P6F40-B5 MAINBOARD

User's Manual

REV: 1.1

Date: 01/97

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☑ *MAINBOARD DIAGRAMS*

INTRODUCTION

Product Description

The **P6F40-B5** represents the highest level of technology available in PC Mainboards today. Designed as a flexible, high-performance and cost-effective solution for System Integrators and End Users alike, the P6F40-B5 provides the power and expandability to meet the requirements of the most advanced operating systems and software applications.

Support for Intel® Pentium Pro® processors at speeds of up to 200Mhz is just the beginning. The P6F40-B5 is designed to provide greater overall system throughput by utilizing the latest in I/O technology. By incorporating such advanced features as Bus Mastering IDE and Universal Serial Bus (USB) onto the mainboard, optimum system performance is assured and system design and implementation is simplified.

Fully "Plug & Play" compatible via an Award BIOS, the P6F40-B5 facilitates easy system configuration and peripheral setup. With support for up to 512MB of System RAM, Fast Page mode, EDO, and BEDO, the P6F40-B5 is the ideal foundation for high-end computer systems. The type of System RAM installed is auto detected by mainboard BIOS.

Item Checklist

Your mainboard package should include the items listed below. Damaged or missing items should be reported to your vendor.

☑ The P6F40-B5 mainboard   ☐ Optional PS/2 connector Module

☑ Floppy disk drive ribbon cable   ☐ Optional Infrared Module

☑ (1) IDE ribbon cable   ☐ Optional USB Module

☑ This User's Manual

☑ Diskette containing support software for updating the FLASH BIOS and IDE drivers
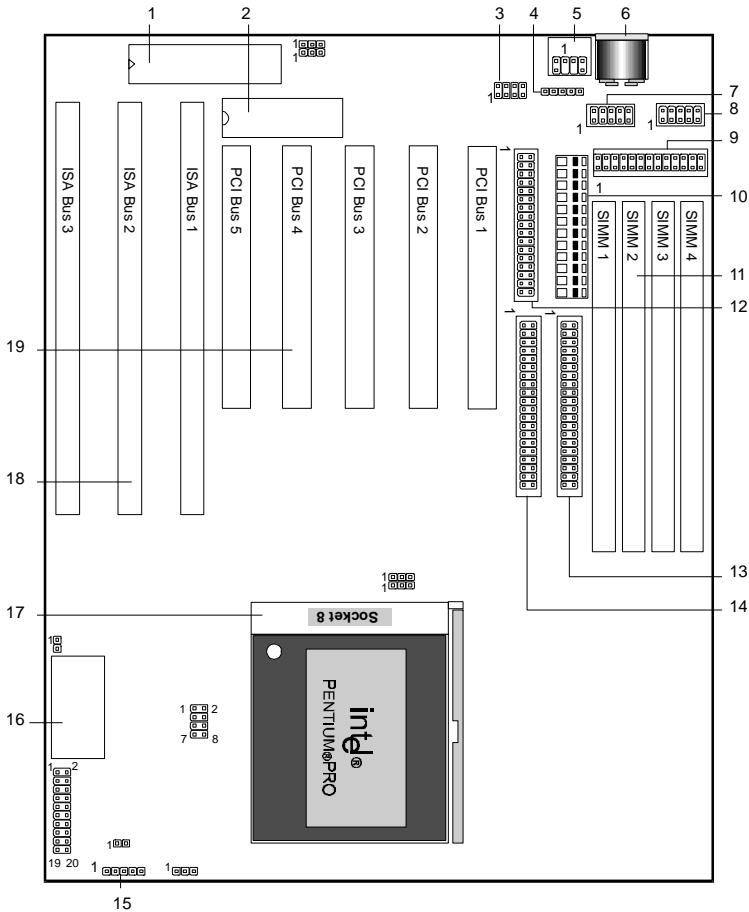
1. Keyboard BIOS	**11.** DRAM SIMM sockets
2. Mainboard BIOS	**12.** Floppy connector
3. USB connector	**13.** Primary IDE connector
4. Back Infrared (IR) connector	**14.** Secondary IDE connector
5. PS/2 mouse connector	**15.** Front Infrared (IR) connector
6. AT-keyboard connector	**16.** Real Time Clock/Battery
7. COM1 connector	**17.** CPU socket
8. COM2 connector	**18.** ISA slots
9. Printer port connector	**19.** PCI slots
10. Power connector	

* Board Size: Baby AT 220mm x 280mm (8.66" x 11")

BOARD LEVEL FEATURES

1. **KEYBOARD BIOS:** Firmware chip controlling keyboard operations.

2. **MAINBOARD BIOS:** Award BIOS supporting "Plug and Play", DMI, Green PC specification, on screen setup for Enhanced IDE and Multi-I/O. The BIOS is FLASH Upgradeable via the AWDFLASH Utility.

3. **USB CONNECTOR:** A connector for an optional USB (Universal Serial Bus) module is provided. This connector permits the connection of two USB peripheral devices directly to the port without an external hub. USB is a new technology supporting printers, fax modems and other telephony devices.

4. **BACK INFRARED (IR) CONNECTOR:** UART2 can also be used for the optional Infrared Module, enabling wireless communication capability. A supplied bracket with a single customized cable connects directly to the back infrared pin-header on the mainboard. For computer cases that support a front IR device, see number 14.

5. **PS/2 MOUSE CONNECTOR**: Connector for optional PS/2 mouse bracket/connector. If you are using a PS/2 mouse, you must purchase this bracket to insert into your PC and connect to the PS/2 mouse pin-header on the mainboard.

6. **AT-KEYBOARD CONNECTOR:** Supports IBM compatible AT style keyboards.

7. **COM1 CONNECTOR:** High-speed UART compatible serial port.

8. **COM2 CONNECTOR:** High-speed UART compatible serial port. COM2 can be directed to the Infrared Module for wireless connection capability.

9. **PRINTER PORT CONNECTOR:** EPP and ECP compatible parallel port.

10. **POWER CONNECTOR:** 12-Pin Power Connector.

11. **DRAM SIMM SOCKETS:** (4) 72-pin SIMM sockets are provided to support a maximum RAM memory capacity of 512 MB. SIMM types of either Fast Page Mode (FPM), Extended Data Output (EDO) or Burst EDO (BEDO) are supported and automatically detected by the BIOS.

12. **FLOPPY CONNECTOR:** Built-in floppy controller supports (2) 5.25" or 3.5" (1.44MB or 2.88MB) floppy drives.

13. **PRIMARY IDE CONNECTOR:** Connector for first IDE channel. The on-board PCI Bus Mastering IDE controller features support for DMA Mode 2 and PIO Modes 3 and 4 for faster data transfer rates. (2) Connectors are provided for support of up to (4) IDE devices on two channels. ATAPI Tape Drives and CD-ROMs are also supported.

14. **SECONDARY IDE CONNECTOR:** Connector for second IDE channel.

15. **FRONT INFRARED (IR) CONNECTOR:** This is convenient to system cases that support a front IR connector.

16. **REAL TIME CLOCK:** Circuitry responsible for the system time and date.

17. **CPU SOCKET:** ZIF Socket 8 for Pentium Pro CPUs. This mainboard supports CPU speeds of 150/166/180/200mhz for Intel.

18. **ISA SLOTS:** (3) 16-bit ISA slots

19. **PCI SLOTS:** (5) 32-bit PCI slots are provided.

Comprehensive Mainboard View
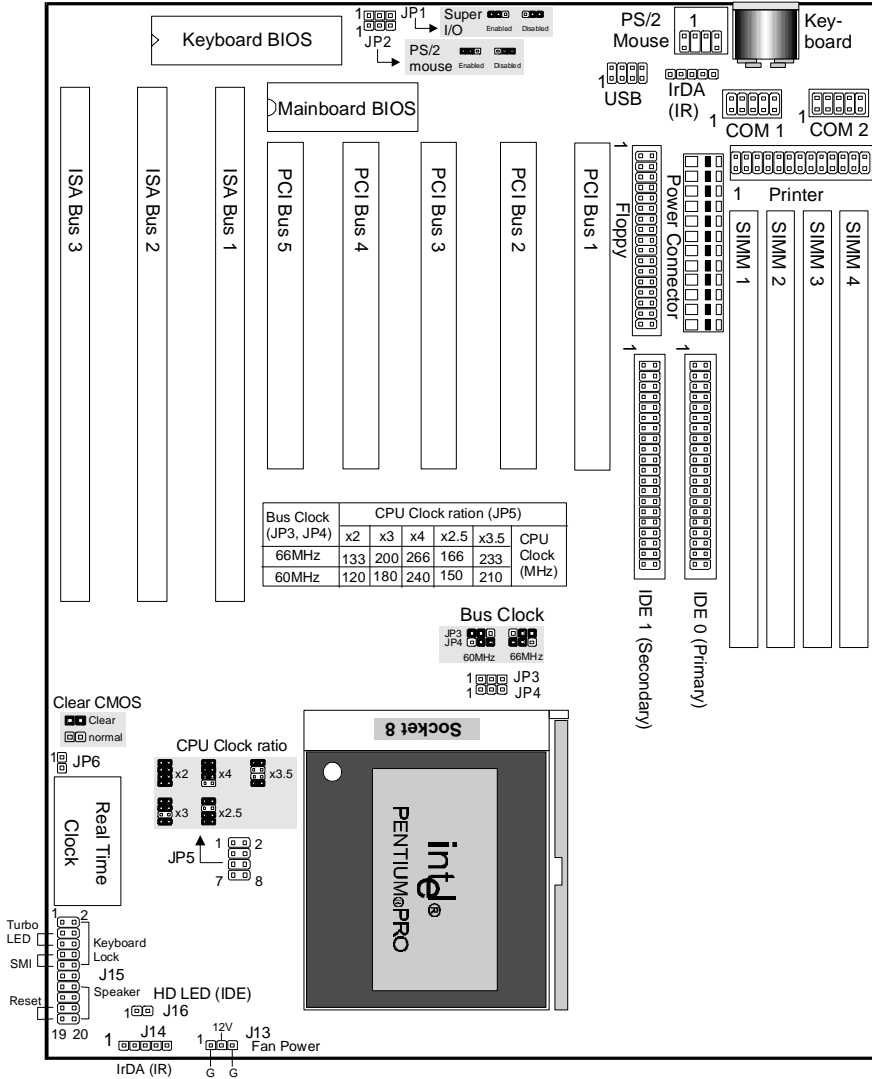
INSTALLING THE CPU AND MEMORY

Static Precautions

Static electricity can be a serious danger to the electronic components on this mainboard. To avoid damage caused by electrostatic discharge, observe the following precautions:

✓ Don't remove the mainboard from its anti-static packaging until you are ready to install it into a computer case.

✓ Before you handle the mainboard in any way, touch a grounded, anti-static surface, such as an unpainted portion of the system chassis, for a few seconds to discharge any built-up static electricity.

✓ Handle add-in cards and modules by the edges or mounting bracket.

Installing the CPU

✓ WARNING: Pentium Pro CPUs require a fan to keep them cool and prevent overheating. *Fans designed specifically for the ZIF Socket 8 are recommended. These fans provide a metal bracket that "snaps on" to the tabs on the socket, holding the fan and CPU firmly in place and preventing the CPU from working loose during shipping.* Other Fans should be installed first before inserting the CPU into its socket.
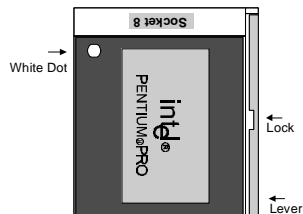
1. Locate the ZIF (Zero Insertion Force) Socket 8. This socket supports Pentium Pro CPUs (150-200Mhz).

2. First open the socket by pulling the lever sideways, then upwards. Notice how the lever locks in place when pressed all the way down.

3. The CPU must be inserted with the correct orientation. One corner of the CPU has a "notch" and looks different that the other three. This corner is marked with a white dot on top of the CPU. Align this corner in the opposite direction of the lever as shown in the figure above. Insert the CPU, hold it down, and close the lever until it locks into place.

Connecting the CPU Cooling Fan (JP13)

JP13 is a small 3-pin Header Connector that provides 12-Volt power for CPU Cooling Fans. This is useful if your Fan provides this type of connector, instead of the normal Molex-Type Power-Supply connector. Pin-2 corresponds to the RED power lead as shown:
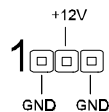
Setting the CPU Clock Selection Jumpers (JP3-5)

After installing the CPU, you must set the clock selection jumper to match the frequency of the CPU. Find the Jumper Blocks labeled JP3-4 and JP5 on the mainboard (Refer to the diagram on page 7). Set the jumper according to the table below for the CPU frequency you are using.

CPU Clock	Ratio	Bus Clock
150MHz	x2.5	60MHz
166MHz	x2.5	66MHz
180MHz	x3.0	60MHz
200MHz	x3.0	66MHz

The CPU Clock corresponds to the number marked on the CPU. The *Bus Clock* when multiplied with the *Ratio* gives the *CPU Clock*.

Bus Clock (MHz)			CPU Clock Ratio				
	60	66		x2	x2.5	x3	x3.5	x4

These jumpers automatically set the ISA Clock as well.

* If you are uncertain about the speed or voltage requirements of your particular CPU, you should obtain Technical Documentation from the manufacturer. Such information is available via the Intel WWW site.

INSTALLING THE CPU AND MEMORY

Installing the Memory (DRAM SIMMS)

- The P6F40-B5 mainboard supports **72-pin SIMMS** of three types:

    - **Fast Page Mode** (Asymmetric or Symmetric)

    - **EDO** (Extended Data Output)

    - **BEDO** (Burst EDO)

- SIMM Sizes supported: **4MB, 8MB, 16MB, 32MB, 64MB,** and **128MB**

- A total of **(4)** SIMMS can be installed for a maximum RAM capacity of **512MB**. (With four 128MB SIMMS Installed)

- Minimum RAM capacity is **8MB** (With two 4MB SIMMS Installed)

- SIMMS speed requirements: 70ns or 60ns

1. This mainboard contains (2) SIMM Banks. Each bank consists of (2) SIMM Sockets. **Memory must be installed two SIMMS (1 Bank) at a time. The two SIMMS in a bank must be identical.**

2. Install SIMMS 1 and 2 first. The SIMMS must be oriented in the correct way. There is a notch in one end of the SIMM. Align this notch as shown in the Diagram below. Retainers on either side of the SIMM will hold it in place.
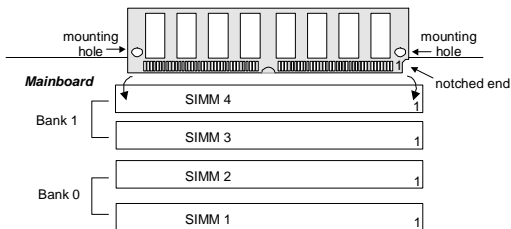
Jumpers are used on this mainboard to select various settings and features. A 2-pin jumper has two settings: Open and Short (or Closed). The jumper is closed by placing the Jumper Cap across the two pins, thereby connecting them. 3-pin jumpers can be set to pins 1-2 or 2-3 connected. Pin-1 is labeled on the circuit board for these jumpers as shown:

3-pin Jumper

Pin 1-2

Pin 2-3

2-pin Jumper

Open

Short
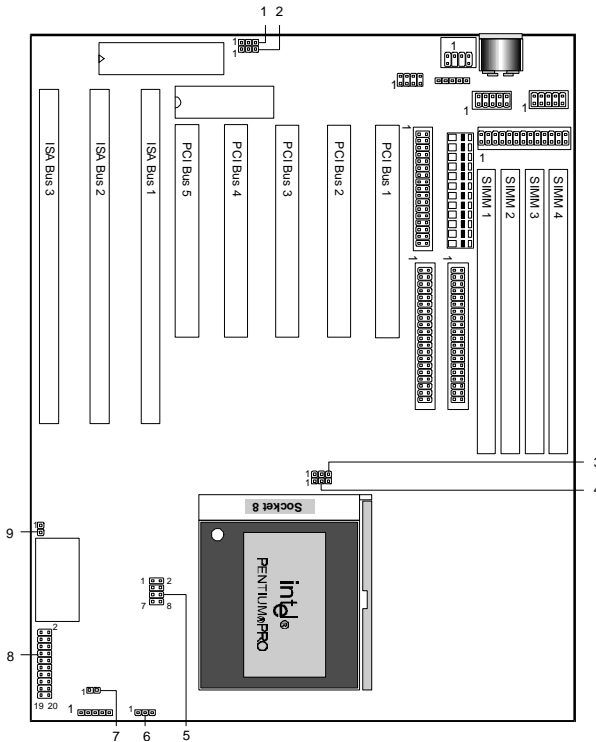
1. **JP1**
2. **JP2**
3. **JP3**
4. **JP4**
5. **JP5**
6. **J13**
7. **J16**
8. **J15**
9. **JP6**

JP1: Super I/O Selection - [1-2] Enabled / [2-3] Disabled. The onboard Super-I/O controller (W83877F) can be disabled to allow the use of an add-on I/O controller. Set JP1 to pins [2-3] to disable the onboard Floppy Controller, Serial Ports, Parallel Port, and IrDA support.

JP2: PS/2 Mouse on IRQ12 - JP2 enables or disables the on-board PS/2 mouse lead connector. When closed, the port becomes active and uses IRQ12.

SETTING THE JUMPERS

JP3, 4: Bus Clock Selection - This jumper set is explained in detail on page 9.

JP5: CPU Clock Ratio Selection - This jumper set is explained in detail on page 9.

J13: CPU cooling fan connector - Hook the CPU cooling fan power connector to this jumper, observing the correct polarity. Pin-2 corresponds to the RED power lead as shown:
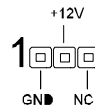
J16: IDE Activity LED - Hook the IDE LED lead to this jumper, with the RED lead corresponding to Pin-1.

J15: System Functions Jumper Block

> **Pins [3 & 5] Turbo LED switch** - The Turbo function is not supported by this mainboard. Therefore, the Turbo LED will always remain lit as long as the system power is on.

> **Pins [7 & 9] SMI suspend switch lead** - If your system's case has a suspend switch, hook the lead from the switch to pins 7 & 9 of J15. A suspend switch is used to save electricity by putting the system into a suspend mode when the computer is not being used. This switch could also be used by the Turbo switch on the front of the system, since this mainboard does not support that function. For this switch to be functional, it must first be enabled in the Power Management Setup in the BIOS Setup utility.
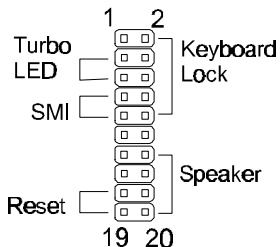
> **Pins [17 & 19] Reset switch lead** - Connects to the Reset Switch lead from the system's case. The reset switch is used to "cold-boot" the system without actually turning off the power, reducing wear and tear on the power supply.

> **Pins [2, 6, 8, 10] Keyboard lock switch lead** - Pins 2 & 6 connect to the Power LED from the system's case. Pins 8 & 10 connect to the case-mounted keylock switch.

> **Pins [14 & 20] Speaker connector** - Connects to the Speaker lead from the system's case.

JP6: Clear CMOS RAM - When closed, the CMOS information is reset to default. All user-entered information is cleared. To clear the CMOS, first turn the computer off, then connect a jumper cap over the two pins for a moment. Remove the jumper and power the system on.

Power Supply Cables

The two cables from the standard 5-volt power supply connect to the power connector on the mainboard (refer to page 4). You must align the connectors on the power cable at a slight angle to correctly fit them onto the mainboards power connector. Then, press down on the connectors to lock them in place. The (2) connectors should be installed so that the BLACK wires meet in the middle of the connector.
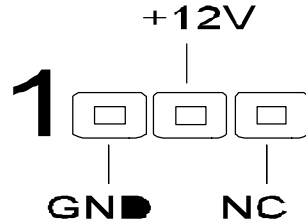
Serial and Parallel Ports

The cables from the supplied serial port connector bracket hook to the COM1 and COM2 connectors on the mainboard. Generally, the upper serial port on the bracket would be configured as COM1 and the lower port as COM2. Make sure to orient Pin-1 marked on the mainboard to the RED stripe on the ribbon cables.

The cable from the supplied parallel port connector bracket hooks to the parallel connector on the mainboard. Make sure to orient Pin-1 marked on the mainboard to the RED stripe on the ribbon cable.

IrDA-compliant infrared module connector

The IrDA connector bracket hooks directly to this connector on the mainboard. This connector provides support for the optional wireless transmitting and receiving infrared module. You must first configure through the BIOS setup where UART2 is directed, COM2 or IrDA.
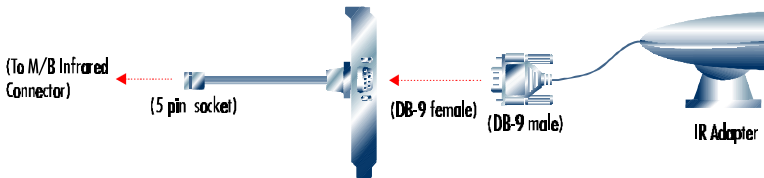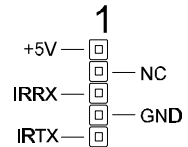
USB Connector

This 8-pin connector permits connection of two USB peripheral devices directly to the system without an external hub.
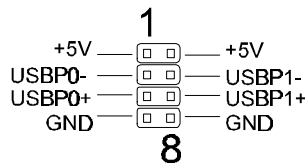
CONNECTIONS

Keyboard Connector

This connection is for a standard IBM-compatible keyboard. May also be known as a 101 enhanced keyboard.
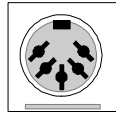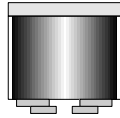
1: KB Clock
2: KB Data
3: (none)
4: GND
5: +5V DC

PS/2 Mouse Connector

If you are using a PS/2 mouse, you must purchase one bracket to insert into your PC and a single customized cable to directly connect to the PS/2 mouse pin-header on your mainboard.

3: GND
1: Data
2: NC
4: VCC
5: CLK
6: NC

Floppy drives

The on-board floppy controller supports (2) floppy disk drives with the floppy ribbon cable provided. Make sure the RED stripe on the ribbon cable is oriented towards Pin-1. Notice the "twist" between the sets of connectors on the floppy cable. The floppy drive "A" position is at the END of the cable, whereas floppy drive "B" is hooked to one of the connectors on the other side of the twist. The cable provides both "Edge" and "Pin" connectors for both the A and B positions to match the connector on your floppy drives.

IDE Hard Drives and CD-ROMs

The on-board Enhanced IDE controller can support up to (4) IDE hard drives or other ATAPI devices, such as CD-ROMs. This controller, as with all Enhanced IDE controllers, consists of both **Primary** and **Secondary** ports. Each port has an associated connector and cable which can support up to (2) ATAPI devices each.

All IDE devices have jumpers which allow the user to configure the device as either "Master" or "Slave". A Master device is one that is ALONE on the IDE cable, whereas a Slave device is installed as a SECOND device on the same cable. Keep in mind that the Master device will appear *before* the Slave device in the CMOS Setup, as well as the Operating System software. *Refer to the device documentation for jumper settings.*

The Secondary IDE port can be used for up to (2) additional ATAPI devices. Normally it's recommended that you connect your first hard drive to the Primary port, and the first CD-ROM to the Secondary.

Make sure to align the RED stripe on the ribbon cable with Pin-1 on the mainboard IDE connector. On most hard drives and CD-ROMs, the RED stripe should be oriented towards the power connector of the device.

About the BIOS

The **Mainboard BIOS** (Basic Input/Output System) acts as the bridge between your *Hardware* (CPU, Disk Drives, Video, etc.) and Operating System *Software* (Windows 95, OS/2 and so on…) The BIOS Setup (also called CMOS Setup) is where many hardware configuration options are set and stored. This configuration information will remain in the BIOS until it is changed, or cleared via the "Clear CMOS" jumper (see page 12).

CMOS (Complementary Metal Oxide Semiconductor) refers to the chip in which the BIOS information is stored.

The P6F40-B5 mainboard features **Award BIOS**, which provides an easy to use Setup program to aid in hardware configuration. In this section we will look at the various menus and options contained in the Award BIOS Setup Program. This mainboard also features a "Flash" BIOS. A Flash BIOS can be upgraded via software, thereby eliminating the need to actually replace the "BIOS Chip" on the mainboard. Procedures for updating the BIOS follow this section.

The Award BIOS installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. This means that it supports Intel/Cyrix/AMD processors in a standard IBM-AT compatible input/output system.

Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit.

Getting Help

Pressing F1 will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.

A Final Note About Setup

Not all systems have the same Setup. While the basic look and function of the Setup program remains the same for all systems, individual motherboard and chipset combinations require custom configurations. For example, you may find that your Setup main menu has a different number of entries from the main menu displayed in this manual. These are simply features not supported (or not user configurable) on your system.

The final appearance of the Setup program also depends on the Original Equipment Manufacturer (OEM) who built your system. If your OEM has decided that certain items should only be available to their technicians, those items may very well be removed from the Setup program.

MAINBOARD BIOS SETUP

- Shortly after the system is powered on, provided a CPU and sufficient RAM are installed, you will see the message: *Press **DEL** to enter SETUP.*

- Press the DEL key to enter the Award BIOS Setup program.

MAIN MENU

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

```
                    ROM PCI/ISA BIOS (2A59F008)
                      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	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING

Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color

Time, Date,　Hard Disk Type...

Note that a brief description of each highlighted selection appears at the bottom of the screen.

STANDARD CMOS SETUP

This first menu is where the most basic hardware options are set. Information regarding the system clock, IDE hard disks and floppy drives is stored and configured in this section. To enter the Standard CMOS Setup, press the [ENTER] key with this menu highlighted.

```
Date (mm:dd:yy) : Fri, Apr 7 1996
Time(hh:mm:ss) : 00:00:00

HARD DISKS        TYPE  SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE
Primary Master   :  Auto   0     0     0      0       0      0     Auto
Primary Slave    :  Auto   0     0     0      0       0      0     Auto
Secondary Master :  Auto   0     0     0      0       0      0     Auto
Secondary Slave  :  Auto   0     0     0      0       0      0     Auto

Drive A : 1.44M , 3.5in.

Drive B : None
Floppy 3 Mode Support: Disabled              Base Memory      :    640K
                                           Extended Memory    : 15360K
  Video   : EGA / VGA                        Other Memory     :    384K
  Halt On : All Errors                       Total Memory     :  16384K

  ESC : Quit        ↑ ↓ → ← : Select Item        PU / PD / + / - : Modify
  F1  : Help        (Shift) F2 : Change Color
```

Upon entering the Standard CMOS Setup screen, you will see a screen like that below. Again, notice that the bottom of the screen provides information relating to the highlighted item as you move around the screen.

First, let's set the system **Date**. Use the arrow keys to move to and highlight the "Date" option. Select the Month by using the PgDn and PgUp keys. This is how most settings will be configured. Then, move to the day, year and time via the arrow keys to finish setting the system date and time.

Keep in mind that the system time is set in 24-hour time. With this method, 1PM is represented as 13:00, 2PM as 14:00 and so on, with 00:00 corresponding to Midnight.

Pri Master, Pri Slave, Sec Master, Sec Slave - These four options relate to the (4) IDE hard drives, CD-ROMs or other ATAPI devices that can be controlled via the on-board IDE controller (review *IDE Hard Drives and CD-ROMs* on page 14). The "Pri Master" setting specifies the first device on the primary IDE channel, "Pri Slave" - the second. Sec Master and Sec Slave specify the devices on the secondary channel.

The first option available is the most important: **Type**. This is where you will specify the type of device and how it is represented in the BIOS Setup. If the device is a hard disk or

MAINBOARD BIOS SETUP

CD-ROM, generally the *Auto* option is the best choice for fast and easy setup of the hard disk parameters. Let's take a look at the difference between the *Auto*, *User* and *Types (1-45)* options:

- **Auto** - This option instructs the BIOS to automatically configure the hard disk by reading the parameters (cylinders, sectors, etc.) directly from the hard disk's firmware. Use this option if you are configuring a new hard drive, or one that has already been formatted using the *Auto* option. Keep in mind that a hard drive is configured using a certain set of parameters, those same parameters must be used for the life of the drive, unless the drive is re-FDISKed using a different parameter set. (This procedure deletes the old partition(s) on the drive and creates a new one, using the new parameters).

- **User** - This option allows you to manually enter in the parameters of the hard drive. Generally, this option would be used only if the hard drive has already been formatted with a certain set of parameters, and assured consistency between the old and new parameters is desired.

TYPE	drive type
CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	mode type

- **Types 1-45** - Similar to the *User* option, these types should only be used if the exact parameters for the hard drive are already entered as a specific type stored in the Setup Program. Again, this would only be needed to assure that the parameters the drive was formatted with and those it is using now, are identical. For new hard drives, the *Auto* option is the preferred choice.

Mode - One of Enhanced IDE's most important features is LBA (Logical Block Addressing) Mode. This feature allows the use of larger hard drives by providing a way to bypass the cylinder limitations imposed by many Operating Systems. LBA Mode is used to extend a hard drive's useable capacity by "remapping" the cylinders in a way that is acceptable to these operating systems. For instance, a hard drive with the parameters of 2100 Cylinders, 16 Heads and 63 Sectors would be represented by LBA Mode as 525 Cylinders, 64 Heads and 63 Sectors. (Notice that the Cylinders have been divided, and the Heads have been multiplied, by a factor of 4)

On hard drives smaller in capacity than 528MB, LBA support is not needed. The option on these devices is ignored, even if enabled. For hard drives greater than 528MB, LBA mode should be enabled. The following rules apply:

- Operating Systems that do not use the FAT file system do not need LBA Mode, and can use the Normal or Large Modes. Examples would be Netware and Unix.

- When configuring a new hard drive greater than 528MB in capacity, always make sure LBA mode is enabled.

- If you are using a hard drive that is over 528MB in capacity, but was already formatted without using LBA mode, LBA support will be ignored even if it is enabled. This assures correct access to the drive's data.

- *SCSI Hard Drives* are <u>NOT</u> entered into the Mainboard BIOS Setup in any way. The hard drive settings in the Standard CMOS Setup are only for drives connected to the IDE Controller. So, if only SCSI drives were installed, all these settings would be set to **Type:** *None*. SCSI Devices are configured via the SCSI controller's BIOS.

Floppy Drives A: and B: - Select the Type for the A: and/or B: floppy drives. Remember, floppy drive A: is the first drive, hooked to the END of the floppy ribbon cable. Floppy drive B: is hooked up after the twist. Available settings are listed below:

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Floppy 3 Mode Support: - Enable this option ONLY for floppy drive(s) that support the Japanese standard (1.2MB on 3.5" Diskette). Options: Disabled (Default), Both, Drive A / B.

Video - This category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select their type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Error Halt - Determines whether or not the system will prompt you if an error is detected during POST.

No errors	The system boot will not be stopped for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Memory - This category is display-only. All memory detected by the POST (Power On Self Test) of the BIOS is shown as the following types:

MAINBOARD BIOS SETUP

Base Memory is the amount of conventional memory installed in the system. This value is typically 640K for systems with 640K or more memory installed on the motherboard. The **Extended Memory** is the amount of memory located above 1MB in the CPU's memory address map. **Other Memory** refers to the memory located in the region between 640K and 1MB. This region can be used for *shadowing* as well as *expanded memory* in DOS.

BIOS FEATURES SETUP

This menu provides access to more advanced BIOS configuration settings that deal with overall performance of the system and peripheral setup. This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU L1 Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
CPU L2 Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D0000-D3FFF Shadow	: Disabled
Hard Disk Boot From	: Pri-IDE	D4000-D7FFF Shadow	: Disabled
System Boot Sequence	: C, A	D8000-DBFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled		
Floppy Disk Access Control	: R/W		
Boot Up NumLock Status	: On		
Boot Up System Speed	: High		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: System	ESC : Quit	↑↓→←: Select
PCI / VGA Palette Snoop	: Disabled	F1 : Help	PU/PD/+/- : Mod
Assign PCI IRQ For VGA	: Disabled	F5 : Old Values	(Shift) F2 : Color
OS/2 Onboard Memory > 64MB	: Non-OS2	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Virus Warning - When enabled, the BIOS will warn the user when any program attempts to write to or format the boot sector. If an attempt is made, the BIOS will halt the system and the following error message will appear:

```
! WARNING !
Disk boot sector is to be modified
Type "Y" to accept write or "N" to abort write
Award Software, Inc.
```

You can accept or abort this operation.

Note: This feature is designed to guard against viruses that modify the boot sector on hard disks. However, many disk diagnostic programs which attempt to access the boot sector table, as well as partition and format programs, will also trigger this warning. If you will be running such a program, you can disable Virus Protection first, or choose "Y" to accept the boot sector modification when this message shows up.

CPU L1 Cache - Enables or Disables the Level-1 Internal Cache memory. Generally, this would only be *Disabled* for troubleshooting purposes.

CPU L2 Cache - Enables or Disables the Level-2 External Cache memory. Generally, this would only be *Disabled* for troubleshooting purposes.

Quick Power on Self Test - Speeds up Power On Self Test (POST) after the computer is powered on. When set to Enable, the BIOS will shorten or skip some checks during POST.

Hard Disk Boot From - This option lets you boot from the Primary IDE Master (Pri-IDE) *Default, Secondary IDE Master (Sec-IDE), or First SCSI hard disk.

System Boot Sequence - When your system is powered on, the BIOS performs a variety of operations, then attempts to boot an Operating System from either a hard drive, floppy drive, or CD-ROM. This setting determines the sequence that the BIOS will follow when searching devices for a bootable disk. Most users find the *C, A* setting to be most beneficial, since it takes the least amount of time to boot the system. If however, you want the ability to boot from a Floppy or CD-ROM drive, you would need to choose either the *A, C* or *CDROM, C, A* setting. For instance, if your boot sequence was set to *C, A* and for some reason you wanted to boot to your Floppy A: Drive, it would not be possible, since the BIOS would always boot from the C: drive first. In this case, this setting would need to be changed to *A, C* so that the system would first check the floppy drive for a bootable disk. This would slow bootup speed, however, since the floppy would be checked on every boot.

C, A	System will first search hard disk drive then floppy disk drive for boot sector.
A, C	System will first search for boot sector on floppy disk, then hard disk.
CDROM, C, A	System will first search the CDROM drive, then hard disk drive and then floppy disk drive for boot sector.
C, CDROM, A	System will first search for boot sector on hard disk drive , then CDROM drive, and then floppy disk drive.

Swap Floppy Drive - The hardware connections determine which floppy is configured as drive A: and drive B: "Swapping" the floppy drives can be useful if your system has two floppy drives, and you want the ability to boot from both. For example: Since a PC cannot boot from the B: Floppy, you would need to "Swap" floppy drives A: and B: in order to set the second floppy drive to drive A:, thereby making it bootable.

Boot Up Floppy Seek - When enabled, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. It will display a warning if the floppy is Low Density (40 Trks).

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Floppy Disk Access Control - When *R/W*, the floppy disk can be read and written. The other option is *Read Only*.

Boot Up NumLock Status - When *On*, the NumLock key will be automatically enabled when the system boots.

Boot Up System Speed - Sets the system speed to High or Low. Generally, low speed would only be used for troubleshooting purposes.

Typematic Rate Setting - Determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will

Enabled	Enable typematic rate
Disabled	Disable typematic rate

generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin to report that the key has been depressed repeatedly. This feature is used to accelerate cursor movements with the arrow keys.

Typematic Rate (Chars/Sec) - When the typematic rate is enabled, this selection allows you to select the rate at which the keys are accelerated. See the table to the right:

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec) - When the typematic rate is enabled, this selection allows you to select the delay (in msec) between when the key was first depressed and when the acceleration begins.

Security Option - This option enables password checking every time the computer is powered on *or* every time BIOS Setup is executed. If *System* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears only when the BIOS Setup program is executed. Refer to the section *Supervisor Password* for more information.

PCI / VGA Palette Snoop - This option must be set to *Enabled* if any ISA MPEG card installed requires VGA palette snooping. The settings are *Disabled* or *Enabled*.

Assign PCI IRQ For VGA - The *Enabled* option allows you to auto-route an IRQ for use by a PCI VGA card.

OS/2 Onboard Memory > 64MB - This should be set to **OS2** if you are running IBM OS/2 with more than 64MB of RAM in the system. Otherwise, the setting should be **Non-OS2**.

Video BIOS Shadow - This option controls the location of the contents of the 32KB of Video ROM beginning at the C0000h memory location. The settings are:

Enabled	The contents of C0000h-C7FFFh are written to the same address in system memory (RAM) for faster execution.
Disabled	The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

C8000-DFFFF Shadow - These options control the location of the contents of the 16KB expansion card ROMs beginning at the specified memory location. If no adapter ROM is using the named ROM area, this area is made available to the local bus. Shadowing a ROM reduces the memory available between 640KB and 1024KB by the amount used for this purpose. The settings are *Enabled* or *Disabled*.

CHIPSET FEATURES SETUP

This setup menu contains advanced configuration options relating to the mainboard chipset. These options are rarely changed by the user.

Auto Configuration	: Enabled	8 Bit I/O Recovery Time	: 1
DRAM Speed Selection	: 70ns	16 Bit I/O Recovery Time	: 1
DRAM RAS# Precharge Time	: 4 T	Memory Hole At 15M-16M	: Disabled
MA Additional Wait State	: Disabled	Passive Release	: Enabled
RAS# To CAS# Delay	: Enabled	Delayed Transaction	: Disabled
DRAM Read Burst (B/E/F)	: x2/3/4		
DRAM Write Burst (B/E/F)	: x3/3/3		
ISA Bus Clock	: PCI CLK/4		
DRAM Refresh Type	: CBR		
DRAM ECC/PARITY Select	: Disabled		
DRAM Leadoff Timing	: Disabled		
Read-Around-Write	: Enabled		
PCI Burst Write Combine	: Enabled		
PCI-To-DRAM Pipeline	: Enabled		
CPU-To-PCI Write Post	: Enabled	ESC : Quit	↑↓ → ←: Select
USWC Write Posting	: Enabled	F1 : Help	PU/PD/+/- : Mod
CPU-To-PCI IDE Posting	: Enabled	F5 : Old Values	(Shift) F2 : Color
System BIOS Cacheable	: Disabled	F6 : Load BIOS Defaults	
Video RAM Cacheable	: Disabled	F7 : Load Setup Defaults	

Auto Configuration - When **Enabled**, pre-defined values for DRAM, Cache, Timings, etc. are set according to the CPU type & system clock. *Enabled* is the recommended setting. These settings are only editable when Auto Configuration is *Disabled*.

Note: The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might occur if your system had mixed speed DRAM chips installed. Here, greater delays may be required to preserve the integrity of the data held in the slower memory chips.

DRAM Speed Selection - DRAM timing is controlled by the DRAM timing registers. The timings programmed into this register are dependent on the system design. 60ns is the fastest rate. The 70ns timing is slower and may be required in certain system designs to support loose layouts or slower memory.

DRAM RAS# Precharge Time - DRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This option allows you to determine the number of CPU clocks allocated for the **R**ow **A**ddress **S**trobe to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data will be lost. Options are **3** or **4** Clocks. *Default = *4 CPU Clocks*.

MA Additional Wait State - *Enabled* would insert one additional wait state before the assertion of the first MA and CAS#/RAS# assertion during DRAM read or write leadoff cycle. And no clock would be inserted for *Disabled* (Default).

RAS# To CAS# Delay - *Enabled* (Default) would insert one clock between assertion of RAS# and CAS#. And no clock would be inserted for *Disabled*. This has no impact on page hit cases and affects only row and page misses.

DRAM Read Burst (B/E/F) - Sets the burst mode read timing for three different DRAM types - (**B**EDO/**E**DO/**F**PM). Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place, while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory. *x2/3/4 timing is the default.

x2/3/4	Read DRAM (BEDO/EDO/FPM) timings are 2-2-2/3-3-3/4-4-4
x2/2/3	Read DRAM (BEDO/EDO/FPM) timings are 2-2-2/2-2-2/3-3-3
x3/4/4	Read DRAM (BEDO/EDO/FPM) timings are 3-3-3/4-4-4/4-4-4

DRAM Write Burst (B/E/F) - Sets the timing for burst mode writes from DRAM. Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place, while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory. **x3/3/3 timings* is the default.

x2/2/3	Write DRAM timings (BEDO/EDO/FPM) are 2-2-2/2-2-2/3-3-3
x3/3/3	Write DRAM timings (BEDO/EDO/FPM) are 3-3-3/3-3-3/3-3-3
x3/3/4	Write DRAM timings (BEDO/EDO/FPM) are 3-3-3/3-3-3/4-4-4
x4/4/4	Write DRAM timings (BEDO/EDO/FPM) are 4-4-4/4-4-4/4-4-4

ISA Bus Clock - This item allows you to select the PCI clock type. PCI CLK/3 or PCI CLK/4 (Default).

DRAM Refresh Type - Two options: CBR (CAS# Before RAS#; Default) and RAS only.

DRAM ECC/PARITY Select - When *Disabled* (Default), there will be no memory errors shown on the monitor for **Memory parity SERR# (NMI)**. When parity DRAM modules are used, you may select *Parity* or *ECC* (Error Checking and Correcting) to correct 1 bit memory errors in the memory.

DRAM Leadoff Timing - Controls the DRAM leadoff timing. Slower leadoffs may be required in certain system designs to support slower memories. *Disabled* is the default.

Read-Around-Write - When *Enabled* (Default), the execution efficiency of the processor will be increased. When there is no dependence between the read and write commands, this would allow the processor to execute read commands out of order.

PCI Burst Write Combine - When *Enabled* (Default), the execution efficiency of the PCI bus will be increased by combining several CPU to PCI write cycles into one. VGA performance will also be increased via this setting.

PCI-To-DRAM Pipeline - When *Enabled* (Default), the bandwidth of the path between the PCI and DRAM will be increased to enhance the PCI bus efficiency and DRAM accessing.

CPU-To-PCI Write Post - When *Enabled* (Default), the efficiency of PCI bus is increased and processor execution is accelerated.

USWC Write Posting - When *Enabled* (Default), allows USWC (Uncacheable, Speculatable, Write-Combining) write posting during I/O bridge access.

CPU-To-PCI IDE Posting - When *Enabled* (Default), the CPU to PCI IDE posting cycles will be treated as normal I/O write transactions.

System BIOS Cacheable - When *Enabled* (Default), the contents of the F0000h system memory segment can be read from or written to the Level-2 cache memory. The contents of the F0000h memory segment are always copied from the BIOS ROM to system RAM for faster execution.

Video RAM Cacheable - *Enabled* will cause access to the video BIOS addressed at C0000H to C7FFFH to be cached and also let the B0000H to BFFFFH to be a USWC memory type. **Disabled* is the default.

8 Bit I/O Recovery Time - The recovery time is the length of time, measured in ISA BUS clocks, that the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating faster than the input/output bus. Therefore the CPU must be delayed to allow for the completion of I/O transfers. This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 ISA BUS clocks. **NA* is the default.

16 Bit I/O Recovery Time - This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 ISA BUS clocks. **NA* is the default.

Memory Hole At 15M-16M - In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB. **Disabled* is the default.

Passive Release - The PIIX3 (PCI ISA IDE Xcelerator) provides a programmable Passive Release mechanism to meet the required master latencies. When *enabled* (default), ISA masters may see long delays in access to any PCI memory, including the main DRAM array.

Delayed Transaction - It is used by targets that cannot complete the initial data phase within the requirements of the PCI 2.1 specification. *Disabled* is the default.

POWER MANAGEMENT SETUP

This menu contains configuration options that reduce power consumption when the system is not in use. Other "Green-PC" compliant peripherals are also supported. Power Management allows you to configure you system to use energy most efficiently, and yet still in a manner consistent with your own style of computer use.

```
Power Management          : User Defined    ** Suspend & Resume Events **
PM Control by APM         : Yes             IRQ3  (COM 2)              : OFF
Video Off Method          : V/H SYNC+Blank  IRQ4  (COM 1)              : ON
Video Off Option          : Susp, Stby -> Off  IRQ5  (LPT 2)           : ON
Suspend Switch            : Enabled         IRQ6  (Floppy Disk)        : ON
MODEM Use IRQ             : 3               IRQ7  (LPT 1)              : ON
                                            IRQ8  (RTC Alarm)          : OFF
Doze Mode                 : Disabled        IRQ9  (IRQ2 Redir)         : ON
Standby Mode              : Disabled        IRQ10 (Reserved)           : ON
Suspend Mode              : Disabled        IRQ11 (Reserved)           : ON
HDD Power Down            : Disabled        IRQ12 (PS/2 Mouse)         : ON
                                            IRQ13 (Coprocessor)        : ON
 ** Wake Up Events In Doze & Standby **     IRQ14 (Hard Disk)          : ON
IRQ3   ( Wake - Up Event )  : OFF           IRQ15 (Reserved)           : ON
IRQ4   ( Wake - Up Event )  : ON           ┌──────────────────────────────────
IRQ8   ( Wake - Up Event )  : OFF          ESC : Quit        ↑↓ → ←: Select Item
IRQ12  ( Wake - Up Event )  : ON           F1  : Help        PU/PD/+/- : Modify
                                           F5  : Old Values  (Shift) F2 : Color
                                           F6  : Load BIOS Defaults
                                           F7  : Load Setup Defaults
```

Power Management - This category allows you to select the type (or degree) of power saving and is directly related to the following modes: Doze Mode, Standby Mode, Suspend Mode and HDD Power Down. There are four selections for Power Management, three of which have fixed mode settings:

Disabled (Default)	No power management. Disables all four modes
Min. Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPUs**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.

User Defined	Set each mode individually. When Enabled, each range is from 1 min. to 1 hr., except for HDD Power Down which ranges from 1 min. to 15 min.

PM Control by APM - When Enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If the Max. Power Saving is not enabled, this will be preset to *No*.

Video Off Method - This determines the manner in which the monitor is blanked.

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

Video Off Option - This is to determine when to activate the video off function. Options are: "Susp, Stby -. Off" (Default), "All Modes -> Off", and "Always On".

Suspend Switch - Enables or Disables the SMI connector on the mainboard. (See page 12) When *Enabled*, a switch on the computer case can be used to trigger power saving functions.

MODEM Use IRQ - This setting tells the BIOS which IRQ the modem is using, so that any activity on that interrupt can bring the system out of power saving mode. Options are: NA, 3 (Default), 4, 5, 7, 9, 10, 11.

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

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

Standby Mode - When enabled and after the set time of system inactivity, the fixed disk drive and the video will be shut off while all other devices still operate at full speed.

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

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

Wake Up Events in Doze & Standby - When set to **ON**, any activity on the specified IRQ will cause the system to "wake up" from Doze or Standby mode. The **OFF** setting disables wake up for the specified IRQ.

Suspend & Resume Events - Suspend and Resume events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from

such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *On*, even when the system is in a power down mode.

When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service. As above, the choices are *On* and *Off. Off* is the default. When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

You can set IRQ3 - 15 individually. Activity detected from any enabled IRQ channel will wake up the system.

PNP/PCI CONFIGURATION SETUP

The PCI **P**ersonal **C**omponent **I**nterconnect Bus was developed by Intel and other industry leader partners primarily to address two important issues faced by PC hardware designers today: a) How to allow peripheral devices to take the fullest advantage of the power of Pentium and Pentium Pro chip technology, and b) Provide a simpler installation process for peripheral devices, such as Network cards, EIDE or SCSI controllers.

PCI accomplishes these goals with its 32-bit Data path Local Bus design, and support for Plug & Play. Unlike older expansion bus architectures, PCI provides peripherals with a direct connection to the CPU and memory. The PCI bus runs at 33Mhz and has a maximum transfer capability of 132MBps. With Plug & Play, the system BIOS automatically determines hardware resources for new peripherals, simplifying installation of multiple interface cards.

This Setup Menu provides configuration options for the PCI Bus and its assigned resources.

```
Resources Controlled by      : Manual      PCI IRQ Activated 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   On Board SCSI BIOS           : Auto
IRQ-5     assigned  to       : PCI/ISA PnP   PCI Latency Timer            : 80 PCI Clocks
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       : Legacy ISA
IRQ-15    assigned  to       : Legacy ISA
DMA-0     assigned  to       : PCI/ISA PnP
DMA-1     assigned  to       : PCI/ISA PnP   ESC : Quit      ↑↓→←: Select Item
DMA-3     assigned  to       : PCI/ISA PnP   F1  : Help      PU/PD/+/- :  Modify
DMA-5     assigned  to       : PCI/ISA PnP   F5  : Old Values  (Shift) F2 : Color
DMA-6     assigned  to       : PCI/ISA PnP   F6  : Load BIOS Defaults
```

DMA-7	assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults

Resources Controlled By - The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. This capability is specifically designed for a Plug and Play operating system such as Windows® 95. Choices are *Auto* (Default) and Manual.

Reset Configuration Data - Reset Configuration Data: When set to Enabled, ESCD (Extended System Configuration Data) is cleared. This setting will automatically be set back to Disabled when the system reboots. *Enabled* and *Disabled* (Default).

IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to - By default, all resources are assigned to the PCI Bus except IRQs 3 and 4. If an ISA card requires a particular IRQ or DMA channel, those resources should be set to Legacy ISA so that the PCI Bus will not try to use them. Choices are *Legacy ISA* and *PCI/ISA PnP*.

PCI IRQ Activated By - This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer. Choices are *Level* (Default) and *Edge*.

PCI IDE IRQ Map To - Configures what type of IDE disk controller is in use. By default, Setup assumes that you are using the on-board PCI IDE Controller and this option is set to **PCI-AUTO**. If you have equipped your system with an add-on PCI controller, changing this setting allows you to specify which slot has the controller and which PCI interrupt (A, B, C or D) is associated with the Primary and/or Secondary port. Most add-on IDE controllers are configured to use INT# A for the primary and INT# B for the secondary.

On Board SCSI BIOS - When set to *Auto* (Default), the system will automatically sense the presence of any SCSI adapter that uses a Symbios SYM53C8XX SCSI chip:

SCSI adapter **has** its own BIOS on board:	uses adapter's own SCSI BIOS
SCSI adapter **doesn't have** its own BIOS:	uses SCSI BIOS built-in Mainboard BIOS

Disabling, the onboard SCSI BIOS prevents it from being active in any way.

PCI Latency Timer - This option sets latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks. Available settings are 0 ~ 248. The default is 80.

LOAD BIOS DEFAULTS

Loads "Fail Safe" settings into the BIOS Setup program. These options are designed to slow the system down for troubleshooting purposes. To load the default values, highlight this option and press [ENTER]. Enter "Y" in the confirmation screen and press [ENTER] again. User-defined options in the **Standard CMOS Setup** are not affected.

MAINBOARD BIOS SETUP

LOAD SETUP DEFAULTS

Loads the default values for best system performance into the BIOS Setup program. To load the default values, highlight this option and press [ENTER]. Enter "Y" in the confirmation screen and press [ENTER] again. User-defined options in the **Standard CMOS Setup** are not affected.

INTEGRATED PERIPHERALS SETUP

This menu is used to configure the integrated IDE subsystem and other peripherals.

IDE HDD Block Mode	: Enabled	
Onboard Primary PCI IDE	: Enabled	
IDE Primary Master PIO	: Auto	
IDE Primary Slave PIO	: Auto	
Onboard Secondary PCI IDE	: Enabled	
IDE Secondary Master PIO	: Auto	
IDE Secondary Slave PIO	: Auto	
PCI Slot IDE 2nd Channel	: Disabled	
USB Controller	: Disabled	
Onboard FDC Controller	: Enabled	
Onboard Serial Port 1	: COM1/3F8	
Onboard Serial Port 2	: COM2/2F8	
InfraRed/COM2 Selected	: UART COM2	
Onboard Parallel Port	: 378/IRQ7	
Onboard Parallel Mode	: Normal	ESC: Quit ↑↓→←: Select
		F1 : Help PU/PD/+/- : Modify
		F5 : Old Values (Shift) F2: Color
		F6 : Load BIOS Defaults
		F7 : Load Setup Defaults

IDE HDD Block Mode
This allows your hard disk controller to use fast block mode to transfer data to and from your hard disk drive (HDD). **Enabled** or **Disabled**. *Enabled* is the default.

PIO Mode - IDE Programmed I/O Mode - This setting relates to the speed at which the hard drive is able to transfer data, up to 16.6MB/second for Mode 4 drives. Available settings are *Auto*, *0*, *1*, *2*, *3*, or *4*. As with the **Type** setting, *Auto* is the preferred choice, in that the supported PIO Mode is read directly from the hard drive. Be sure not to enter in a PIO Mode Setting that is higher than what the drive actually supports. This will probably result in loss of data.

- The relation between the IDE PIO mode value and IDE cycle timing is shown in the following table:

PIO Mode	Timing
0	600 ns
1	383 ns
2	240 ns
3	180 ns
4	120 ns

MAINBOARD BIOS SETUP

Onboard Primary PCI IDE - Enables or Disables the primary controller. Situations where this controller would be disabled are: *a) You are not using any IDE Drives* or *b) You are using an add-on IDE controller in a PCI Slot*.

Enabled	Primary onboard HDD controller used -- (Default)
Disabled	Primary onboard HDD controller not used.

Onboard Secondary PCI IDE - Enables or Disables the secondary controller. Situations where this controller would be disabled are: *a) You are not using any IDE Drives* or *b) You are using IDE Drives ONLY on the primary controller* or *c) You are using an add-on IDE controller in a PCI Slot*.

Enabled	Secondary onboard HDD controller used
Disabled	Secondary onboard HDD controller not used.

PCI Slot IDE 2nd Channel - Allows you designate an IDE controller board inserted into one of the PCI slots as your secondary IDE controller. *Disabled* (Default).

USB Controller - Enables or Disables the on-board USB (Universal Serial Bus) controller.

Onboard FDC Controller - Enables or Disables the on-board Floppy Disk Controller.

Onboard Serial Port 1 - With this option, the on-board Serial Port 1 can be Disabled, or set to COM1/3F8 (Default), COM2/2F8, COM3/3E8 or COM4/2E8.

Onboard Serial Port 2 - With this option, the on-board Serial Port 2 can be Disabled, or set to COM2/2F8 (Default), COM1/3F8, COM3/3E8 or COM4/2E8.

InfraRed /COM2 Selected - By default, this field is set to **UART COM2**, which directs the second serial port UART to support the COM2 serial port. Choosing **IrDA SIR** or **SHARP IR** will activate the on-board infrared feature and redirect the second serial port UART to support the infrared module connector on the mainboard.

Onboard Parallel Port - With this option, the on-board Parallel Port can be Disabled, or set to 378/IRQ7 (Default), 3BC/IRQ7 or 278/IRQ5.

Onboard Parallel Mode - Sets the operating mode of the parallel port. Options are: *Normal, EPP/Normal, ECP* and *ECP/EPP*.

ECP Mode Use DMA - Options are 1 and 3. This field is available only when one of the two following options in **Parallel Port Mode** is selected: ECP or ECP/EPP.

EPP Version - Options are 1.7 (Default) and 1.9 (IEEE 1284 compliant).

SUPERVISOR PASSWORD AND USER PASSWORD SETTING

Passwords can be set to provide protection for the BIOS configuration options, or to restrict access to the computer itself.

When enabled, *User Password* will require all users to enter a password in order to use the system, and/or enter the BIOS setup (but can't change its contents). A *Supervisor Password* is used to protect the stored CMOS options from being changed by unauthorized users.

Keep in mind that when set, a password is required only when *booting* the system. It will not provide protection to a system that is already booted.

The password check option is set in **BIOS FEATURES SETUP** by choosing either *System* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when the user enters the BIOS Setup). The password is stored in CMOS RAM, and can be cleared with the *Clear CMOS Jumper*.

To set a password:

1. You must first set the *Supervisor* password by choosing *Supervisor Password* and pressing [ENTER]. Setup prompts for a password.

2. Enter a 1-8 character password using letters, numbers, or a combination of both. The specific characters are not shown as you enter them. Press [ENTER].

3. A confirmation box appears asking you to re-enter the password. Enter the password again. Press [ENTER]. Follow the same procedure to set the *User Password*.

Changing a Password:

1. Select the appropriate password option (Supervisor or User) from the main menu and press [ENTER]. Enter the current password and press [Enter]. The screen does not display the characters entered. Enter in the new password, then the confirmation. You cannot change the current password unless you know it.

Erasing a Password:

1. If you know the current password, but want to disable password checking, follow the procedure for changing the password. When Setup prompts for the new password, simply press [ENTER]. You will see a message indicating that the password is disabled.

2. If you do not know the current password, the CMOS must be cleared via the *Clear CMOS Jumper*, JP3 (See page 10). *This will clear all user-defined BIOS Setup options.

IDE HDD AUTO DETECTION

Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk's parameters. See also "Standard CMOS Setup".

LOW-LEVEL FORMAT UTILITY

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

```
┌────────────────────────────────────────────────┬──────────────────┐
│        Hard Disk Low Level Format Utility        │   NO. CYLS HEAD  │
│              SELECT DRIVE                         │                  │
│              BAD TRACK LIST                       │                  │
│              PREFORMAT                            │                  │
│                                                   │                  │
│           Current select drive is : C             │                  │
│                                                   │                  │
│      Drive : C:  CYLINDER : 0   HEAD : 0          │                  │
└──────────────────────────────────────────────────┴─────────────────┘
```

		SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	:	850	1647	16	65535	1646	63	AUTO
Primary Slave	:	0	0	0	0	0	0	AUTO
Secondary Master	:	0	0	0	0	0	0	AUTO
Secondary Slave	:	0	0	0	0	0	0	AUTO

```
Up/Down - Select Item              ENTER - Accept              ECS - Exit/Abort
         Copyright (c) Award Software, Inc. 1992-94  All Rights Reserved
```

SELECT DRIVE - Select from installed hard disk drive C or D. Listed at the bottom of the screen is the drive automatically detected by the utility.

BAD TRACK LIST - *Auto Scan Bad Track* - The utility will automatically scan bad tracks and list the bad tracks in the window at the right side of the screen. *Add Bad Track* - Directly type in any information about known bad tracks in the window at the right side of the screen.
Modify Bad Track - Modify information about the added bad tracks in the window at the right side of the screen. *Delete Bad Track* - Delete the added bad tracks in the window at

the right side of the screen. *Clear Bad Track Table* - Clear the whole bad track list in the window at the right side of the screen.

PREFORMAT - *Interleave* - Select the interleave number of the hard disk drive you wish to perform low level format. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.
Auto Scan Bad Track - This allows the utility to scan for bad sectors first then format by each track. *Start* - Press <Y> to start low level format.

SAVE & EXIT SETUP / EXIT WITHOUT SAVING

Select *Save & Exit Setup* to save into the CMOS memory all modifications specified during the current session. To save the configuration changes, highlight this option in the main menu and press [ENTER]. The system displays a confirmation message on the screen. Press the "Y" key and then [Enter]. Press the "N" key and then the [Enter] key to abort. The *Exit Without Saving* option allows the user to exit the BIOS Setup without updating any changes made during the current session.

PCI Device Listing

This list of installed PCI devices appears after the **System Configuration** screen:

PCI device listing						
Bus No.	Device No.	Func No.	Vender ID	Device ID	Device Class	IRQ
0	7	1	8086	7010	IDE Controller	14/15
0	7	2	8086	8829	Serial bus controller	11
0	9	0	1013	7333	Display controller	NA

Bus No.   Encoded value indicating 1 of 256 possible buses in a system.

Device No.   Encoded value indicating 1 of 32 possible devices on a given bus.

Func No.   Encoded value indicating 1 of 8 possible functions on a multifunction device.

Vender ID   Identifies the manufacturer of the device. Valid vendor identifiers are allocated by the PCI SIG (Special Interest Group) to ensure uniqueness.

Device ID   Identifies the particular device. This identifier is allocated by the vendor.

Device Class   Specifies one of the following device classes: Mass storage controller, Network controller, Display controller, Multimedia device, Bridge device, Simple communication controller, Base system peripherals, Input device, Docking station, Processor and Serial bus controller.

MAINBOARD BIOS SETUP

The PCI device listing is useful for troubleshooting purposes. More detailed information for each field may be obtained through the PCI specification documentation.

To provide easy to use and cost effective support for adapters using or compatible with the Symbios Logic 53C8XX SCSI chips, this mainboard features built-in Symbios SCSI BIOS.

In most cases you should not need to change the default configuration of your host adapter. You may decide to alter these default values if there is a conflict between device settings, or if you need to optimize system performance. A message appears on your computer monitor (for about 5 seconds) during boot that looks like this:

Press Crtl-C to start Configuration Utility

The Symbios SCSI Configuration Utility

This menu driven utility allows you to view and change the default configuration settings for host adapters using Symbios 53C8XX chips.

Note: Pressing **Ctrl-A** after memory count during re-boot allows you to recover the default settings and reconfigure.

The following tables lists the configuration settings you can change:
- Global: Affects both adapter and all SCSI devices
- Device: Affects only the individual SCSI devices

Global Default Settings	
Settings	**Default**
SCAM Support	On
Parity Checking	Enabled
Host Adapter SCSI ID	7
Scan Order	Low to High (0-Max)

Device Default Settings	
Settings	**Default**
Synchronous Transfer Rate (MB/sec)	20
Data Width	8
Disconnect	On
Read Write I/O Timeout (secs)	10
Scan for Devices at Boot Time	Yes
Scan for SCSI LUNs	Yes
Queue Tags	Enabled

If you decide to press Ctrl-C during boot, the following message appears:

Please wait, invoking Configuration Utility …

After a brief pause, your computer will display the Main Menu of the utility.

Main Menu

```
┌─ MAIN MENU ──────────────────────────────────────────┐
│                                                        │
│              Port    Irq   ---------Status-------  NvRAM│
│              Num    Level  Current  Next-Boot    Found │
│   1. SYM53C860  FC00   9     On        On         Yes  │
│   2. SYM53C820    0    0     Off       Off         ?   │
│   3. SYM53C825  FD00   9     On        On         Yes  │
│   4. SYM53C815  FE00  10     On        On         No   │
│   B  ...  Adapter Boot Order.                          │
│   C  ...  Change Adapter Status.                       │
│   D  ...  Display Mode = Terse.                        │
│   M  ...  Mono/Color.                                  │
│   F1 ..  Help                                          │
│   Q  ...  Quit                                         │
│                                                        │
└────────────────────────────────────────────────────────┘
```

You can select an adapter only if the current status is "On". **Changes are only possible with SCSI adapters that support NVRAM (non-volatile memory)**. Check the "NvRAM Found" column to see if NVRAM is present on your adapter. If you choose to alter any of these settings, exit via the **Quit** option and the system will reboot.

Adapter Boot Order - Allows you to set the order in which host adapters will boot when more than one Symbios host adapter is present in the system. To change an adapter's boot order, select it and press <Enter>. You are then prompted to enter the new boot sequence number. When the adapters are ordered properly, press the <Esc> key to exit this menu.

```
┌─ Boot Order: ────────────────────────────────────┐
│                                                    │
│            Port    Irq   ---------Status-------  NvRAM│
│            Num    Level  Current  Next-Boot    Found │
│ 1. SYM53C860  FC00   9     On        On         Yes  │
│ 2. SYM53C820    0    0     Off       Off         ?   │
│ 3. SYM53C825  FD00   9     On        On         Yes  │
│ 4. SYM53C815  FE00  10     On        On         No   │
│                                                    │
└────────────────────────────────────────────────────┘
```

Change Adapter Status - Allows you to activate or deactivate a host adapter and all SCSI devices attached to it. The change takes place after a reboot, which is automatic upon exit from the utility when this option is changed.

Display Mode - Determines how much information about your host adapters and SCSI devices is displayed on your computer monitor during boot:

- *verbose:* for more complete information
- *terse*: for a faster boot

Mono/Color - Allows you to choose between a black and white or color display for the SCSI Configuration utility.

Help - Brings up a help screen with information about the Main menu.

Quit - Lets you out of the SCSI Configuration utility.

Adapter Utilities Menu

When you select a host adapter from the main menu, the following screen is displayed:

```
┌─ 1. SYM53C860 ─────────────────────────────┐
│ ┌─ Utilities ──────────────────────────┐   │
│ │                                       │   │
│ │        A - Adapter Setup              │   │
│ │        D - Device Selections          │   │
│ │        F1  .. Helps.                  │   │
│ │        ESC .. Exit this menu.         │   │
│ │                                       │   │
│ └───────────────────────────────────────┘   │
└─────────────────────────────────────────────┘
```
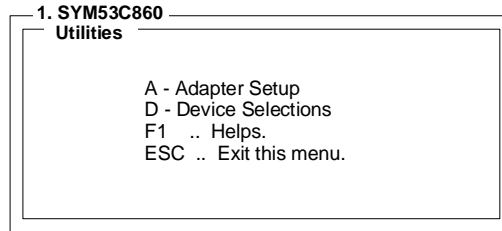
• **Adapter Setup**: views and changes the selected adapter settings.

```
┌─ 1. SYM53C860 ─────────────────────────────────────┐
│ ┌─ Adapter Setup ──────────────────────────────┐   │
│ │                                               │   │
│ │   S - SCAM Support  ..........  On            │   │
│ │   P - Parity  .........................  Enabled │ │
│ │   I  - Host Adapter ID  ........  7           │   │
│ │   O - Scan Order  ...............   Low to High (0..Max) │ │
│ │   F1 .. Help.                                 │   │
│ │   F2 .. Restore Default Setup.                │   │
│ │   ESC .. Exit this menu.                      │   │
│ │                                               │   │
│ └───────────────────────────────────────────────┘   │
└─────────────────────────────────────────────────────┘
```
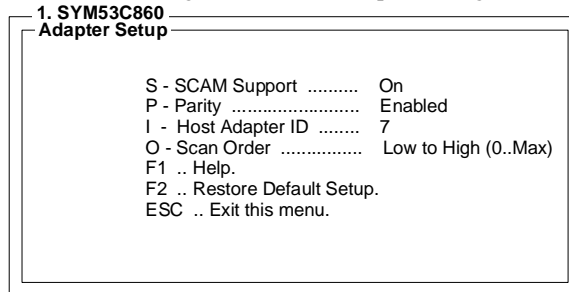
SCAM Support - SCAM (SCSI Configured AutoMatically) is the SCSI Plug and Play protocol supported by this Symbios BIOS version 4.X.

Parity - The Symbios host adapters always generate parity, but some SCSI devices do not. So you are offered the option of disabling parity checking.

Note: When disabling parity checking, it is also necessary to disable disconnects for all devices, as parity checking for the reselection phase is not disabled. If a device does not generate parity, and it disconnects, the I/O never completes because the reselection never completes.

Host SCSI ID - It's not suggested to change your host adapter SCSI ID (default: 7), as this gives it the highest priority on the SCSI bus. However, if you have two adapters on the same SCSI bus, you should give one of them a currently unassigned ID to avoid duplication of SCSI IDs.

Scan Order - This option allows you to tell the host adapter BIOS and your device drivers to scan the SCSI bus from low to high (o to max) SCSI ID, or from high to low (max to 0) SCSI ID. If you have more than one device on the SCSI bus, changing the scan order changes the order in which drive letters are assigned by the system.

- **Device Selections**: views and changes settings for the devices attached to the selected adapter.

```
┌─ 1. SYM53C860 ──────────────────────────────────────────┐
│ ┌─ Device Selection 0-7 ──────────────────────────────┐ │
│ │                                                      │ │
│ │              Sync Data Disc Time Scan Scan Queue     │ │
│ │              Rate Width      Out  Bus  LUNS Tags     │ │
│ │                                                      │ │
│ │  0 - Dev0 N/A     20   8   On   10  Yes  Yes  Enabled│ │
│ │  1 - Dev1 N/A     20   8   On   10  Yes  Yes  Enabled│ │
│ │  2 - Dev2 N/A     20   8   On   10  Yes  Yes  Enabled│ │
│ │  3 - Dev3 N/A     20   8   On   10  Yes  Yes  Enabled│ │
│ │  4 - Dev4 N/A     20   8   On   10  Yes  Yes  Enabled│ │
│ │  5 - Dev5 N/A     20   8   On   10  Yes  Yes  Enabled│ │
│ │  6 - Dev6 N/A     20   8   On   10  Yes  Yes  Enabled│ │
│ │  7 - SYM53C860    20   8   On   10  Yes  Yes  Enabled│ │
│ │  D -Device Selection 8-15                            │ │
│ │  F1  .. Help.                                        │ │
│ │  ESC  .. Exit this menu.                             │ │
│ └──────────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────────┘
```

The above menu provides information about individual SCSI devices attached to the selected host adapter, and the adapter itself. To make changes to these settings select a device from this display and press <Enter> to bring up the individual **Device Setup** menu.

Device Setup Menu

When you select a specific device from the Device Selection menu, your computer displays the following Device Setup menu. The settings in this menu effect individual SCSI devices attached to the selected host adapter. Changes made from this menu do cause the system to reboot upon exit from the SCSI Configuration utility.

```
┌─ 1. SYM53C860 ──────────────────────────────────────────┐
│ ┌─ Dev0 N/A Setup ────────────────────────────────────┐ │
│ │                                                      │ │
│ │    R  - Sync Rate (Mega Bytes/sec) ..... 20 Mb/sec   │ │
│ │    W - Width (bits) .................................  8     │ │
│ │    D - Disconnect ..............................  On    │ │
│ │    T  - Read Write I/O Timeout (secs) ...  10        │ │
│ │    S - Scan for Device at Boot Time ...  Yes        │ │
│ │    L - Scan for SCSI LUNs  ................  Yes     │ │
│ │    Q - Queue Tags ............................  Enabled │ │
│ │    F1  .. Help.                                       │ │
│ │    F2  .. Restore Default Setup.                     │ │
│ │    ESC  .. Exit this menu.                           │ │
│ └──────────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────────┘
```

Sync Rate (Mega Bytes/sec) - Defines the maximum transfer rate the host adapter attempts to negotiate. The host adapter and a SCSI device must agree to a rate they can both handle.

Width (bits) - Sets the maximum data width the host adapter attempts to negotiate. The host adapter and a SCSI device must agree to a width they can both handle. Only host adapters that can do 16 bit data transfers have this option enabled.

Disconnect - SCSI devices have the ability to disconnect from the bus during an I/O transfer. This option tells the host adapter whether or not to allow a device to disconnect.

Some devices run faster with disconnects *enabled* (mostly newer devices), while some run faster with disconnects *disabled* (mostly older devices).

Read Write I/O Timeout (secs) - This option sets the time the host adapter waits for a read, write, verify, or seek command to complete before trying the I/O transfer again. Since this provides a safeguard allowing the system to recover if an I/O operation fails, it is recommended that you always set the time-out to a value greater than zero (no time-out).

Scan for Device at Boot Time - When there is a device you do not wish to make available to the system, set this option to *No* for that device. Also, on a bus with only a few devices attached, you can speed up boot time by changing this setting to *No* for unused SCSI IDs.

Scan for SCSI LUNs - You can set this option to *No* if you have problems with a device that responds to all LUNs whether they are occupied or not.

Queue Tags - If your device driver can issue queue tags, this option allows you to enable or disable the issuing of queue tags during I/O requests.

Since some changes only take effect after your system reboots, it is important that you quit this Configuration utility properly. You should return to the Main Menu and exit via the **Quit** option. If you reboot the system without properly exiting the utility, some changes may not take effect.
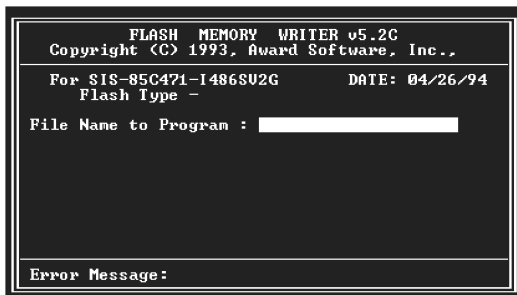
Device Drivers

To function properly with different SCSI devices under different operating systems you'll need to install **device drivers**. The device driver information should be available in your SCSI adapter's package.

FLASH BIOS PROGRAMMING UTILITY

Updating the Award BIOS Code is made easy with the AWDFLASH Utility. Since this mainboard features FLASH BIOS, it is not necessary to change the actual BIOS chip in order to upgrade the System BIOS. The user can simply re-program the old BIOS using the AWDFLASH Utility as follows:

1. First, boot the system with DOS or to "Safe Mode" under Windows 95. If you are booting DOS from a hard drive or floppy disk, press [F5] when the message "Starting MS-DOS…" appears on the screen. If you are booting Windows 95, press the [F8] key, and select the "Safe mode command prompt" option. This will assure that the system is running in **"*real mode*"** with **no device drivers loaded**. *This is the only correct way to run the AWDFLASH Utility program.*

2. There are (2) important files needed to re-program the BIOS. The first is "AWDFLASH.EXE" which is the FLASH BIOS Programming Utility. The second file needed is the updated "BIN" file which contains the actual BIOS code. This file will have the extension [.bin], such as "P598GH.BIN". Make sure these files are on the diskette or hard drive in the same directory.

3. Start the AWDFLASH Utility by changing to the directory where the two required files exist and typing: AWDFLASH and pressing [ENTER].

```
          FLASH  MEMORY  WRITER v5.2C
     Copyright (C) 1993, Award Software, Inc.,

   For SIS-85C471-I486SV2G        DATE: 04/26/94
        Flash Type -
 File Name to Program : [                        ]




 Error Message:
```

4. The AWDFLASH Utility Screen appears. You will be asked for the file name to program. Type in the name of the new BIOS (.bin) file and hit [ENTER].

5. The program will then ask if you want to backup the old BIOS. This is recommended in case there are any problems with the new ".bin" file. Enter the name of the new backup file (such as "backup.bin") and press [ENTER].

6. At this time the system will prompt you for final confirmation before beginning programming. The Utility can be aborted at this time by hitting "n". To begin programming, hit "y"…

7. When the Flash programming starts, a bar indicator will show the progress of the programming operation. After successful completion, hit the reset button or power off the computer.

This mainboard supports the **Desktop Management Interface (DMI)**, which is a new method of providing enterprise management for personal computers. The main component of DMI is the Management Information Format Database (MIF), which contains information about the computer system and its components, such as BIOS version/vendor, CPU speed/type, memory size/type, L1/L2 cache, port connectors (IDE, floppy, 2S/1P, USB, keyboard, mouse,), slots … etc. Using DMI, remote PC management software is able to obtain various information about the system, including hardware profiles, capabilities, operational status, installation dates, and other information about the system and its components.

This DMI utility, DMICFG.EXE, allows you to add additional information, such as serial numbers, vendor information, and enclosure/chassis configurations, into the MIF.

```
  [Edit DMI]   [Add DMI]   [Load DMI FILE]   [Save DMI FILE]

        BIOS
        System                  ===    Display Component   ===
      Base Board
  Enclosure/Chassis       Type : BIOS Information
       Processor          Handle : 0000
  Memory Controller            Vendor Name : Award Software International, Inc.
    Memory module              BIOS Version : 4.51 PG
    Memory module              BIOS starting Address Segment : E000
    Memory module              BIOS Build Date : 10/07/96
    Memory module              BIOS Characteristics : Press [ENTER] for detail
        Cache                  Size of BIOS ROM : 0256K
        Cache
    Port Connector
    Port Connector
    Port Connector
    Port Connector
    Port Connector
    Port Connector
    Port Connector
     System slots

  ↑↓←→Move cursor  Enter-Accept  DEL-Delete  ESC-Abort&Exit
```

Note: The DMI utility must be run in real mode without the EMM386 memory manager loaded.

DC-310U PCI ULTRA SCSI ADAPTER

The DC-310U is an Ultra-SCSI Host Adapter based on the Symbios Logic SYM53C860 Ultra-SCSI Chip. Designed to provide a low cost, easy to implement SCSI solution, this adapter utilizes the built-in Symbios Logic SCSI BIOS on supported mainboards.

Fully Plug & Play and PCI 2.1 compliant, enhanced SCSI features include *Disconnect/Reconnect*, *Scatter/Gather*, and *Tag Queuing* to greatly improve overall system performance, particularly under multitasking environments.

Jumper-less hardware design, *Active SCSI Bus Termination,* and *32-bit PCI DMA Bus Mastering* are a few more of the advanced features built-in to the DC-310U, providing the best performance and ease of use possible.

S P E C I F I C A T I O N S :

SCSI Performance

SCSI Chip:	• Symbios SYM53C860
SCSI devices:	• Max: 7
SCSI bus transfers:	• Async: 7MB/sec & Sync: 20MB/sec
Bus master data transfers:	• 133MB/sec (at 33MHz)
	• 80-byte DMA FIFO for 2/4/8/16 dwords burst across PCI bus
PCI Integration	• Full 32-bit PCI DMA bus master
	• Jumper-less design
	• Active SCSI bus termination
Reliability	SYMTolerANT technology with:
	• Active negation of SCSI Data, Parity, Request, and Acknowledge signals for improved fast SCSI transfer rates.
	• Input signal filtering on SCSI receivers improves data integrity, even in noisy cabling environments.
Drivers & Utilities	• DOS, Win3.1, Win95, NT 3.5/4.x, Netware 3.x/4.x, SCO 3.2v4.2/5.0, UnixWare 2.x., OS/2 Warp
	• BIOS (& Flush utility), Installation, Low Level Format.

Mainboard BIOS Support
Adapter Setup

```
┌─ 1. SYM53C860 ──────────────────────────────────────┐
│┌─ Adapter Setup ─────────────────────────────────┐  │
││                                                  │  │
││      S - SCAM Support  ..........    On          │  │
││      P - Parity  ........................   Enabled  │
││      I  -  Host Adapter ID  ........    7        │  │
││      O - Scan Order  ...............    Low to High (0..Max) │
││      F1  .. Help.                                │  │
││      F2  .. Restore Default Setup.               │  │
││      ESC  .. Exit this menu.                     │  │
││                                                  │  │
│└──────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────┘
```

Device Setup

```
┌─ 1. SYM53C860 ──────────────────────────────────────┐
│┌─ Dev0 N/A Setup ────────────────────────────────┐  │
││                                                  │  │
││      R  - Sync Rate (Mega Bytes/sec) ..... 20 Mb/sec │
││      W - Width (bits) .................................   8  │
││      D  - Disconnect ................................  On  │
││      T  - Read Write I/O Timeout (secs) ...  10  │  │
││      S  - Scan for Device at Boot Time ...   Yes │  │
││      L  - Scan for SCSI LUNs  ................   Yes │  │
││      Q  - Queue Tags  .............................  Enabled │
││      F1  .. Help.                                │  │
││      F2  .. Restore Default Setup.               │  │
││      ESC  .. Exit this menu.                     │  │
││                                                  │  │
│└──────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────┘
```