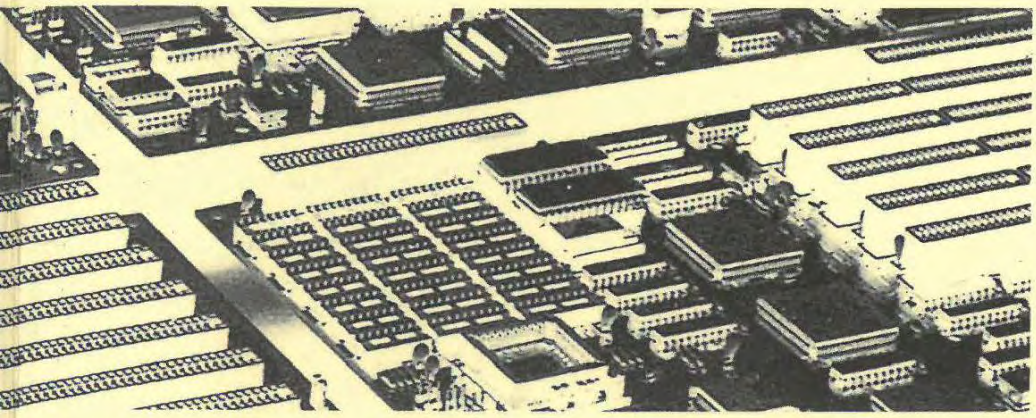
EPA POLLUTION PREVENTER

SI54P AIO

(for Award BIOS)



USER'S MANUAL

SI54P-AIO
User's Manual

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1 Introduction

The SI54P AIO is a Pentium™ PCI Bus mainboard. It uses the SiS 85C501, 85C502, 85C503 system chipset, CMD PCI0640B PCI Bus IDE Controller, and SMC 37C665 Super I/O Controller. Other on-board specifications include 4 AT Bus slots and 4 PCI slots, 2 memory banks with memory sizes of up to 128MB, and cache sizes from 256KB to 1MB.

1.1 General Specifications

Processor:	Intel Pentium™ 75/90/100
Chipset:	SiS 85C501 (PCI/ISA Cache Memory Controller) SiS 85C502 (PCI Local Data Buffer) SiS 85C503 (PCI System I/O) CMD PCI0640B (PCI Bus IDE Controller) SMC 37C665 (Super I/O Controller) UMC 82C865 (I/O TTL Integration)
External Cache:	256/512 KB or 1MB cache supporting write back or write-through policies
Memory Size:	2 banks of DRAM with memory size capacity of up to 128MB, all supporting double-sided SIMMs
BIOS:	Award
Slots :	Four 16-bit ISA slots Four PCI slots
Connectors:	Power Keylock & Power LED Hardware Reset Speaker Turbo LED Turbo Switch Suspend HDD LED
Form Factor:	Baby-AT
PCB :	4 layers

System Chipset

SIS 85C501

- Supports Pentium™ processor at 50/60/66 MHz bus speed
- Integrated second level (L2) cache modes
- write-through and write-back cache modes
- direct mapped organization
- supports standard and burst SRAMs
- supports 128KB to 2MB cache sizes
- cache read/write cycle of 3-2-2-2 or 4-3-3-3 using standard SRAM at 66MHz
- Integrated DRAM controller
- supports 2MB to 128MB of cacheable main memory
- 1 level posted write buffer of 4 Qwords deep
- concurrent write back
- CAS#-before-RAS# transparent DRAM refresh
- 256K/1M/4M/16M*N 70ns fast page mode DRAM support
- programmable DRAM speed

SIS 85C502

- Three integrated posted write buffers and two read buffers increase system performance
- 1 level CPU-to-Mem posted write buffer with 4 Qwords deep
- 4 levels CPU-to-PCI posted write buffer with 4 Dwords deep
- 1 level PCI-to-Mem posted write buffer with 1 Qword deep
- 1 level Mem-to-CPU read buffer with 1 Qword deep
- 1 level Mem-to-PCI read buffer with 1 Qword deep
- Provides a 64-bit Pentium™, DRAM data bus and 32-bit PCI data bus
- Operates synchronously to the 66.7MHz CPU and 33.3MHz PCI clocks
- Provides parity generation for memory writes

SIS 85C503

- Integrated bridge between PCI Bus and ISA Bus

- translates PCI Bus cycles into ISA Bus cycles
- translates ISA master or DMA cycles into PCI Bus cycles
- provides PCI-to-ISA memory one Dword posted write buffer
- Integrated ISA Bus compatible logic
- Supports reroutability of four PCI interrupts to any unused IRQ interrupt
- Supports Flash ROM

CMD PCI0640B

- Fully compatible with the latest PCI IDE and ATAPI specifications
- The most complete 32-bit driver support in the industry (DOS, Windows 3.1 Past Disk, Windows NT, OS/2, Novell & SCO Unix 32-bit driver support)
- Programmable data transfer timing supports customized setting for 4 IDE devices
- Read-ahead and write-back buffers enhance transfer rates and allow concurrent operations
- Suitable for PCI motherboard or PCI expansion card applications
- Fully supports and surpasses enhance IDE Mode-3
- Supports program I/O function

SMC 37C665

- Super I/O controller
- Two 16C550 compatible UARTs
- One multi-mode parallel port which include EPP and ECP support

2 System Memory

SI54P AIO accepts a minimum of 2MB and a maximum of 128MB on-board. There are two memory banks which support 256/512 KB or 1/2/4/8/16 MB 72-pin type, single- and/or double-density modules.

Important: DRAM insertion on every bank should come in pair and of the same type. For instance, if you only have two DRAM modules, you cannot install one DRAM module in socket SIM1 and another DRAM module of the same type on SIM3. Likewise, memory type mixing is NOT allowed within a bank.

The following table lists all the possible DRAM module combinations and the total memory amount for each option.

Bank 0		Bank1		Total Memory Size
SIM3	SIM4	SIM1	SIM2	
256K x 36	256K x 36	None	None	2MB
256K x 36	256K x 36	256K x 36	256K x 36	4MB
512K x 36	512K x 36	None	None	4MB
512K x 36	512K x 36	512K x 36	512K x 36	8MB
512K x 36	512K x 36	4M x 36	4M x 36	36MB
1M x 36	1M x 36	None	None	8MB
1M x 36	1M x 36	1M x 36	1M x 36	16MB
1M x 36	1M x 36	4M x 36	4M x 36	36MB
2M x 36	2M x 36	None	None	16MB
2M x 36	2M x 36	2M x 36	2M x 36	32MB
2M x 36	2M x 36	4M x 36	4M x 36	48MB
4M x 36	4M x 36	4M x 36	4M x 36	64MB
8M x 36	8M x 36	None	None	64MB
8M x 36	8M x 36	8M x 36	8M x 36	128MB

Table 2-1. Memory Configurations and Requirements

Cache Memory Subsystems

Cache Size	Darity RAM (U28)	TAG RAM (U27)	Data (U23-26) (U34 - U37)
256KB	32Kx8 (5V)	32Kx8 (5V)	32Kx8 (3.3V)
512KB	32Kx8 (5V)	32Kx8 (5V)	64Kx8 (3.3V)
1MB	32Kx8 (5V)	32Kx8 (5V)	128Kx8 (3.3V)

Table 2-2. Second Level Cache Memory Configurations

3 Jumper Settings and Connectors

3.1 Setting the Jumpers

The table below summarizes the functions and jumper settings on the SI54P AIO.

Function		Jumper Settings
CPU Clock Select	50MHz (for 75MHz CPU)	**JP7** short 2-3, 5-6, 7-8
	60MHz (for 90MHz CPU)	**JP7** short 2-3, 4-5, 8-9
	66MHz (for 100MHz CPU)	**JP7** short 1-2, 5-6, 7-8
CPU Signal Select	Internal Cache Write-back	**JP12** short 1-2
	Internal Cache Write-through	**JP12** short 2-3
	Always invalidated	**JP14** short 1-2
	Write to invalidated	**JP14** short 2-3
External Cache Memory Settings	256KB (with 32Kx8 SRAMs)	**JP11** open **JP10** open
	512KB (with 64Kx8 SRAMs)	**JP11** short **JP10** open
	1MB (with 128Kx8 SRAMs)	**JP11** short **JP10** short
ROM BIOS	For Programming Flash ROM (+5V) used	**JP8** short 1-2
	For Programming Flash ROM (+12V) used	**JP8** short 2-3
	EPROM	**JP8** open

Function		Jumper Settings
On-board PCI IDE	Enable IDE	**JP4** open
	Disable IDE	**JP4** short
On-board I/O	Enabled	**JP3** short 1-2
	Disabled	**JP3** short 2-3
ECP Mode	ECP Mode Parallel Port DRQ1 DACK1 Selection	**JP1** short 1-2 **JP2** short 2-3
	ECP Mode Parallel Port DRQ3 DACK3 Selection	**JP1** short 2-3 **JP2** short 1-2
DRAM Parity Check	Enabled	**JP9** short
	Disabled	**JP9** open
Memory Select	All SIMMs are single density modules	**JP5** short 2-3
	All SIMMs are double density modules or SIMMs 3/4 are double density and SIMMs 1/2 are single density	**JP5** short 1-2, 3-4

Table 4-1. Jumper Settings

Note1: If a flash ROM is installed on the mainboard, please refer to the README.DOC file in the Flash Utility diskette before programming the Flash ROM BIOS.

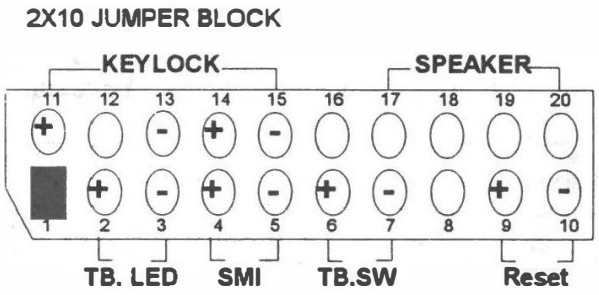
Note2: Before installing the driver for on-board PCI IDE (CMD PCI0640B), consult the readme file in the CMD Driver Diskette.

Note3:
1. JP8 open for EPROM and Flash ROM normal use.
2. When you update your system BIOS with Flash ROM or JP8 to short 2-3 for +12V Flash ROM.
3. After updated the system BIOS, you should remove the jumper JP8.

3.2 Connectors

There are several connectors located on the SI54P AIO. Their functions are listed below.

Connector	Function
J2	AT Keyboard Connector
J4	Power Connector
J5	Floppy Connector
J6	COM1 Port Connector
J7	COM2 Port Connector
J8	Printer Port Connector
J9	IDE Primary Connector
J10	IDE Secondary Connector
J11	Power Connector (For 3.3V)
J12	HDD LED Connector
J13	



pin 2-3: Turbo LED
pin 4-5: Suspend Push Button (SMI)
PIN 6-7: Turbo Switch
pin 9-10: Hardware Reset
pin11-13: System Power LED & pin 14-15 Keylock
pin 17-20: Speaker

Note: J13 (pin6-7), Turbo Switch Function Procedure:

a. Short 2-3 for the jumper setting of JP12.
b. Set the L1 Cache Update Mode into (WT) Write Through within the BIOS Chipset Features SETUP.
c. After finishing Steps a & b, the H/W turbo switch will function normal and the Turbo LED will turn on/off when system in the Turbo/De-turbo mode.

3.3 Board Layouts

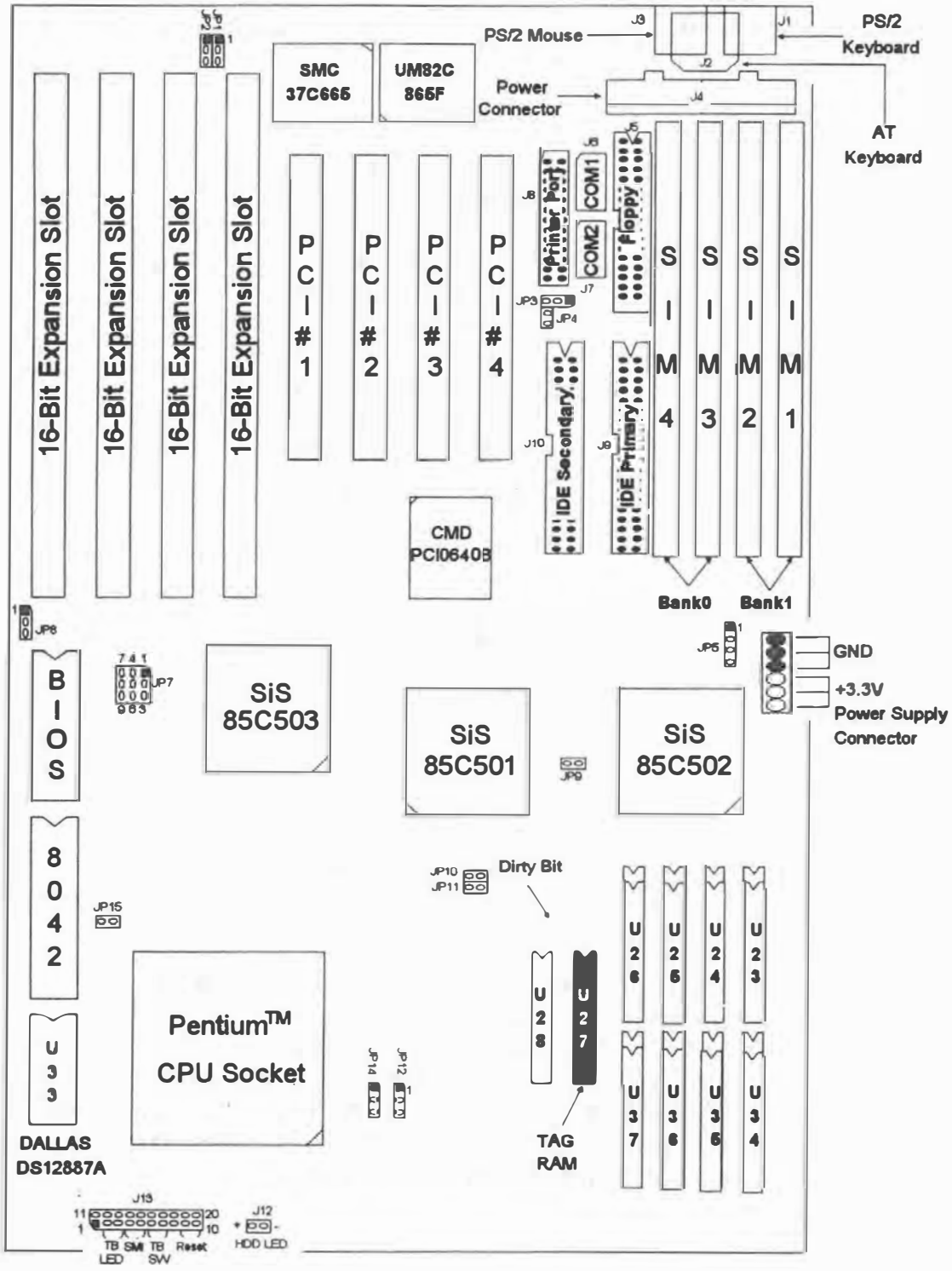


Figure 4-1. SI54P AIO Mainboard Layout

4 Built-in BIOS SETUP Program

4.1 SETUP Program

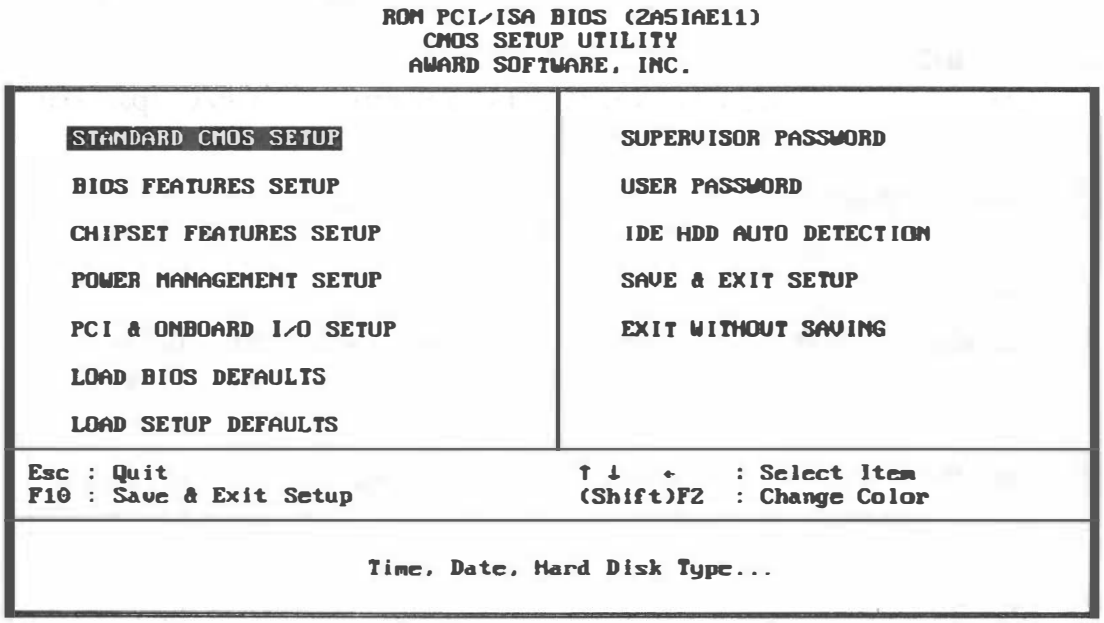


Figure 4-1. SETUP Main Menu

It is highly recommended that you list down all the values of the SETUP program before making any changes. Doing so will save a lot of time restoring the system back in the event of a configuration memory loss.

Note: On-screen instructions at the bottom of each screen explain how to use the program.

- **Standard CMOS SETUP** - allows checking or modification of general configuration information.
- **BIOS Features SETUP** - used to set the various system options for the user, including the virus warning, internal/external cache memory functions, quick power on self test, boot operations, gate A20 option, memory parity, security option, typematic rate settings, and BIOS shadowing.
- **Chipset Features SETUP** - dedicated for the user who wishes to program the chipset registers of the DRAM, cache, cacheable BIOS, non-cacheable block 1 size/start address etc.

- **Power Management Setup** - allows the programming of the timeout functions of six devices. If the device is not active, Power Management Function will slow down the CPU speed to 8 MHz and both IDE and monitor will be put into standby mode.
- **PCI & Onboard I/O SETUP** - used to set the various system functions and internal addresses of the PCI devices and onboard PCI IDE controller.
- **Load BIOS Defaults** - allows for automatic configuration of all the options in the Standard CMOS SETUP/BIOS Features SETUP/Chipset Features SETUP with the BIOS defaults.
- **Load SETUP Defaults** - loads the SETUP default values which would allow safe booting of the system in the event a BIOS configuration memory loss.
- **Supervisor Password** - required when entering and changing the SETUP option or booting your system. The supervisot can change the current password stored in the CMOS by accessing the option.
- **User Password** - required when entering the SETUP program or booting your system. The user can change the current password stored in the CMOS by accessing this option.
- **IDE HDD Auto Detection** - allows for automatic detection of the hard disk drive type(s) including the number of cylinders and heads, write precompensation time, read/ write head landing zone, and number of sectors per track.
- **Save & Exit SETUP** - saves the changes you have made in the SETUP program, then exits and reboots the system.
- **Exit Without Saving** - abandons all previous settings then exits and reboots the system.

To choose an item from the SETUP main menu, move the cursor using the <Left/Right> and <Up/Down>arrow keys and press <Enter>. To modify the setting of an option, simply press the <PgUp> or <+> and the <PgDn> or <-> keys. Press the <F2> key when changing the color setting, <F1> for a context sensitive help function, and the <ESC> key when quitting SETUP.

4.2 Standard CMOS SETUP

```
                    ROM PCI/ISA BIOS (2A5IAE11)
                       CMOS SETUP Utility
                    AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Fri, Dec 24 1994
Time (hh:mm:ss) :  7 : 10 : 25

Primary HDDs                CYLS.  HEADS  PRECOMP  LANDZONE  SECTORS  MODE
 Master : None  (   0Mb)       0      0        0         0        0   ------
 Slave  : None  (   0Mb)       0      0        0         0        0   ------
Secondary HDDs
 Master : None  (   0Mb)       0      0        0         0        0   ------
 Slave  : None  (   0Mb)       0      0        0         0        0   ------

Drive A : 1.2M, 5.25 in.
Drive B : 1.44M, 3.5 in                    Base Memory:   640K
                                         Extended Memory: 31744K
Video   : EGA/VGA                           Other Memory:   384K

Halt On : All Errors                       Total Memory: 32768K

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

Figure 4-2. Standard CMOS SETUP Screen

Date - allows manual setting of the electronic calendar on the mainboard.

Time - sets the system's internal clock which includes hour, minutes, and seconds.

Primary/Secondary Master and Slave: - specify the physical and electronic properties of the standard hard disk drives installed. Relevant specifications include the type, number of cylinders (CYLS.), heads (HEADS), write pre-compensation time (PRECOMP), read/write head landing zone (LANDZONE), number of sectors per track (SECTORS), and HDD mode (MODE). Selecting **"AUTO"** in the hard disk type item avoids the necessity of loading the HDD specifications and the function of the IDE HDD Auto Detection option in the main menu. The system BIOS will automatically detect the hard drive(s) installed on the system upon bootup.

Drive A:/B: - specify the capacity and format of the floppy drives installed in your system.

Video - specifies the display adapter installed.

Halt On - enables the system to halt on several conditions/options. The default value is set at **"All Errors"**.

Base/Extended/Other Memory - A small section in the lower right corner of the screen displays important information about your system which includes the base, extended, and other memory sizes. They are updated automatically by the SETUP program according to the status detected by the BIOS self-test. This section of the Standard CMOS SETUP screen is for viewing purpose only and manual modifications are not allowed.

4.3 BIOS Features SETUP

```
                ROM PCI/ISA BIOS (2A5IAE11)
                  BIOS FEATURES SETUP
                  AWARD SOFTWARE, INC.

Virus Warning                : Disabled      Video BIOS Shadow    : Enabled
CPU Internal Cache           : Enabled       C8000-CBFFF Shadow   : Disabled
External Cache               : Enabled       CC000-CFFFF Shadow   : Disabled
Quick Power On Self Test     : Disabled      D0000-D3FFF Shadow   : Disabled
Boot Sequence                : A,C           D4000-D7FFF Shadow   : Disabled
Swap Floppy Drive            : Disabled      D8000-DBFFF Shadow   : Disabled
Boot Up Floppy Seek          : Enabled       DC000-DFFFF Shadow   : Disabled
Boot Up NumLock Status       : On
Boot Up System Speed         : High
Gate A20 Option              : Fast
Typematic Rate Setting       : Disabled
Typematic Rate (Chars/Sec)   : 6
Typematic Delay (Msec)       : 250
Security Option              : Setup

                                ESC : Quit          ↑↓ ←: Select Item
                                F1  : Help          PU/PD/+/- : Modify
                                F5  : Old Values    (Shift)F2 : Color
                                F6  : Load BIOS Defaults
                                F7  : Load Setup Defaults
```

Figure 4-3. BIOS Features SETUP Screen

Virus Warning - allows the virus warning feature for the hard disk boot sector to display a warning message and produce a beep sound whenever an attempt is made to write on the hard disk's boot sector. The default value for this option is **"Disabled."**

CPU Internal Cache - enables the internal 16KB code/data cache of the Intel Pentium™ CPU when set to **"Enabled"** (default).

External Cache - enables the on-board secondary cache (either standard non-burst or burst cache) when set to **"Enabled"** (default).

Quick Power On Self Test - allows the power on self test to run at either a fast or a normal speed. The available options are:

- Disabled (default)
- Enabled

Boot Sequence - selects the drive where the system would search for the operating system to run with. The available options are:

- A,C (default)
- C,A

Swap Floppy Drive - **"Enabled"** will effectively change the A: drive to B: and the B: to A: drive. **"Disabled"** (default) sets the floppy drives in their default states.

Boot Up Floppy Seek - checks whether the floppy drives installed on the system are correct or not. This option's operation usually occurs when the magnetic heads of the floppy drives produce a sound during power on self test. The available options are:

- Enabled (default)
- Disabled

Boot Up NumLock Status - sets the Num Lock key to either on or off during system boot-up. The available options are:

- On (default)
- Off

Boot Up System Speed - sets the speed of the system during power on self test sequence. The available options are:

- High (default)
- Low

Gate A20 Option - boosts the performance of systems with softwares using the 80286 protected mode such as OS/2 or UNIX. This option determines the accessibility of the extended memory. The available options are:

- Fast (default)
- Normal

Typematic Rate Setting - defines the setting of the keyboard's typematic rate. The available options are:

- Enabled
- Disabled (default)

Typematic Rate (Chars/Sec) - specifies the key repeat rate, in seconds, of keyboard characters. The available options are:

- 2/sec
- 6/sec (default)
- 10/sec
- 13.3/sec
- 18.5/sec
- 21.8/sec
- 26.7/sec
- 30/sec

Typematic Delay (Msec) - selects the delay, in milliseconds, before a key repeats itself. The available options are:

- 1/4 sec (default)
- 1/2 sec
- 3/4 sec
- 1 sec

Security Option - determines whether the password will be asked for in every boot (**System**), or when entering into the SETUP program (**Setup** - default). Refer to the section entitled Password Setting for the password setting procedure.

Video BIOS Shadow - enables the system shadowing and achieve the best performance of the system. The available options are:

- Enabled (default)
- Disabled

C8000-CBFFF, CC000-CFFFF, D0000-D3FFF, D4000-D7FFF, D8000-DBFFF, DC000-DFFFF Shadow - if you have a shadowing of the BIOS at any of the above segments, you may set the appropriate memory cacheable function to**"Enabled"**. Otherwise, select **"Disabled"** (default).

4.4 Chipset Features SETUP

```
ROM PCI/ISA BIOS (2A5IAE11)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration          : Enabled          Latency from ADS# status: 2T
Read CAS Pulse Width        : 4T               Refresh When CPU Hold   : Disabled
DRAM Write CAS Width        : 2T               Post Write CAS Active   : 1T
L2 Cache Update Mode        : WB               CPU/PCI Post Write Delay: 1T
L1 Cache Update Mode        : WB               PCI Clock Frequency     : CPUCLK/2
DRAM Relocate (2,4 & 8M)    : Disabled         Max. Burstable Range    : 0.5Kb
SRAM Speed Option           : Slower           CPU/PCI Burst Mem. Write: Disabled
SRAM Burst R/W Cycle        : 3T               CPU/PCI Post  Mem. Write: Disabled
Refresh RAS Active Time     : 5T               ISA Bus Clock Frequency : PCICLK/4
DRAM RAS to CAS Delay       : 4T               Non-Cacheable Block 1   : Disabled
DRAM RAS Precharge Time     : 5T                 Block 1 Start Address : 0500000H
Gate A20 Emulation          : Enabled            Block 1 Size          : 64KB
Fast Reset Emulation        : Enabled
Slow Refresh (1:4)          : Disabled         ESC : Quit        ↑↓ ←: Select Item
System BIOS Cacheable       : Disabled         F1  : Help        PU/PD/+/- : Modify
Turbo/Deturbo Switch        : Enabled          F5  : Old Values  (Shift)F2 : Color
                                               F6  : Load BIOS Defaults
                                               F7  : Load Setup Defaults
```

Figure 4-4. Chipset Features SETUP Screen

Auto Configuration - loads the default values, if **"Enabled"** (default), for the following DRAM and cache options. Otherwise, **"Disabled"** allows you to program each option as required.

Read CAS Pulse Width - determines the pulse width length of the CAS during DRAM read cycles. The available options are:

- 2T
- 3T
- 4T (default)

DRAM Write CAS Width - determines the pulse width length of the CAS during DRAM write cycles. The available options are:

- 2T (default)
- 3T

L2 Cache Update Mode - determines the mode wherein the external (L2) cache will operate. Choosing **"WB"** will set the cache in its fastest mode since writes as well as reads are cached. The available options are:

- WT
- WB (default)

L1 Cache Update Mode - sets the state of the (L1) internal cache of the Pentium™ CPU and determines the mode wherein data will be updated. The available options are:

- WB (default)
- WT

DRAM Relocate (2,4 & 8M) - remaps the 256K DRAM region to the top of the DRAM size. This option is only applicable when the D & E segments are not shadowed, and when total on-board memory is 2MB, 4MB, or 8MB. The available options are:

- Enabled
- Disabled (default)

SRAM Speed Option - specifies the speed of the standard SRAM cache during normal read/write operations. The available option are:

- Slower (default)
- Faster
- Fastest

SRAM Burst R/W Cycle - defines the speed of the cache SRAM burst read/write cycles. The available options are:

- 3T (default)
- 2T

Refresh RAS Active Time - defines the amount of active time needed for the row address strobe (RAS), during DRAM refresh time, to be refreshed. The available options are:

- 5T (default)
- 6T

DRAM RAS to CAS Delay - defines the amount of time required after which a CAS# will be succeeded by RAS# signal during normal DRAM operations. The available options are:

- 3T
- 4T (default)

DRAM RAS Precharge Time - sets the amount of time for DRAM RAS recovery. The available options are:

- 4T
- 5T (default)

Gate A20 Emulation - allows access and increases the speed of the Gate A20 feature incorporated in the on-board chipset. When enabled, the SiS85C501 responds the cycle by asserting DEVSEL# in slowest timing. Otherwise, the cycle is subtractively decoded by SiS85C503, and then is passed to 8042 on the ISA Bus. The available options are:

- Enabled (default)
- Disabled

Fast Reset Emulation - enhances the speed of the software reset by delaying the assertion of INIT or CPURST by 2μs or 6μs, and holding them for 25 CPUCLK. The available options are:

- Enabled (default)
- Disabled

Slow Refresh (1:4) - allows you to turn the DRAM's slow refresh feature to on or off. The available options are:

- Enabled
- Disabled (default)

System BIOS Cacheable - allows caching of the different segments where there is system BIOS shadowing. The available options are:

- Enabled
- Disabled (default)

Turbo/Deturbo Switch - enables the hardware turbo switch on-board and/or the keyboard control when changing the system speed.

- Enabled (default)
- Disabled

Latency from ADS# status - determines the CPU to PCI Post write speed. When this is set to **"3T"**, the Post write rate is 5T for each double word. When this option is set to **"2T"** (default), the rate is 4T per double word. For a Qword PCI memory write, the post write rate is 7T (2T) or 8T (3T).

- 2T (default)
- 3T

Refresh When CPU Hold - enables the refresh cycle when the CPU is in HOLD state. The available options are:

- Enabled
- Disabled (default)

Post Write CAS Active - defines the pulse width of CAS# when the PCI master writes to DRAM. The available options are:

- 1T (default)
- 2T

CPU/PCI Post Write Delay - pertains to the delay time before the CPU writes data into the PCI Bus. The available options are:

- 1T (default)
- 2T

PCI Clock Frequency - selects the timing of the PCI Bus clock. The available options are:

- CPUCLK/1.5
- CPUCLK/2 (default)
- 14Mhz

Max. Burstable Range - defines the maximum bursting length for each FRAME# asserting. The available options are:

- 0.5Kb (default)
- 1Kb

CPU/PCI Burst Mem. Write - If enabled, back-to-back sequential CPU memory write cycles to PCI are translated to PCI burst memory write cycles. If disabled, each single write to PCI will have an associated FRAME# sequence. The available options are:

- Enabled
- Disabled (default)

CPU/PCI Post Memory Write - enabling allows up to 4 Dwords of data to be posted to PCI. Disabling this option not only disables the buffering but also limits the completion of CPU write (CPU write does not complete until the PCI transaction completes). In general, this option enhances the performance of the PCI slots when "**Enabled**" (default).

- Enabled
- Disabled (default)

ISA Bus Clock Frequency - specifies the speed of the ISA Bus clock of the system. The available options are:

- PCICLK/3
- PCICLK/4 (default)
- 7.159Mhz

Non-cacheable Block 1 - allow a certain block of the local DRAM to be classified as non-cacheable. The available options are:

- Enabled
- Disabled (default)

Block 1 Start Address - accommodates ISA devices that have their memory mapped into the 1MB to 15.5MB range (i.e., an ISA LAN card or an ISA frame buffer), and defines a hole in main memory that transfers the cycles in this address space to the PCI Bus instead of main memory. This area is not cacheable and its default is **"0500000H."**

Block 1 Size - defines the size or Block 1. If the frame buffer range is programmed below 16MB and within main memory space, this option must include the frame buffer range. The amount of main memory specified in the following options is remapped to the top of main memory. The options are:

- 64KB (default)
- 128KB
- 256KB
- 512KB
- 1MB
- 2MB
- 4MB
- 8MB

4.5 Power Management SETUP

```
                ROM PCI/ISA BIOS (2A5IAE11)
              POWER MANAGEMENT SETUP
              AWARD SOFTWARE, INC.

POWER MANAGEMENT     : Disabled          VGA Activity          : Disabled
PM Control by APM    : Yes               IRQ3  (COM2)          : Enabled
Video Off Option     : Suspend->Off      IRQ4  (COM1)          : Enabled
Video Off Method     : V/H SYNC+Blank    IRQ5  (LPT2)          : Enabled
Suspend Switch       : Enabled           IRQ6  (Floppy Disk)   : Enabled
Doze Speed (div by)  : 2                 IRQ7  (LPT1)          : Enabled
Stdby Speed (div by): 3                  IRQ8  (RTC Alarm)     : Disabled
                                         IRQ9  (IRQ2 Redir)    : Enabled
          ** PM Timers **                IRQ10 (Reserved)      : Enabled
HDD Power Down       : Disabled          IRQ11 (Reserved)      : Enabled
Doze Mode            : Disabled          IRQ12 (PS/2 Mouse)    : Enabled
Standby Mode         : Disabled          IRQ13 (Coprocessor)   : Enabled
Suspend Mode         : Disabled          IRQ14 (Hard Disk)     : Enabled
                                         IRQ15 (Reserved)      : Enabled
          ** PM Events **
COM Ports Activity   : Enabled           ESC : Quit      ↑↓ →←: Select Item
LPT Ports Activity   : Enabled           F1  : Help      PU/PD/+/- : Modify
HDD Ports Activity   : Enabled           F5  : Old Values (Shift)F2 : Color
PCI/ISA Master Act   : Enabled           F6  : Load BIOS Defaults
IRQ1-15 Activity     : Enabled           F7  : Load Setup Defaults
```

Figure 4-5. Power Management Screen

Power Management - The available options are:

- Disabled (default)
- Min Saving
- Max Saving
- User Define

PM Control By APM - sets the power management (PM) control by the APM. The available options are:

- Yes (default)
- No

Video Off Option - The available options are:

- Suspend ->Off (default)
- Susp. Stby ->Off
- All Modes ->Off
- Always On

Video Off Method - The available options are:

- V/H SYNC+Blank (default)
- Blank Screen

Suspend Switch - sets the system of the suspend switch. The available options are:

- Enabled (default)
- Disabled

Doze Speed (div by) - The available options are:

- 2 (default)
- 1/3/4/5/6/7/8

Stdby Speed (div by) - The available options are:

- 3 (default)
- 1/2/4/5/6/7/8

HDD Power Down - The available options are:

- Disabled (default)
- 1/2/3/4/5....15 Min
- When Suspend

Doze Mode - sets the time interval after system inactivity when the system enters DOZE mode. The available options are:

- Disabled (default)
- Enabled

Standby Mode - sets the timer interval after system inactivity when the system events enters STANDBY mode. The options are:

- Disabled (default)
- Enabled

Suspend Mode - sets the time interval after system inactivity when the system enters SUSPEND mode. The available options are:

- Disable (default)
- Enabled

The menu also lists the Power Management SETUP (PM) events by which the system wakes up from STANDBY or SUSPEND modes. Switch the following parameters to disabled or enabled:

- COM Ports Activity
- LPT Ports Activity
- HDD Ports Activity
- PCI/ISA Master Act
- IRQ1-15 Activity
- VGA Activity
- IRQ3 (COM2)
- IRQ4 (COM1)
- IRQ5 (LPT2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

4.6 PCI Configuration SETUP

```
                ROM PCI/ISA BIOS (2A5IAE11)
              PCI & ONBOARD I/O SETUP
              AWARD SOFTWARE, INC.

Slot 1 Using INT#    : AUTO          Onboard FDC Controller   : Enabled
Slot 2 Using INT#    : AUTO          Onboard Serial Port 1    : COM1
Slot 3 Using INT#    : AUTO          Onboard Serial Port 2    : COM2
Slot 4 Using INT#    : AUTO          COM3 & COM4 Address      : 3E8H,2E8H
                                     Onboard Parallel Port    : 378H
1st Available IRQ    : 9             Parallel Port Mode       : Normal
2nd Available IRQ    : 10
3rd Available IRQ    : 11            IDE HDD Block Mode       : Disabled
4th Available IRQ    : NA            IDE 32-bit Transfer Mode: Disabled
                                     Onboard CMD IDE Mode 3   : Disabled
PCI IDE IRQ Map To   : ISA

                                     ESC : Quit          ↑↓ →←: Select Item
                                     F1  : Help          PU/PD/+/- : Modify
                                     F5  : Old Values    (Shift)F2 : Color
                                     F6  : Load BIOS Defaults
                                     F7  : Load Setup Defaults
```

Figure 4-6. PCI Slot Configuration Screen

PCI Slot 1/2/3/4 Using INT# - defines the INTx# assigned to every PCI slot. The available options are:

- AUTO (default)
- A
- B
- C
- D

1st/2nd/3rd/4th Available IRQ - specify the IRQ for the PCI devices. The end user should assign an available IRQ if the PCI device needs an IRQ service. The available options are:

- NA (4th Available IRQ default)
- 3
- 4
- 5
- 7
- 9 (1st Available IRQ default)
- 10 (2nd Available IRQ default)
- 11 (3rd Available IRQ default)
- 12
- 14
- 15

PCI IDE IRQ Map To - defines the CMD PCI0640B IRQ Routing either from the **PCI** Bus or the **ISA** Bus. The default setting of this option is **"ISA."**

Onboard FDC Controller - sets the diskette controller mode of the CMD PCI0640B PCI Bus IDE controller chip to either on or off. The available options are:

- Enabled (default)
- Disabled

Onboard Serial Port 1/2 - assign the addresses of the primary and secondary serial ports on-board. The available options are:

- COM1 (Onboard Serial Port 1 default)
- COM2 (Onboard Serial Port 2 default)
- Disabled
- COM3
- COM4

COM3 & COM4 Address - assigns the addresses of COM3 and COM4 ports on-board. The available options are:

- 3E8H,2E8H (default)
- 2E8H,2E0H
- 220H,228H

Onboard Parallel Port - assigns the address of the LPT port (printer port) on-board. This option also prevents the system from encountering any conflict when an add-on card with parallel port is installed in the future. The available options are:

- 278H
- Disabled
- 3BCH
- 378H (default)

Parallel Port Mode - specifies the mode under which the parallel port is assigned to operate. In **"ECP+EPP"** mode, EPP can be selected through the ECR register of ECP mode 100. **"Normal"** (default) however can be selected through the ECR register as mode 000. The available options are:

- Normal (default)
- EPP
- ECP+EPP
- ECP

IDE HDD Block Mode - sets the IDE block mode which is dependent on the size of the hard drive cache. Enabling this option prevents multiple IRQ request lines to be sent in order to read more than 512 bytes. The available options are:

- Enabled
- Disabled (default)

IDE 32-bit Transfer Mode - refers to the setting of the 32-bit transfer rate of hard disk drives. Normally, I/O transfer cycles are accessed in 16 bits however by enabling this option, system transfer cycles perform faster because the BIOS reads hard disk data twice before it sends request signals to the CPU. The available options are:

- Enabled
- Disabled (default)

Onboard CMD IDE Mode 3 - permits access into the option ROM at segment E800 of the system BIOS. The option ROM then programs the timing registers of the CMD PCI0640B into a faster speed (minimum of 180ns - to IDE Mode 3 hard drives only), and turns on the Mode 3 feature of the installed hard drive. In the event that the installed hard disk drive does not support Mode 3, the option ROM will still program the timing registers to an acceptable rate compared to the chip's default timings. In general, this option enhances the hard drive's performance. The available options are:

- Enabled
- Disabled (default)

4.7 Load BIOS Defaults

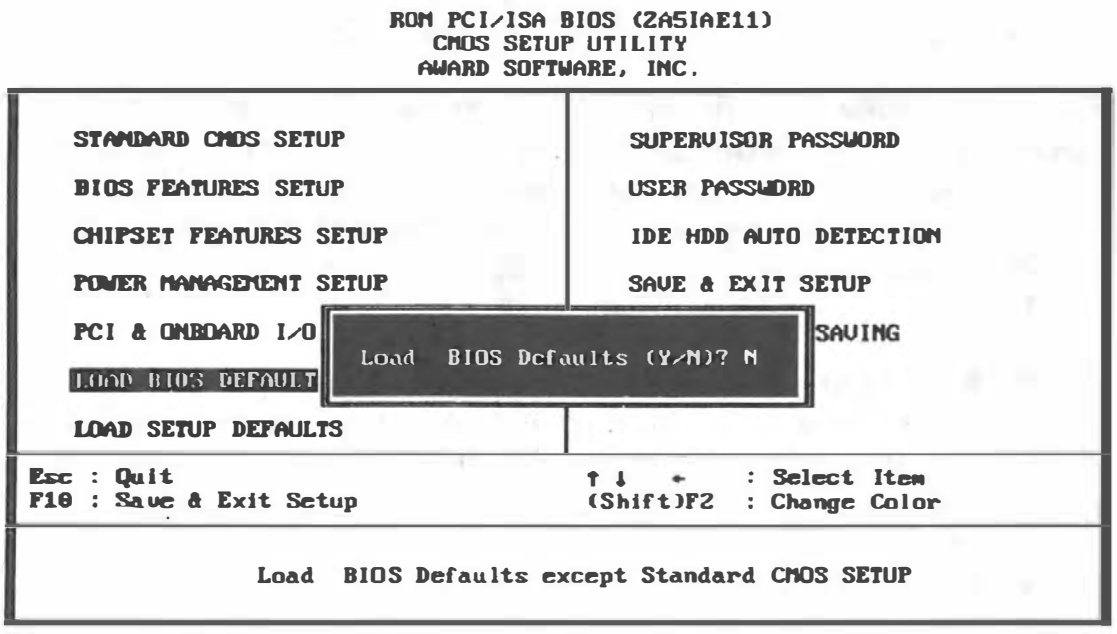


Figure 4-7. Load BIOS Defaults Screen

In the event of a loss in memory on the configuration SETUP, the user can restore the information on the BIOS by loading its default values. Loading the BIOS defaults provides safe booting of the system.

Important : This option may not be able to configure all the values within the SETUP program according to the installed equipments (i.e., floppy drives A: & B:, hard disk drives C: & D:).

4.8 Load SETUP Defaults

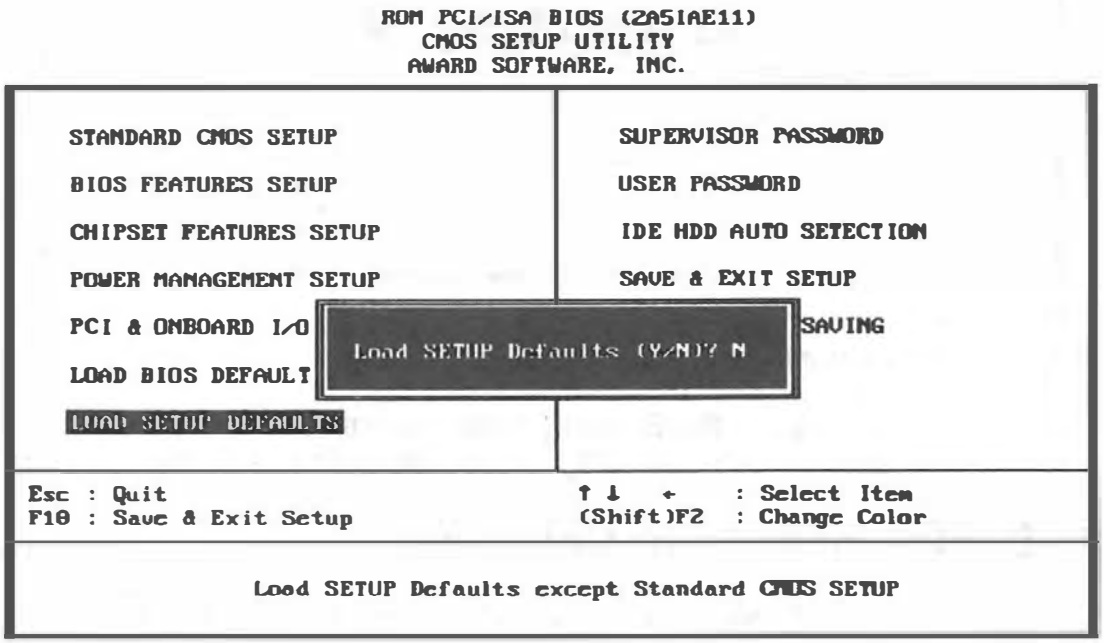


Figure 4-8. Load SETUP Screen

SETUP defaults are considered default values with which the system will be enabled to perform better. This is due to the enabling of some options within the SETUP program. However, if problems are encountered after loading the SETUP defaults, reboot the system and load the BIOS defaults instead.

4.9 Supervisor & User Password

The Password Setting utility allows you to set, change, and disable the password stored in the BIOS. To change the password setting, press <Enter> on the Password Setting option of the main menu and type the new password when the following screen is displayed.

The password can be at most 6 characters long. The program will require you to confirm the new password before it exits and enables the utility. To disable the password setting, press the <F1> once the program asks you to enter the new password.

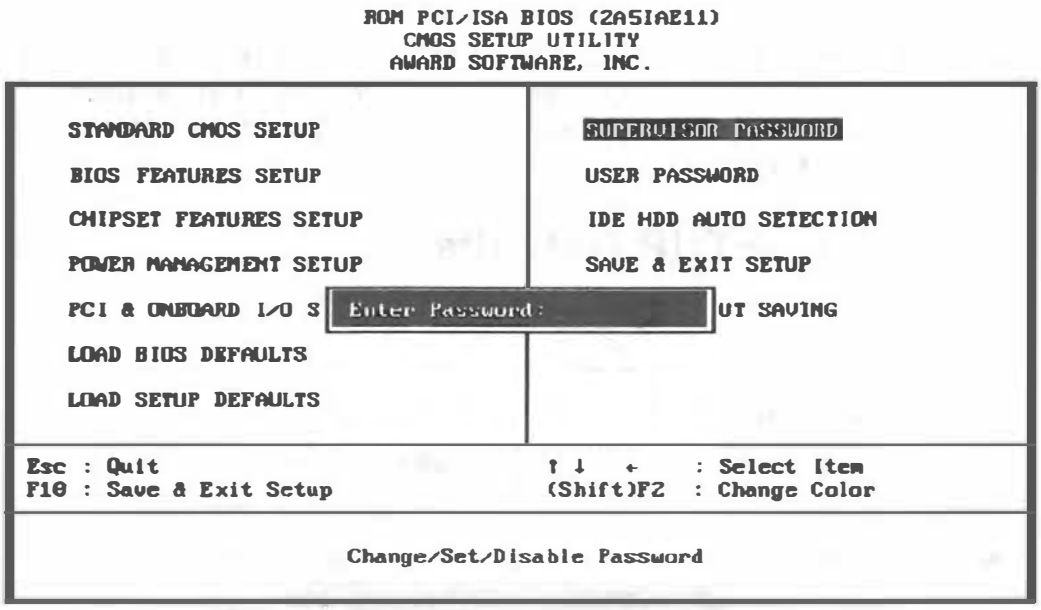


Figure 4-9. Supervisor & User Password Screen

Note : Configure the Security Option within the BIOS Features Setup corresponding to the setting in this utility.

4.10 IDE HDD Auto Detection

The IDE HDD Auto Detection provides auto configuration of the hard drive installed in the system. It supports LBA, Large, and Normal modes. If the system's hard disk drive has a capacity of over 528MB and supports LBA functions, you may enable either the LBA mode or the Large mode. On the other hand, if the hard disk drive's capacity is over 528MB but does support LBA functions, you may enable the Large mode in order to use over 528MB.

Note:

a. The **LBA** and **Large** modes will only appear on the screen when the installed hard disk drive is specified to support the LBA mode.

b.In the case when a hard disk drive's cylinder specification exceeds 1024, and does not support the LBA functions, only the **Large** mode will be displayed on the screen.

c. With a hard disk drive supporting cylinders below 1024, only the **Normal** mode will appear on the screen. The **Normal** mode will also be shown on the screen under conditions a & b above.

d. Hard disk drives with less than 528MB total capacity must be set to **Normal** mode when combined with either old BIOS versions or the Award BIOS.

Warning: LBA and Large modes are new specifications which may not be fully supported by all operating systems. An example of which is the current version of UNIX System (R3.2.4) which is still unable to support the LBA function. Therefore, determine the specifications of your hard disk drive and operating system before selecting the drive's mode.

After pressing the <Enter> key on this item of the main menu, the display screen will show the following screen.

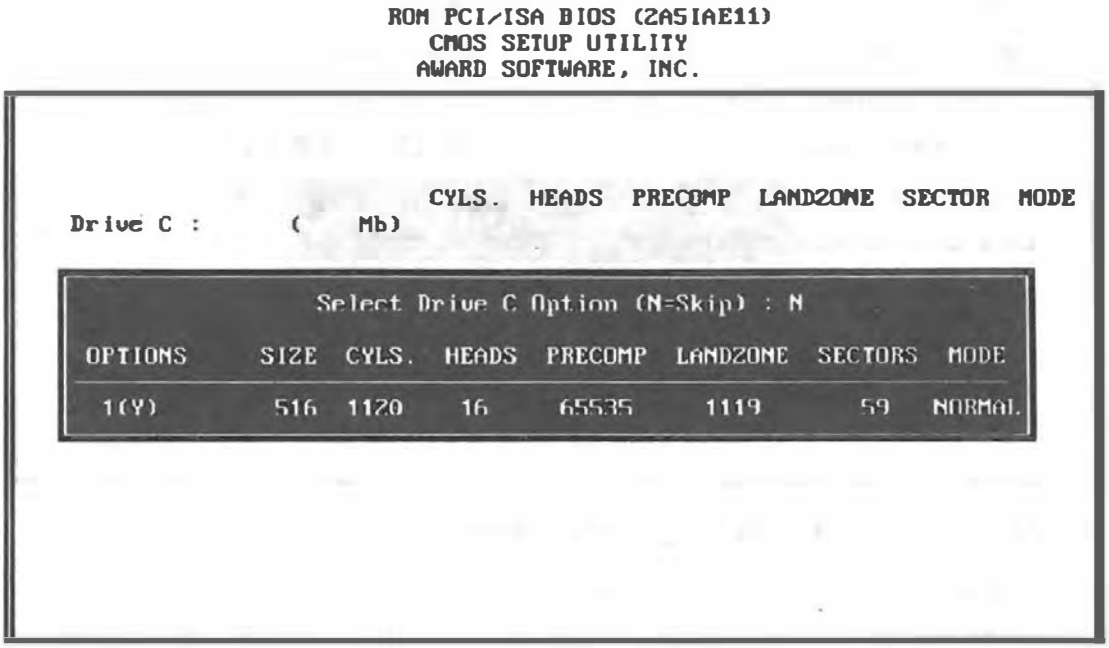


Figure 4-10. IDE HDD Auto Detection Screen

Once the program detects the type of hard disk installed, it will display the relative information such as the type, cylinders, heads, write pre-compensation, landing zone, number of sectors per track, size and mode. A message asking you to accept the IDE HDD detected will also be flashed on the screen.

4.11 Quitting SETUP

After making all modifications in the SETUP program, go to the option "Save & Exit SETUP" then press the <Enter> key. The program will display the following screen.

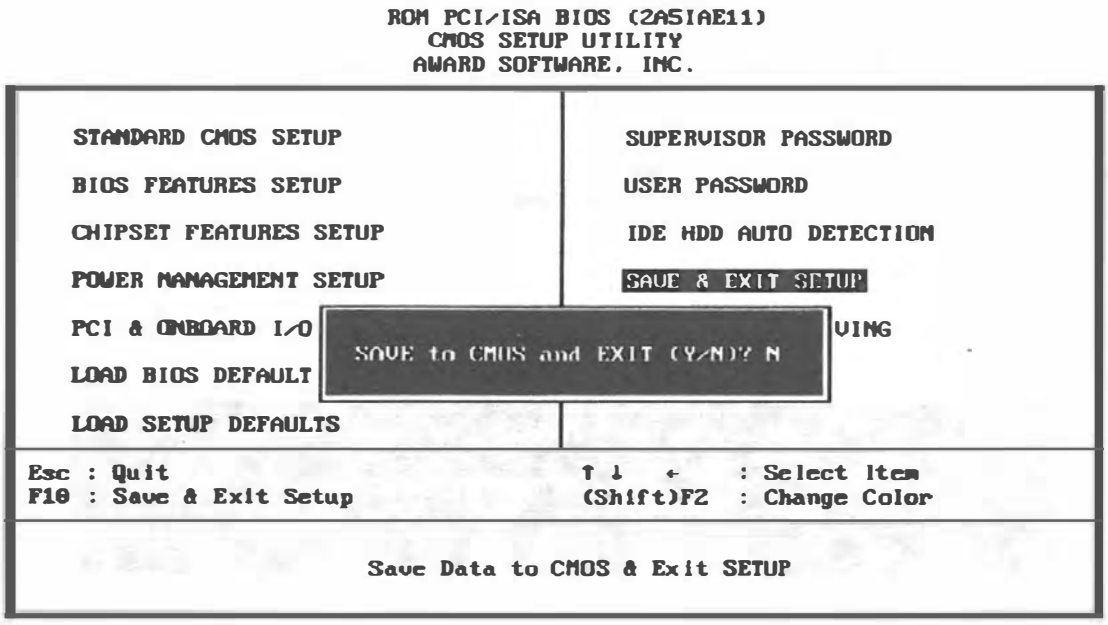


Figure 4-11. Save & Exit SETUP Screen

Press <Y> to confirm the changes made, and the <N> or the <ESC> keys if further modifications are still necessary before exiting the SETUP program. Once the <Y> key is pressed, the system will automatically exit the program and reboot. However, if you want to cancel all changes made under the SETUP program, go to the option "Exit Without Saving". The system will display the following screen.

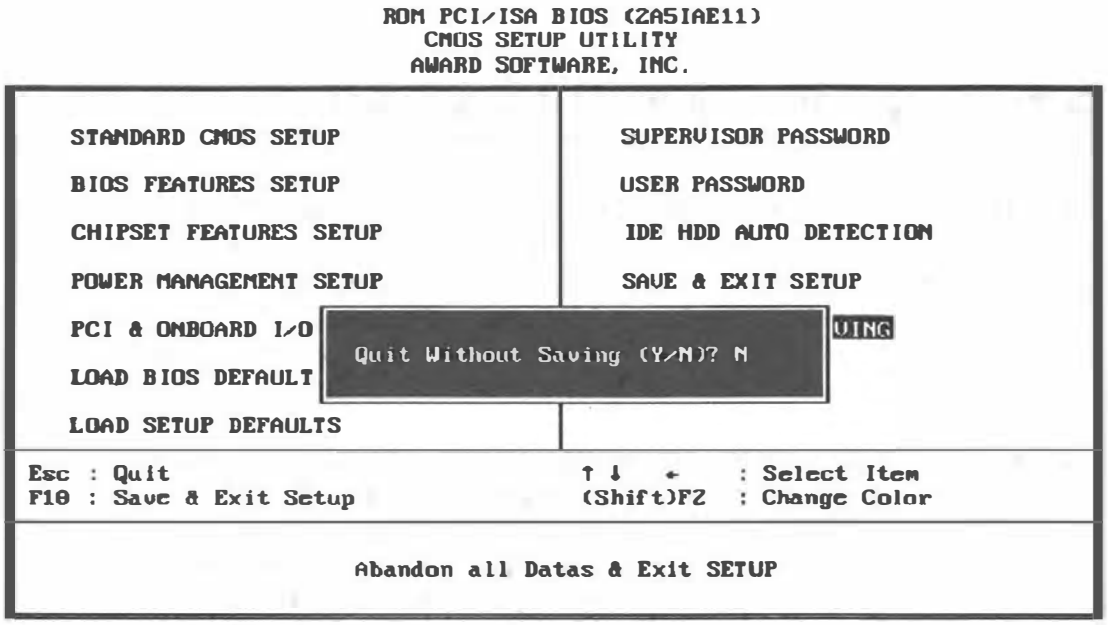


Figure 4-12. Exit Without Saving Screen

Press <Y> and the system will exit the SETUP program then reboot without saving any of the changes made.

Note: You may also use the <F10> key to save the new settings.

Appendix A
Setting the System Speed

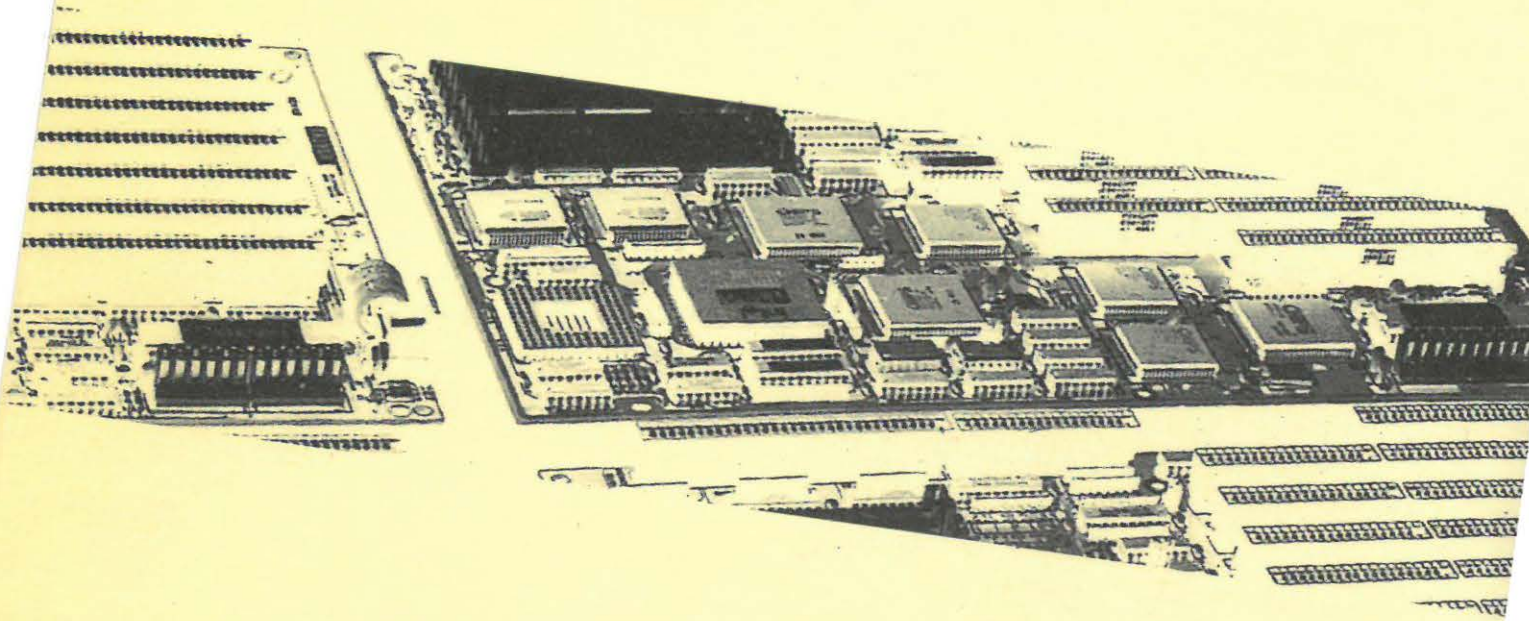
There is two methods in changing the system processing speed of your SI54P AIO. The first method is implemented through the hardware connector designated as J16. The second method is done with the simultaneous pressing of several special keys on the keyboard known as hot-keys. You may change the speed during normal operation while working with your application program.

Note: Hot-Key for changing System Speed Procedure:
a. Short 2-3 for the jumper setting of JP12.
b. Set the L1 Cache Update Mode into (WT) Write Through within the BIOS Chipset Features SETUP.
c. After finishing steps a & b, the S/W hot-key will function normally but the Turbo LED will not tum on/off, no matter system in Turbo/De-turbo mode.

The hot-key combinations for setting the system speed on your SI54P AIO are shown on the following diagrams.

■ High Speed

■ Low Speed



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