3	**close**	**close**
AMD K6 PR166	66 Mhz	2.5x	2-3	1-2	2-3	**close**	**close**
AMD K6 PR200	66 Mhz	3x	2-3	1-2	2-3	open	**close**
AMD K6 PR233	66 Mhz	3.5x	2-3	1-2	2-3	open	open
Cyrix 6x86(L) P133+	55 Mhz	2.0x	2-3	2-3	2-3	**close**	open
Cyrix 6x86(L) P150+	60 Mhz	2.0x	1-2	2-3	2-3	**close**	open
Cyrix 6x86(L) P166+	66 Mhz	2.0x	2-3	1-2	2-3	**close**	open
Cyrix 6x86(L) P200+	75 Mhz	2.0x	1-2	2-3	1-2	**close**	open
Cyrix MX PR166	60 Mhz	2.5x	1-2	2-3	2-3	**close**	**close**
Cyrix MX PR200	66 Mhz	2.5x	2-3	1-2	2-3	**close**	**close**
Cyrix MX PR233	75 Mhz	2.5x	1-2	2-3	1-2	**close**	**close**
Cyrix MX PR266	75 Mhz	3x	1-2	2-3	1-2	open	**close**
P54C P75	50 Mhz	1.5x	2-3	2-3	2-3	open	open
P54C P90	60 Mhz	1.5x	1-2	2-3	2-3	open	open
P54C P100	66 Mhz	1.5x	2-3	1-2	2-3	open	open
P54C P120	60 Mhz	2.0x	1-2	2-3	2-3	**close**	open
P54C P133	66 Mhz	2.0x	2-3	1-2	2-3	**close**	open
P54C/P55C P150	60 Mhz	2.5x	1-2	2-3	2-3	**close**	**close**
P54C/P55C P166	66 Mhz	2.5x	2-3	1-2	2-3	**close**	**close**
P54C/P55C P180	60 Mhz	3x	1-2	2-3	2-3	open	**close**
P54C/P55C P200	66 Mhz	3x	2-3	1-2	2-3	open	**close**
P55C P233	66 Mhz	3.5x	2-3	1-2	2-3	open	open

New CPUs Update

If you have higher frequency CPU than above list, just follow the rules below
to set your CPUs.

CPU Frequency	Bus clock	Multiplier	JP10	JP11	JP12	JP13	JP14	JP15
266 MHz	66MHz	4.0x	2-3	1-2	2-3	short	open	short
300 MHz	66MHz	4.5x	2-3	1-2	2-3	short	short	short