

MAINBOARD

BIOS, Driver & Utility Guide

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- * Specifications and information contained in this manual are subject to change without notice.

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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 by removing the battery for a while then reinstalling it back.

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

This 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 processor 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>.

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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.

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Main Menu

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.

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 (xxxxxxxx)
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 BIOS DEFAULTS | EXIT WITHOUT SAVING |
| LOAD SETUP DEFAULTS | |
| Esc : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |
| | |

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

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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.

Upon entering the Standard CMOS Setup screen, you will see a screen like that below:

| | | | | | | | | | |
|------------------------------------|-------------|-------------|---------------------------|-------------|--------------------------|--------------------------|---------------|-------------|--|
| Date (mm:dd:yy) : Sat, Dec 18 1999 | | | | | | | | | |
| Time (hh:mm:ss) : 00:00:00 | | | | | | | | | |
| <u>HARD DISKS</u> | <u>TYPE</u> | <u>SIZE</u> | <u>CYLS</u> | <u>HEAD</u> | <u>PRECOMP</u> | <u>LANDZ</u> | <u>SECTOR</u> | <u>MODE</u> | |
| 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 | | | | | | | | | |
| Video : EGA / VGA | | | | | | | | | |
| Halt On : All Errors | | | | | | | | | |
| | | | | | Base Memory : 640K | | | | |
| | | | | | Extended Memory : 15360K | | | | |
| | | | | | Other Memory : 384K | | | | |
| | | | | | Total Memory : 16384K | | | | |
| ESC : Quit | | | ↑ ↓ → ← : Select Item | | | PU / PD / + / - : Modify | | | |
| F1 : Help | | | (Shift) F2 : Change Color | | | | | | |

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 in the Installation Guide). The "Pri Master" setting specifies the first device on the

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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 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

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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 NOT 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.

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| | |
|---------|---|
| 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 |

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

| | |
|-------------------|--|
| All Errors | Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted. |
| No Errors | The system boot will not be stopped for any error that may be detected. |
| 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:

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.

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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.

| | | | |
|----------------------------|-------------|--------------------------|-----------------------|
| Anti-Virus Protection | : Enabled | Video BIOS Shadow | : Enabled |
| CPU Internal Cache | : Enabled | C8000-CBFFF Shadow | : Disabled |
| External Cache | : Enabled | CC000-CFFFF Shadow | : Disabled |
| Quick Power On Self Test | : Disabled | D0000-D3FFF Shadow | : Disabled |
| Hard Disk Boot From | : Pri-IDE-M | D4000-D7FFF Shadow | : Disabled |
| Boot Sequence | : C, A | D8000-DBFFF Shadow | : Disabled |
| Swap Floppy Drive | : Disabled | DC000-DFFFF Shadow | : Disabled |
| Boot Up Floppy Seek | : Enabled | | |
| Boot Up NumLock Status | : On | | |
| Gate A20 Option | : Fast | | |
| Memory Parity/ECC Check | : Disabled | | |
| Typematic Rate Setting | : Disabled | | |
| Typematic Rate (Chars/Sec) | : 6 | | |
| Typematic Delay (Msec) | : 250 | | |
| Security Option | : System | | |
| PCI / VGA Palette Snoop | : Disabled | ESC : Quit | ↑ ↓ → ← : Select Item |
| OS Select For DRAM > 64MB | : Non-OS2 | F1 : Help | PU/PD/+/- : Modify |
| HDD S.M.A.R.T. Capability | : Disabled | F5 : Old Values | (Shift) F2 : Color |
| Report No FDD For WIN 95 | : No | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

Anti-Virus Protection – Enables/Disables the built-in anti-virus for protection against **boot virus** infection. Unlike traditional BIOS protection which generally consists of simply write protecting the hard disk partition table, this Anti-Virus protection provides more complete virus protection by taking control early in the boot process, detecting boot viruses before they have a chance to load.

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

External 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 Enabled, the BIOS will shorten or skip some checks during POST.

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Hard Disk Boot From - This option lets you choose to boot from Primary IDE Master (*Pri-IDE-M*), Primary IDE Slave (*Pri-IDE-S*), Secondary IDE Master (*Sec-IDE-M*), Secondary IDE Slave (*Sec-IDE-S*), or *SCSI* hard disk. Same as IDE options, the Boot Sequence in the next field is set to C, A when the SCSI is chosen.

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, CD-ROM or LS-120/ZIP. 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.

| | |
|-------------|---|
| A,C | System will first search for boot sector on floppy disk, then hard disk. |
| C, A | System will first search hard disk drive 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. |
| CDROM, C, A | System will first search the CDROM drive, then hard disk drive and then floppy disk drive for boot sector. |
| C only | System will search for boot sector on hard disk drive only. |
| LS/ZIP, C | System will first search for boot sector on LS-120 IDE floppy drive or ZIP ATAPI drive, then hard disk. |

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.

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Boot Up Floppy Seek - When enabled, BIOS will attempt to move the head of the floppy disk drive forth and back once during POST to see if the drive is working properly.

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

Gate A20 Option - This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard (Normal). Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset (Fast; default) to provide support for gate A20.

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

Typematic Rate Setting - Determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will 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: Options are 6 (default), 8, 10, 12, 15, 20, 24 and 30.

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. Options are 250 (default), 500, 750 and 1000.

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.

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

OS Select For DRAM > 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*.

HDD S.M.A.R.T. Capability - The default is *Disabled*. If you are using hard drives that support S.M.A.R.T., set this field to *Enabled*. SMART (Self-Monitoring, Analysis and Reporting Technology) is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. SMART is supported in ATA-3 or later hard drives.

Report No FDD For WIN95 - When no floppy disk drive is installed, set this option to *No* to release IRQ6 for passing Win95 logo. This option is irrelevant under normal operation.

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.

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Chipset Features Setup

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

| | | | |
|------------------------|--------------|--------------------------|-----------------------|
| Bank 0/1 DRAM Timing | : SDRAM 10ns | Auto Detect DIMM/PCI Clk | : Enabled |
| Bank 2/3 DRAM Timing | : SDRAM 10ns | Spread Spectrum | : Disabled |
| Bank 4/5 DRAM Timing | : SDRAM 10ns | | |
| SDRAM Cycle Length | : 3 | Current CPU Temp. | : 47°C/116°F |
| DRAM Read Pipeline | : Disabled | Current System Temp. | : 47°C/116°F |
| Sustained 3T Write | : Enabled | Current CPUFAN1 Speed | : 5400 RPM |
| Cache R/CPU W Pipeline | : Enabled | Current CPUFAN2 Speed | : 0 RPM |
| Cache Timing | : Fast | Vcore | : 2.81V 2.5V : 2.81V |
| Video BIOS Cacheable | : Enabled | 3.3V | : 3.36V 5V : 5.14V |
| System BIOS Cacheable | : Enabled | 12V | : 12.16V |
| Memory Hole | : Disabled | | |
| Init Display First | : PCI Slot | | |
| Frame Buffer Size | : 8M | | |
| AGP Aperture Size | : 64M | | |
| AGP-2X Mode | : Disabled | | |
| OnChip USB | : Enabled | ESC : Quit | ↑ ↓ → ← : Select Item |
| USB Keyboard Support | : Disabled | F1 : Help | PU/PD/+/- : Modify |
| OnChip Sound | : Enabled | F5 : Old Values | (Shift) F2 : Color |
| * OnChip Modem | : Enabled | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

* The “OnChip Modem” option is available only for mainboards with AMR support.

Bank 0/1, 2/3, 4/5 DRAM Timing – DRAM timing is controlled by the DRAM timing registers. The timings programmed into this register are dependent on the system design. The slower timing may be required in certain system designs to support loose layouts or slower memory.

SDRAM Cycle Length - When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

Options are 2, 3 (default).

DRAM Read Pipeline - This item allows you to enable/disable the DRAM read pipeline. Pipelining improves system performance.

Sustained 3T Write – This item allows you to enable or disable direct map write back / write through secondary cache.

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Cache R/CPU W Pipeline - This item allows you to enable/disable the cache read and CPU write pipeline.

Cache Timing - This item determines the cache timing. Options are Fast (default) and Fastest.

Video BIOS Cacheable - When *Enabled*, the Video BIOS cacheable will cause access to the video BIOS addressed at C0000H to C7FFFH to be cached. **Enabled* is the default.

System BIOS Cacheable – When enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

Memory Hole - In order to improve compatibility, certain space in memory can be reserved for old style ISA cards that map memory between 15M-16M. Do not select the *15M-16M* option unless you use the old style ISA card, otherwise the memory size may be reduced to 15 MB for some O.S.

Init Display First – If you have a PCI display adapter installed, this item allows you to decide whether to activate the PCI first or the on-chip AGP graphics support.

Frame Buffer Size – Determines the size of the frame buffer in the system memory. A frame buffer is used to hold a frame of data for screen display and is the size of the maximum image area on screen.

AGP Aperture Size (MB) - Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for AGP information.

AGP-2X Mode – Set to *Enabled* if your AGP card supports the 2X mode, which uses a double-clocked data technique to transfer twice the data per each AGP clock.

OnChip USB - If your system contains a Universal Serial Bus peripheral, select *Enabled*. The next option will become available:

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

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OnChip Sound – Enabling this option allows the system to use the on-chip AC97 audio support. If you want to use the Sound Blaster compatible mode or an add-on audio card instead, set this option to *Disabled* to avoid possible conflict.

OnChip Modem – Enabling this option allows the system to use the on-chip MC97 support. If you are using the legacy modem, set this option to *Disabled* to avoid possible conflict.

* This option is available only for mainboards with AMR support.

Auto Detect DIMM/PCI Clk – When *enabled*, any DIMM/PCI clock not in use will be disabled to reduce EMI radiation.

Spread Spectrum – The default is the optimal value determined by the system designer to reduce EMI radiation peak. Users should not attempt to change it.

Hardware Monitoring -

The on-chip hardware monitoring functions allow you to observe the current temperatures of the CPU and the system, current speeds (in RPM, rotation per minute) of the system and CPU fans, as well as the various operating voltages. (If the fan is not installed, 0 RPM will be shown.)

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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 still in a manner consistent with your own style of computer use.

| | |
|--|---|
| ACPI function : Enabled Power Management : User Define PM Control by APM : Yes Video Off Method : DPMS Support Video Off After : Suspend MODEM Use IRQ : 3 Doze Mode : Disabled Suspend Mode : Disabled HDD Power Down : Disabled Soft-Off by PWRBTN : Instant-Off * PWRON After PW-Fail : Off ** PM Events ** VGA : OFF LPT & COM : LPT/COM HDD & FDD : ON DMA/master : OFF Power On by RTC Alarm : Disabled Power On by Ring/LAN : Disabled | Primary INTR : ON IRQ3 (COM 2) : Primary IRQ4 (COM 1) : Primary IRQ5 (LPT 2) : Primary IRQ6 (FDD) : Primary IRQ7 (LPT 1) : Primary IRQ8 (Alarm) : Disabled IRQ9 (RSV) : Secondary IRQ10 (RSV) : Secondary IRQ11 (RSV) : Secondary IRQ12 (PS/2) : Primary IRQ13 (Copro) : Primary IRQ14 (HDD) : Primary IRQ15 (RSV) : Disabled ESC : Quit ↑ ↓ → ← : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults |
|--|---|

* The “PWRON After PW-Fail” option is available only for mainboards with ATX or Micro-ATX form factor.

ACPI Function – This option allows you to enable/disable the **Advanced Configuration and Power Interface** which offers improved power management.

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, Suspend Mode and HDD Power Down:

| | |
|-------------|--|
| Min Saving | Minimum power management. Doze Mode = 1 hr., Suspend Mode = 1 hr. |
| Max Saving | Maximum power management – ONLY AVAILABLE FOR SL CPUs. Doze Mode = 1 min., Suspend Mode = 1 min. |
| User Define | Set each mode individually. When selected, each range is from 1 min. to 1 hr., except for HDD Power Down which ranges from 1 min. to 15 min. |

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PM Control by APM – When set to *Yes*, an **Advanced Power Management** device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock.

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

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

Video Off After – This option determines how the monitor operates in a power saving mode.

| | |
|---------|---|
| NA | Monitor will remain on during power saving modes. |
| Suspend | Monitor blanked when the systems enters the Suspend mode. |
| Doze | Monitor blanked when the system enters the Dose mode. |

MODEM Use IRQ – This option forces the installed MODEM to use the specified IRQ so that the Power Management BIOS can use this information. Options are NA, 3, 4, 5, 7, 9, 10, and 11.

The following three modes are Green PC power saving functions. **Dose Mode** and **Suspend Mode** are only user configurable when *User Define* Power Management has been selected. See below 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. |
| 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. |

Soft-Off by PWRBTN – With *Instant-Off* selected, the ATX switch functions like a normal system power off button. With *Delay 4 Sec.* selected, you must hold down the ATX switch for more than 4 seconds to power off the system.

PWRON After PW-Fail – This feature can power on the PC when power returns after a power failure. The table below lists the options available and the corresponding “System State” when power returns after a power failure.

* This option is available only for mainboards with ATX or Micro-ATX form factor.

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| Options Available | System State When Power Failure Occurred | System State When Power Returns |
|-------------------|--|---------------------------------|
| Off | On | Off |
| | Off | Off |
| On | On | On |
| | Off | On |

PM Events

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

LPT & COM - Any event occurring at the specified port(s) will awaken a system which has been powered down.

HDD & FDD - When set to *On*, any event occurring at a hard or floppy drive port will awaken a system which has been powered down.

DMA/master - When set to *On*, any event occurring to the DMA controller will awaken a system which has been powered down.

Power on by RTC Alarm - When *enabled*, the system will automatically power on or returns to full power out of suspend mode at the time and date of the month (0 for daily) specified.

Power on by Ring/LAN – An input signal on the serial Ring Indicator (RI) line in other words, an incoming call on the modem (either external modem or internal modem card) power on the system. Refer to “Wake-on-Ring Function” in the Installation Guide for more information. With a LAN card installed, the Wake-up On LAN function allows the network to wake up a Soft Power Down (Soft-Off) PC. Refer to “Wake-up On LAN Connector” in the Installation Guide for more information.

Primary INTR - When set to *On* (default), any primary interrupt request (see below) will awake the system which has been powered down.

Following this option is a list of IRQs (**I**nterrupt **R**e**Q**uests). You can set each IRQ to be *Primary*, *Secondary* or *Disabled*. When set to *Secondary*, the interrupt request will neither prevent the system from going into a power management mode nor awaken it.

MAINBOARD BIOS SETUP

PNP/PCI Configuration Setup

The PCI **P**ersonal **C**omponent **I**nterconnect **B**us was developed to address two important issues: 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.

| | | | |
|--------------------------|---------------|--------------------------|-------------------|
| PNP OS Installed | : No | CPU to PCI Write Buffer | : Enabled |
| Resources Controlled by | : Manual | PCI Dynamic Bursting | : Enabled |
| Reset Configuration Data | : Enabled | PCI Master 0 WS Write | : Enabled |
| IRQ-3 assigned to | : PCI/ISA PnP | PCI Delay Transaction | : Enabled |
| IRQ-4 assigned to | : PCI/ISA PnP | PCI#2 Access #1 Retry | : Disabled |
| IRQ-5 assigned to | : PCI/ISA PnP | AGP Master 1 WS Write | : Enabled |
| IRQ-7 assigned to | : PCI/ISA PnP | AGP Master 1 WS Read | : Disabled |
| IRQ-9 assigned to | : PCI/ISA PnP | SYMBIOS SCSI BIOS | : Auto |
| IRQ-10 assigned to | : PCI/ISA PnP | Assign IRQ For USB | : Enabled |
| IRQ-11 assigned to | : PCI/ISA PnP | Assign IRQ For VGA | : Enabled |
| IRQ-12 assigned to | : PCI/ISA PnP | | |
| IRQ-14 assigned to | : PCI/ISA PnP | | |
| IRQ-15 assigned to | : PCI/ISA PnP | | |
| DMA-0 assigned to | : PCI/ISA PnP | | |
| DMA-1 assigned to | : PCI/ISA PnP | 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 | |

PNP OS Installed - Set to Yes if your operating system supports Plug & Play, such as Windows[®] 95.

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

MAINBOARD BIOS SETUP

capability is specifically designed for a Plug and Play operating system such as Windows® 95. Choices are *Auto* 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.

IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to – These options are available when the above **Resources Controlled by** option is set to *Manual*. By default, all resources are assigned to the PCI Bus. If an ISA card requires a particular IRQ or DMA channel, that resource should be set to Legacy ISA so that the PCI Bus will not try to use them.

CPU to PCI Write Buffer - When this field is *Enabled*, writes from the CPU to the PCI bus are buffered to compensate for the speed differences between the CPU and the PCI bus. When *Disabled*, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

PCI Dynamic Bursting - When Enabled, data transfers on the PCI bus, where possible, make use of the high-performance PCI burst protocol, in which greater amounts of data are transferred at a single command.

PCI Master 0 WS Write - When *Enabled*, writes to the PCI bus are executed with zero wait states.

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

PCI#2 Access #1 Retry - This item allows you enable/disable the PCI #2 Access #1 Retry when PCI#2 (AGP bus) access to PCI#1 (PCI bus) has an error occurred.

AGP Master 1 WS Write - When *Enabled*, writes to the AGP (Accelerated Graphics Port) are executed with one wait state. When *Disabled*, two wait states are used by the system, allows for greater stability.

AGP Master 1 WS Read - When *Enabled*, reads to the AGP (Accelerated Graphics Port) are executed with one wait state. When *Disabled*, two wait states are used by the system, allows for greater stability.

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

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| | |
|--|--|
| If the SCSI adapter installed has its own BIOS on board: | The on-board SCSI BIOS will not be loaded. The adapter's own SCSI BIOS will be used. |
| If the SCSI adapter installed doesn't have its own BIOS and the card uses or is compatible with the SYM53C8XX chip: | The on-board SCSI BIOS will load and control the SCSI adapter. |

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

Assign IRQ For USB - When *Enabled*, the system automatically assigns an IRQ for the USB device connected to your system. However, if no USB devices are used and an ISA slot requires an IRQ address, set this function to *Disabled*. The IRQ address previously occupied by the USB device will be available for the ISA slot.

Assign IRQ For VGA - The *Enabled* option allows the BIOS to auto-route an IRQ for use by a VGA card. While most of the VGA cards do not need the IRQ assignment, certain VGA cards may need it.

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.

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.

MAINBOARD BIOS SETUP

Integrated Peripherals Setup

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

| | | | |
|------------------------|-------------|-----------------------------------|-------------|
| OnChip IDE Channel 0 | : Enabled | Onboard Parallel Port | : 378/IRQ7 |
| OnChip IDE Channel 1 | : Enabled | Onboard Parallel Mode | : ECP/EPP |
| IDE Prefetch Mode | : Enabled | ECP Mode Use DMA | : 3 |
| IDE HDD Block Mode | : Enabled | Parallel Port EPP Type | : EPP 1.9 |
| Primary Master PIO | : Auto | Onboard Legacy Audio | : Enabled |
| Primary Slave PIO | : Auto | Sound Blaster | : Enabled |
| Secondary Master PIO | : Auto | SB I/O Base Address | : 220H |
| Secondary Slave PIO | : Auto | SB IRQ Select | : IRQ 5 |
| Primary Master UDMA | : Auto | SB DMA Select | : DMA 1 |
| Primary Slave UDMA | : Auto | MPU-401 | : Enabled |
| Secondary Master UDMA | : Auto | MPU-401 I/O Address | : 330 -333H |
| Secondary Slave UDMA | : Auto | FM Port (388-38BH) | : Enabled |
| | | Game Port (200-207H) | : Enabled |
| Onboard FDD Controller | : Enabled | ESC: Quit ↑↓→←: Select Item | |
| Onboard Serial Port 1 | : Auto | F1 : Help PU/PD/+/- : Modify | |
| Onboard Serial Port 2 | : Auto | F5 : Old Values (Shift) F2: Color | |
| IR/COM2 Mode Select | : UART COM2 | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

On-Chip IDE Channel 0 - 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.*

On-Chip IDE Channel 1 - 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.*

IDE Prefetch Mode - Enable prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does not appear when the Internal PCI/IDE field, above, is Disabled.

IDE HDD Block Mode - This allows your hard disk controller to use fast block mode to transfer multisector data to and from your hard disk drive (HDD).

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- **IDE 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 use a PIO Mode higher than what the drive actually supports. This could result in loss of data.

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

- **IDE UDMA (Ultra DMA) Mode** - The chipset used for this mainboard improves the IDE performance by implementing UltraDMA/33 Bus Mastering IDE which can handle data transfer up to 33 Mbyte/sec. This UDMA technology is downward compatible with existing ATA-2 IDE. So there is no upgrade required for current hard drives and cabling. **Auto* is default.

Onboard FDD Controller - Set to *Enabled* if you have a floppy disk drive installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

Onboard Serial Port 1 - With this option, the on-board Serial Port 1 can be Disabled, or set to Auto, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4 or 2E8/IRQ3.

Onboard Serial Port 2 - With this option, the on-board Serial Port 2 can be Disabled, or set to Auto, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4 or 2E8/IRQ3.

IR/COM2 Mode Select - By default, this field is set to *UART COM2*, which directs the second serial port UART to support the COM2 serial port. Choosing *SHARP IR* (ASKIR) or *IrDA SIR* (HPSIR) 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* (Enhanced Parallel Port), *ECP* (Extended Capability Port), and *ECP/EPP* (default).

MAINBOARD BIOS SETUP

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

Parallel Port EPP Type - Options are EPP1.7 and EPP1.9 (default ; IEEE 1284 compliant). This field is available only when one of the two following options in *Onboard Parallel Mode* is selected: EPP or ECP/EPP.

Onboard Legacy Audio – Enabling this option allows the system to use the on-chip legacy SoundBlaster-compatible audio support. If you want to use the on-chip AC97 audio support or an add-on audio card instead, set this option to *Disabled* to avoid possible conflict.

*** The following fields are available only when the *Onboard Legacy Audio* is *Enabled*.

Sound Blaster – Enables/Disables the Sound Blaster compatible mode.

SB I/O Base Address – This option allows the user to select the audio I/O base address in Sound Blaster compatible mode.

SB IRQ Select – This option allows the user to select the IRQ for audio in Sound Blaster compatible mode.

SB DMA Select – This option allows the user to select the DMA for audio in Sound Blaster compatible mode.

MPU-401 – Enables/Disables the MPU-401 MIDI interface standard.

MPU-401 I/O Address – This option allows the user to select the I/O base address for the use of MPU-401 MIDI device.

FM Port (388-38BH) – Enable this option to use the FM port, which occupies 388-38BH address.

Game Port (200-207H) – Enable this option to use the game port, which occupies 200-207H address.

MAINBOARD BIOS SETUP

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 by removing the battery for a while and then re-installing it back.

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:

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 by removing the battery for a while and then re-installing it back. *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".

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.

MAINBOARD BIOS SETUP

PCI Device Listing

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

| PCI device listing | | | | | | |
|--------------------------|------------|----------|-----------|-----------|-----------------------|-------|
| Bus No. | Device No. | Func No. | Vendor ID | Device ID | Device Class | IRQ |
| 0 | 7 | 1 | 1106 | 0571 | IDE Controller | 14/15 |
| 0 | 7 | 2 | 8086 | 8829 | Serial bus controller | 11 |
| 0 | 9 | 0 | 1013 | 7333 | Display controller | 11 |

- 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.
- Vendor 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.

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

BUILT-IN SYMBIOS SCSI BIOS

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 Ctrl-C to start Symbios Configuration Utility

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

Please wait, invoking Symbios Configuration Utility ...

After a brief pause, your computer will display the Main Menu of the 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 list the configuration settings you can change:

- Global: Affects both the adapter and all SCSI devices
- Device: Affects only the individual SCSI devices

BUILT-IN SYMBIOS SCSI BIOS

| 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 |

Main Menu

| MAIN MENU | | | | | |
|----------------------------------|------|-------|------------------|-----------|-------|
| | Port | Irq | -----Status----- | | NvRAM |
| | Num | Level | Current | Next-Boot | Found |
| SYM53C860 | FC00 | 9 | On | On | Yes |
| SYM53C820 | 0 | 0 | Off | Off | ? |
| SYM53C825 | FD00 | 9 | On | On | Yes |
| SYM53C815 | FE00 | 10 | On | On | No |
| Change Adapter Status | | | | | |
| Adapter Boot Order | | | | | |
| Additional Adapter Configuration | | | | | |
| Display Mode = Verbose | | | | | |
| Mono/Color | | | | | |
| Language | | | | | |
| Help | | | | | |
| 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.

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.

BUILT-IN SYMBIOS SCSI BIOS

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.

| | Port Num | Irq Level | -----Status----- | | NVRAM Found |
|-----------|-------------|--------------|------------------|-----------|----------------|
| | | | Current | Next-Boot | |
| SYM53C860 | FC00 | 9 | On | On | Yes |
| SYM53C820 | 0 | 0 | Off | Off | ? |
| SYM53C825 | FD00 | 9 | On | On | Yes |
| SYM53C815 | FE00 | 10 | On | On | No |

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.

Language - English mode only.

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

Quit - Exits the SCSI Configuration utility.

Adapter Utilities Menu

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

| SYM53C860 |
|-------------------|
| Adapter Setup |
| Device Selections |
| Help |
| Exit this menu |

BUILT-IN SYMBIOS SCSI BIOS

- **Adapter Setup:** Adapter settings are viewed and changed.

| SYM53C860 Adapter Setup | |
|----------------------------|----------------------------|
| SCAM Support | Off |
| Parity | On |
| Host SCSI ID | 7 |
| Scan Order | Low to High (0..Max) |
| Removable Media Support | None |
| CHS Mapping | SCSI Plug and Play Mapping |
| Spinup Delay (Secs) | 2 |
| Help | |
| Restore Default Setup | |
| Exit this menu | |

SCAM Support - SCAM (SCSI Configured AutoMatically) is the SCSI Plug and Play protocol supported by Symbios BIOS version 4.X.

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

Note: When disabling parity checking, it is also necessary to disable disconnect for all devices, as parity checking for the reselection phase will not be disabled. If a device does not supporting parity disconnects, the I/O will never complete because the reselection phase will halt.

Host SCSI ID - The host adapter SCSI ID should remain on 7 (default), as this setting gives the adapter the highest priority on the SCSI bus. However, if you have two adapters on the same SCSI bus, you should give one of them an 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 (0 to max) SCSI IDs, or from high to low (max to 0) SCSI IDs. 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.

Removable Media Support - Determine if the removable media will be used as BIOS device. A BIOS device here is a device that can be controlled via BIOS INT 13H, i.e. it does not need a device driver and can be bootable. However, when used as a BIOS device, the full removability of removable media devices is not preserved. The following constraints apply:

- a) The device can only work as a fixed disk, i.e. media change is not allowed.

BUILT-IN SYMBIOS SCSI BIOS

- b) The media must be inserted before the system boot-up.
- c) Only media with 512Bytes/sector is supported.

| | |
|----------------------|---|
| None | The removable media devices will not be used as BIOS devices. |
| Boot Drive Only | Allows only the removable media installed as Drive C: to work as a BIOS device. |
| With Media Installed | Enables all removable disk drives to work as BIOS devices. |

CHS Mapping – Cylinder, Head, Sector mapping. Options are “SCSI Plug and Play Mapping” (default) and “Alternate CHS Mapping”.

Spinup Delay – 1-10 seconds. The default is a 2-second delay before the BIOS starts to scan for SCSI devices during initialization. This amount of time is enough for most devices to get ready for proper operation. Since some older hard drives may need more time to spin up, you may need to extend the delay for those devices.

- **Device Selections:** Settings for the devices attached to the selected adapter are viewed and changed.

| SYM53C860 Devices 0 to 7 | | | | | | | | | |
|-----------------------------|-----------|------------|------|----------|-----|-----------|------------|------|------|
| | Sync Rate | Data Width | Disc | Time Out | Bus | Scan LUNS | Queue Tags | Init | Boot |
| Dev0 N/A | 20 | 8 | On | 10 | Yes | Yes | On | No | |
| Dev1 N/A | 20 | 8 | On | 10 | Yes | Yes | On | No | |
| Dev2 N/A | 20 | 8 | On | 10 | Yes | Yes | On | No | |
| Dev3 N/A | 20 | 8 | On | 10 | Yes | Yes | On | No | |
| Dev4 N/A | 20 | 8 | On | 10 | Yes | Yes | On | No | |
| Dev5 N/A | 20 | 8 | On | 10 | Yes | Yes | On | No | |
| Dev6 N/A | 20 | 8 | On | 10 | Yes | Yes | On | No | |
| SYM53C860 | 20 | 8 | On | 10 | Yes | Yes | On | No | |
| Devices 8 to15 | | | | | | | | | |
| Help | | | | | | | | | |
| Exit this menu | | | | | | | | | |

The above menu provides information about individual SCSI devices attached to the selected host adapter, as well as 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.

BUILT-IN SYMBIOS SCSI BIOS

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 will require a system reboot upon exit from the SCSI Configuration utility.

| SYM53C860 Setup for All devices on this adapter | |
|---|-----|
| Sync Rate (MBytes/sec) | 20 |
| Width (bits) | 8 |
| Disconnect | On |
| Read Write I/O Timeout (secs) | 10 |
| Scan for Device at Boot Time | Yes |
| Scan for SCSI LUNS | Yes |
| Queue Tags | On |
| Initial Boot Device | No |
| Format | |
| Verify | |
| Help | |
| Restore Default Setup | |
| 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 will attempt to negotiate. The host adapter and a SCSI device must agree to a width they can both handle. Only those host adapters that support 16 bit data transfers will show this option as 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 disconnect enabled (mostly newer devices), while some run faster with disconnect 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).

BUILT-IN SYMBIOS SCSI BIOS

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.

Format - Low level format the selected device. All information on the drive will be erased.

Verify – This command is used to detect bad blocks on the chosen disk. With your confirmation, the bad blocks detected can be reassigned for future operations. This command is non-destructive, and therefore won't destroy the data on the drive.

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 be saved.

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 found under the “Utilities” folder of the supplied CD-ROM. 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].



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].

FLASH BIOS PROGRAMMING UTILITY

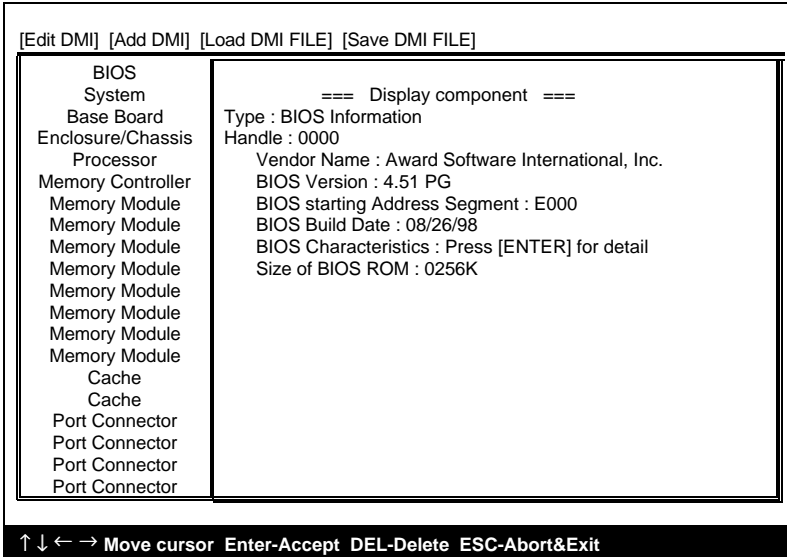
5. The program will then ask if you want to backup the old BIOS. This is recommended in case there are any problems with the new “.bin” file. Enter the name of the new backup file (such as “backup.bin”) and press [ENTER].
6. At this time the system will prompt you for final confirmation before beginning 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.

Be sure to perform “**LOAD SETUP DEFAULTS**” for your new BIOS to synchronize the previous BIOS with the updated BIOS.

DMI UTILITY

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 found under the “Utilities” folder of the supplied CD-ROM, allows you to add additional information, such as serial numbers, vendor information, and enclosure/chassis configurations, into the MIF.



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

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