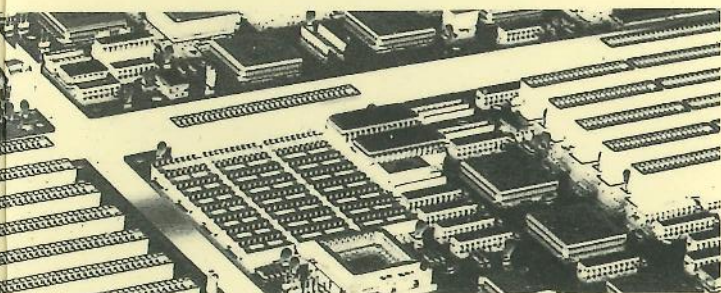




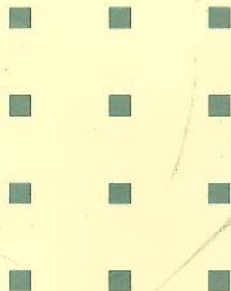
EPA POLLUTION PREVENTER

SI54P AIO

(FOR PHOENIX BIOS)



U S E R ' S M A N U A L



SI54P AIO
User's Manual
(for Phoenix BIOS)

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■ Contents

Introduction

General Specifications	1
System Chipset	2

System Memory

Cache Memory Subsystems	5
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Jumper Settings and Connectors

Setting the Jumpers	5
Connectors	7
Board Layouts	8

Built-in BIOS SETUP Program

SETUP Program	9
System Setup	10
Fixed Disk Setup	11
Advanced System Setup	13
Integrated Peripherals	14
Memory Cache	15
Memory Shadow	18
Advanced Chipset Control	19
PCI Devices	23
Boot Options	26
Security Setup	27
Green PC Feature	28
Load ROM Default Values	31
Load Values from CMOS	32
Save Values to CMOS	33
Quitting Setup	34

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:	Phoenix
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 Fast 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

■ **SNC 37C665**

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

2 System Memory

SIS4P 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		Bank 1		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	Dirty 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

Table 4-1. Jumper Settings (Continued)

Function		Jumper Settings
ROM BIOS Selection	For Programming Flash ROM (+5V) used	JP8 short 1-2
	For Programming Flash ROM (+12V) used	JP8 short 2-3
	EPR0M .	JP8 open
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

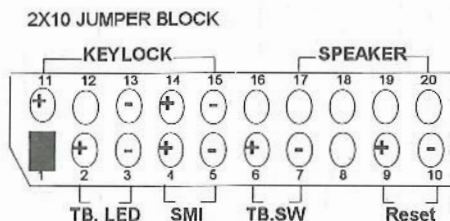
Table 4-1. Jumper Settings

- 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 utility, please set the JP8 to short 1-2 for +5V 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
 pin 11-13: System Power LED & pin 14-15 Keylock
 pin 17-20: Speaker

Note:

- J13 (pin6-7), Turbo Switch Function Procedure:*
- Short 2-3 for the jumper setting of JP12.*
 - Set the L1 Cache Update Mode into (WT) Write Through within the BIOS Chipset Features SETUP.*
 - 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

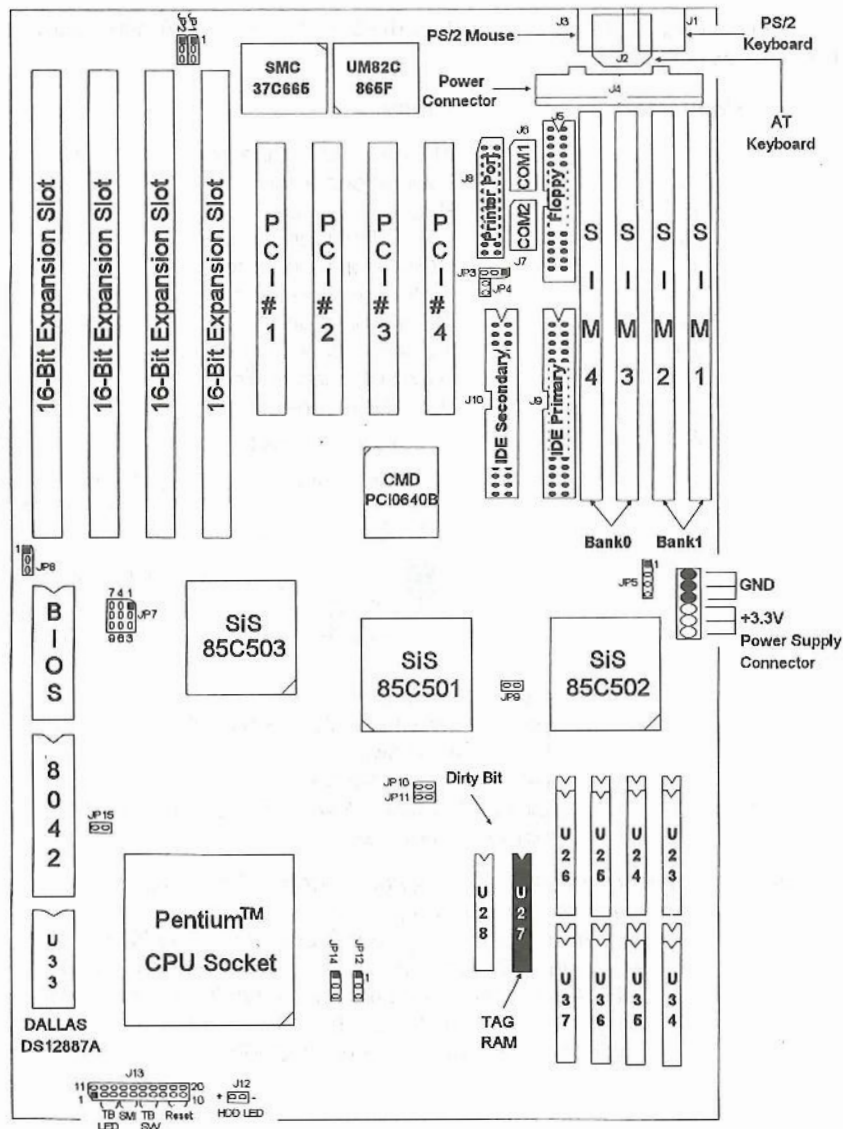


Figure 4-1. SI54P AIO Mainboard Layout

4 Built-in BIOS SETUP Program

4.1 SETUP Program

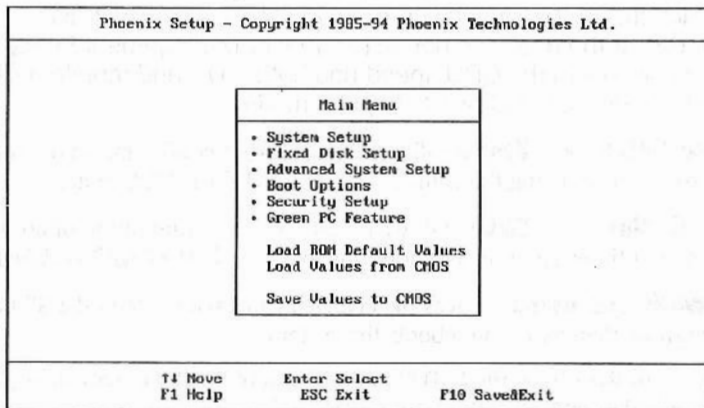


Figure 4-1. SETUP Main Menu

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.

- **System Setup** - allows checking or modification of general configuration information.
- **Fixed Disk Setup** - allows for automatic detection of the hard disk drive type(s) including the number of cylinders and heads, write pre-compensation time, read/write head landing zone, and number of sectors per track. Also switches the LBA Mode feature of the hard disk to on or off.
- **Advanced System Setup** - sets the various system options for the user, including the Integrated Peripherals, Memory Cache, Memory Shadow, Advanced Chipset Control, and PCI Devices.
- **Boot Options** - determines the sequence with which the system will proceed when booting the operating system.

- **Security Setup** - provides special access for the user to enter the operating system and Setup program, and restricts unauthorized access to the floppy disk drives.
- **Green PC Features** - allows the timer settings for the DOZE, STANDBY and RESUME modes. It also lists the SMI events by which the system wakes up from STANDBY or SUSPEND modes. If the device is not active, Power Management Function will slow down the CPU speed and both the IDE and monitor will be put into doze, standby, or suspend mode.
- **Load ROM Default Values** - allows for automatic configuration of all the above options using the values stored in the ROM BIOS table.
- **Load Values from CMOS** - allows for automatic configuration of all the above options using the previous values stored in the CMOS SRAM.
- **Save Values to CMOS** - saves the changes you have made in the SETUP program, then exits and reboots the system.

To choose an item from the SETUP main menu, move the cursor using the <Up> and <Down> arrow keys and press <Enter>.

4.2 System Setup

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.			
System Setup			
System Time:	[16:58:59]		
System Date:	[04/01/1994]		
Video System:	[EGA / VGA]		
System Memory:	640 KB		
Extended Memory:	7 MB		
Diskette Drive A:	[1.2 MB, 5¼"]		
Diskette Drive B:	[Not Installed]		
Keyboard:	[Installed]		
F1 Move	ESC Exit	FgUp Previous Value	F5 Previous Configuration
	F1 Help	FgDn Next Value	F6 Default Configuration

Figure 4-2. System Setup Screen

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

System Date - allows manual setting of the electronic calendar on the main-board.

Video System - specifies the display adapter installed.

System/Extended Memory - displays important information about your system configuration which includes the system and extended memory sizes. They are updated automatically by the SETUP program according to the status detected by the BIOS self-test. This section of the System Setup screen is for viewing purpose only and manual modifications are not allowed.

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

Keyboard - selects Install/ Not Installed for keyboard device setting.

4.3 Fixed Disk Setup

The Fixed Disk Setup provides auto configuration of the hard drive installed in the system. After pressing the <Enter> key on this item in the main menu, the following screen is displayed.

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.		
Fixed Disk Setup		
IDE Adapter 0 Master (C:541 Mb)		
IDE Adapter 0 Slave (None)		
IDE Adapter 1 Master (None)		
IDE Adapter 1 Slave (None)		
Large Disk Access mode: [Enabled]		
↑↓ Move	Enter Select	
F1 Help	ESC Exit	F10 Save&Exit

Figure 4-3. Fixed Disk Setup Screen 1

Once the program detects the type of hard disk 0 and/or 1 installed, it will display the relative information such as the type, cylinder, heads, write pre-compensation, landing zone, number of sectors per track, and the LBA mode control.

If the program fails to detect the hard disk type(s) or the <Enter> key was not pressed in the Autotype Fixed Disk option, manual setting of the values is recommended.

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.	
Fixed Disk 0 Control (Boot Drive)	
Autotype Fixed Disk:	[Press Enter]
Type:	[User]
Cylinders:	[667]
Heads:	[8]
Sectors/Track:	[33]
Write precomp:	[None]
Multi-Sector Transfers:	[Disabled]
LBA Mode Control:	[Disabled]
32 Bit I/O:	[Disabled]
↑↓ Move Enter Select F1 Help ESC Exit F10 Save&Exit	

Figure 4-4. Fixed Disk Setup Screen 2

Autotype Fixed Disk - detects the type of fixed disk 0 and/or 1 installed. If successful, it fills the remaining fields on this menu.

Type - 1 to 45 fill the remaining fields with values for predefined disk drives. "User" allows the user to fill in the remaining fields. "Auto" allows the system auto detect IDE HDD Function, if you already install IDE HDD.

Cylinders - specifies the number of cylinders of the hard disk drive.

Heads - specifies the number of read/write heads of the hard disk drive.

Sectors/Track - provides the number of sectors per track defined for the hard disk drive.

Landing Zone - refers to the cylinder number where the disk drive heads (read/write) are positioned to when the disk drive is parked.

Write Precomp - refers to the cylinder number, above which, disk drive operations require reduced write current. Also specifies the number of cylinders at which to change the write timing.

Large Disk Access Mode - for Large Hard Disk Compatibility (larger than 528MB) issues, you must enable this item except when running the system under UNIX. The default setting of this option is "Disabled."

Multi-Sector Transfers - determines the number of sectors per block for multiple sector transfers. The available options are 2/4/8/16 sectors, "Auto" which refers to the size the disk returns when queried, and "Disabled" (default).

LBA Mode Control - turns on or off the hard disk drive's LBA Mode support. Some HDD sizes support more than 540MB and the LBA mode for data transfer. If your hard disk supports LBA mode, you should enable (on) this option otherwise disable (off) it.

32 Bit I/O - it is only for PCI IDE card, if you want to use the ISA IDE card, you have to disable it.

4.4 Advanced System Setup

The Advanced System Setup allows the user to program five main groups of parameters namely the Integrated Peripherals, Memory Cache, Memory Shadow, Advanced Chipset Control, and PCI Devices. This BIOS Setup parameter is designed for programmers who wish to fine tune the on-board chipset.

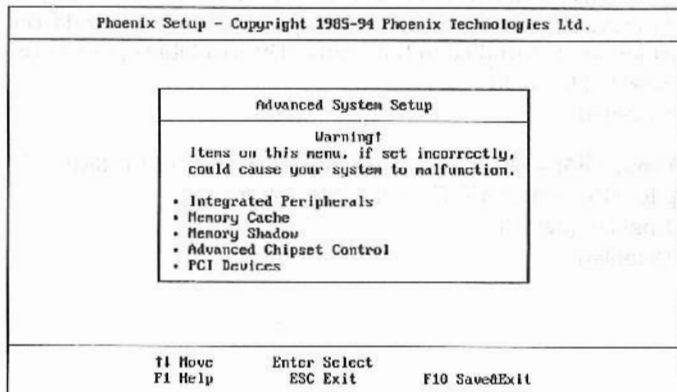


Figure 4-5. Advanced System Setup Screen

Integrated Peripherals

Selecting Integrated Peripherals from the Advanced System Setup main menu displays the following screen. The actual features displayed depend on the capabilities of your system's hardware.

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.			
Integrated Peripherals			
COM1 Port:	[03F8 , IRQ 3]		
COM2 Port:	[2F8 , IRQ 3]		
LPT Port:	[378 , IRQ 7]		
Diskette Controller:	[Enabled]		
LPT Extended Mode:	[Standard]		
CMD Enhanced Mode:	[Disabled]		
↑ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
	F1 Help	PgDn Next Value	F6 Default Configuration

Figure 4-6. Integrated Peripherals Screen

COM1/2 Port - assign the addresses of the primary and secondary serial ports on-board. The available options are:

- Enabled (default)
- Disabled

LPT Port - assigns the address of the parallel 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:

- Enabled (default)
- Disabled

Diskette controller - sets the diskette controller mode of the SMC 37C665 I/O chip to either on or off. The available options are:

- Enabled (default)
- Disabled

LPT Extended Mode - In "ECP & EPP" mode, EPP can select through the ECR register of ECP mode 100. "Standard" mode can be selected through the ECR register as mode 000. The available options are:

- Standard (default)
- EPP Mode
- ECP Mode
- ECP & EPP

CMD Enhanced Mode - enables 32 Bit I/O and CMD Enhanced Mode to support CMD DOS driver.

Memory Cache

Selecting the Memory Cache from the Advanced System Setup main menu displays the following screens. The actual features displayed depend on the capabilities of your system's hardware.

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.			
Memory Cache			
External cache:		[Enabled]	
L1 cache write back:		[Enabled]	
L2 cache write back:		[Enabled]	
System BIOS cacheable:		[Disabled]	
Cache speed:		[Slower]	
Cache burst size cycle:		[31]	
Refresh RAS active time:		[61]	
Non-cacheable area#1:		[Disabled]	
Allocation of non-cacheable area#1:		[Local DRAM]	
Region 1, start addr:		[0 KB]	
Region 1, size:		[64 KB]	
F4 Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
	F1 Help	PgDn Next Value	F6 Default Configuration

Figure 4-7. Memory Cache Screen 1

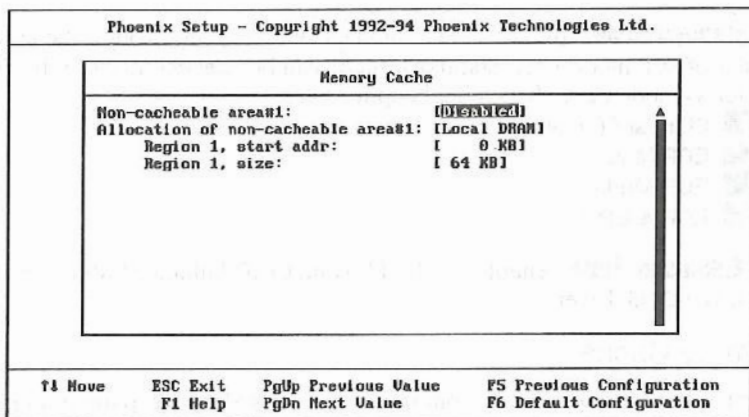


Figure 4-8. Memory Cache Screen 2

External cache - turns on or off the function of the external (L2) cache memory.

- Enabled (default)
- Disabled

L1 cache write back - switches the write-back feature of the (L1) internal cache of the Pentium™ CPU to either on or off. "Disabled" sets the L1 cache into write through mode. The available options are:

- Enabled (default)
- Disabled

L2 cache write back - switches the write-back feature of the (L2) external cache on-board to either on or off. "Disabled" sets the L2 cache into write through mode. The available options are:

- Enabled (default)
- Disabled

System BIOS cacheable - controls the caching of the system BIOS area.

- Enabled
- Disabled (default)

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

- Slower
- Faster
- Fastest

Cache burst r/w cycle - defines the speed of the cache SRAM burst read/write cycles. The available options are:

- 3T (default)
- 2T
- 1T

Refresh RAS active time - defines the amount of active time needed for the row address strobe (RAS), during DRAM refresh time, to be refreshed.

- 5T
- 6T (default)

Non-cacheable area#1/#2 - allow a certain block of the local DRAM to be classified as non-cacheable. The available options are:

- Enabled
- Disabled (default)

Allocation of non-cacheable area#1/#2 - define the location of the non-cacheable blocks. The available options are:

- Local DRAM (default)
- AT Bus

Region 1/2 start addr - 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 0 KB.

Region 1/2, size - defines the size of Region 1/2. 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:

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

Memory Shadow

Selecting the Memory Shadow from the Advanced System Setup main menu displays the following screen. The actual features displayed depend on the capabilities of your system's hardware.

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.			
Memory Shadow			
System BIOS shadow:	Enabled		
Video BIOS shadow:	[Enabled]		
Shadow Option ROM's -			
C800 - CFFF:	[Disabled]		
D000 - D7FF:	[Disabled]		
D800 - DFFF:	[Disabled]		
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
	F1 Help	PgDn Next Value	F6 Default Configuration

Figure 4-9. Memory Shadow Screen

System BIOS shadow - allows shadowing of the system BIOS which improves the system performance. This option is always set as "Enabled."

Video BIOS shadow - sets the mode of the system's video BIOS shadowing mode. The available options are "Enabled" (default) and "Disabled."

Shadow Option ROM's - shadows the memory regions located in the specified blocks of memory, which can likewise improve the system performance.

Note: Some option ROMs do not work properly when shadowed.

Advanced Chipset Control

Selecting the Advanced Chipset Control from the Advanced System Setup main menu displays the following screens. The actual features displayed depend on the capabilities of your system's hardware.

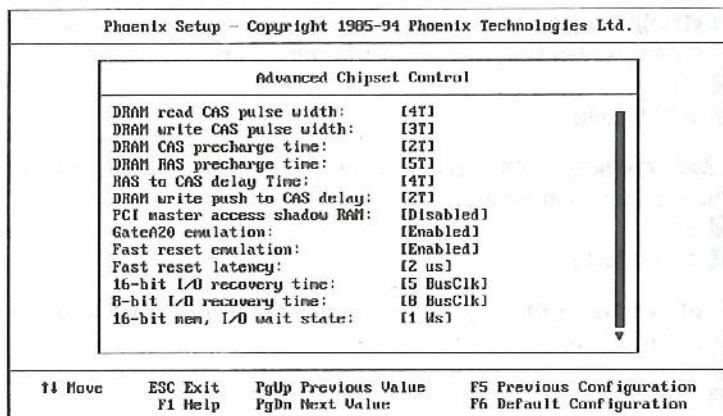


Figure 4-10. Advanced Chipset Control Screen 1

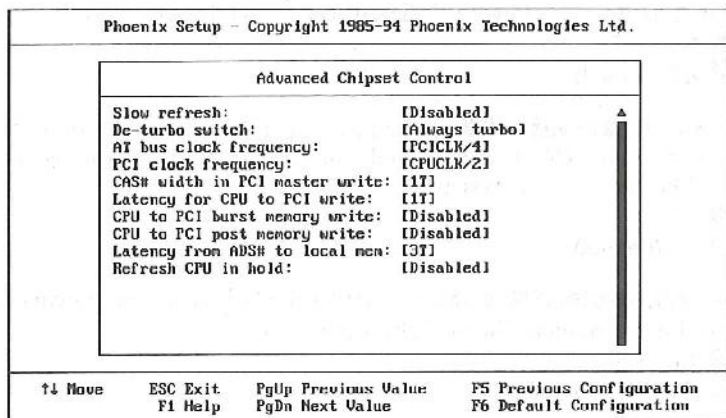


Figure 4-11. Advanced Chipset Control Screen 2

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

- 2T
- 3T (default)

DRAM CAS precharge time - sets the amount of time for DRAM CAS recovery. The available options are:

- 1T
- 2T (default)

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

- 4T
- 5T (default)

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

- 3T
- 4T (default)

DRAM write push to CAS delay - pertains to the number of cycles needed by DRAM to force the CAS to delay thereby matching the DRAM timing specifications. The available options are:

- 1T
- 2T (default)

PCI master accesses shadow RAM - enables the PCI master shadowing for improved performance. The available options are:

- Enabled
- Disabled (default)

GateA20 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 2 μ s or 6 μ s, and holding them for 25 CPUCLK. The available options are:

- Enabled (default)
- Disabled

Fast reset latency - defines the time (in microseconds) required for software reset. The available options are:

- 2 μ s (default)
- 6 μ s

16-bit I/O recovery time - used to specify the 16-bit I/O command recovery time except for some add-on cards that cannot work properly. It is recommended to set this option at a "low" value to enhance the I/O performance. The available options are:

- 2 BusClk
- 3 BusClk
- 4 BusClk
- 5 BusClk (default)

8-bit I/O recovery time - used to specify the 8-bit I/O command recovery time except for some add-on cards that cannot work properly. It is recommended to set this option at a "low" value to enhance the I/O performance.

- 3 BusClk
- 4 BusClk
- 5 BusClk
- 8 BusClk (default)

16-bit mem, I/O wait state - determines the number of wait states to be inserted to the 16-bit ISA I/O command. The available options are:

- 0 Ws
- 1 Ws (default)

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

- Enabled
- Disabled (default)

De-turbo switch - controls the software's turbo and de-turbo features.

- Always turbo (default)
- Enabled

AT bus clock frequency - specifies the speed of the AT Bus clock of the system. The available options are:

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

PCI clock frequency - selects the timing of the PCI Bus clock.

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

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

- 1T (default)
- 2T

Latency for CPU to PCI write - pertains to the delay time before the CPU writes data into the PCI Bus. The available options are:

- 1T (default)
- 2T

CPU to PCI burst memory 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 to 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)

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

- 2T
- 3T (default)

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

- Enabled
- Disabled (default)

PCI Devices

Selecting the Advanced Chipset Control from the Advanced System Setup main menu displays the following screens. The actual features displayed depend on the capabilities of your system's hardware.

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.	
PCI Devices	
Base I/O Address:	[3000]
Base Memory Address:	[0000000000]
Multimedia mode:	[Disabled]
Parity: (Which)	[Disabled]
PCI Interrupt 1 set to:	[None]
Edge/Level Select:	[LEVEL]
PCI Interrupt 2 set to:	[None]
Edge/Level Select:	[Level]
PCI Interrupt 3 set to:	[None]
Edge/Level Select:	[Level]

F1 Move	ESC Exit	FgUp Previous Value	F5 Previous Configuration
	F1 Help	FgDn Next Value	F6 Default Configuration

Figure 4-12. PCI Devices Screen 1

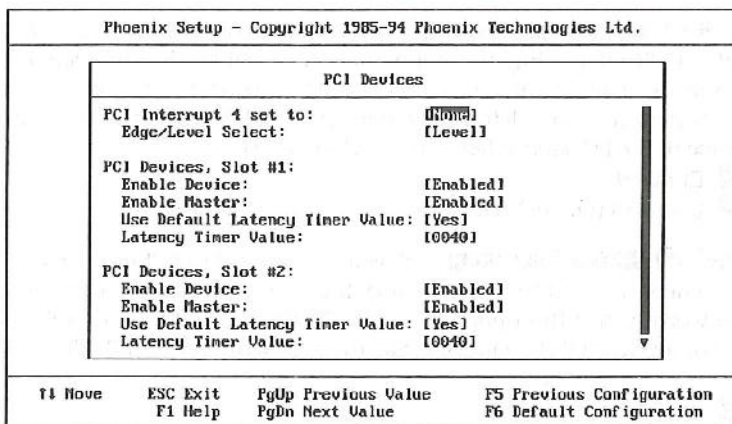


Figure 4-13. PCI Devices Screen 2

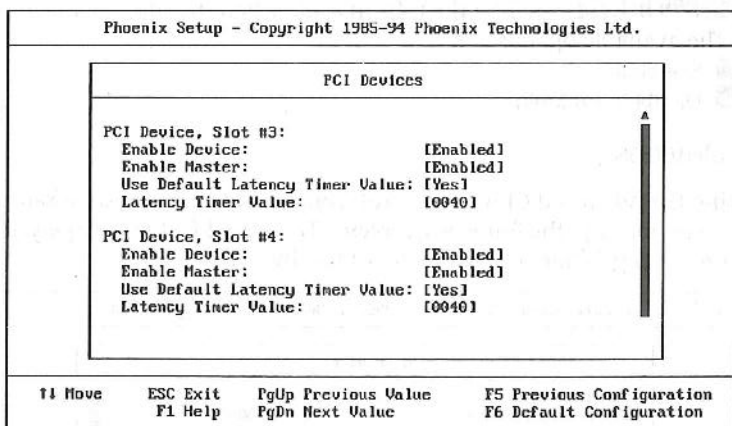


Figure 4-14. PCI Devices Screen 3

Base I/O Address - refers to the base of I/O address ranges from which the PCI device resource requests are satisfied.

Base Memory Address - pertains to the base of 32-bit memory address range from which the PCI device resource requests are satisfied.

Multimedia mode - enables or disables palette snooping for multimedia card.

Parity - enables or disables the parity checking.

PCI Interrupt 1/2/3/4 set to - program the IRQ associated with PCI Interrupt 1, 2, 3 and 4. The available IRQs are 3/5/7/9/10/11/14/15 and None (default)

Edge/Level Select - programs the PCI IRQ to single edge or logic level. Level/Edge sensitivity is programmed per controller. Every IRQ input for a given bank is either "EDGE" or "LEVEL" (default) triggered.

Note: When a PCI IDE add-on card is installed onto the main-board, it will require the user to plug the card onto a daughter board and to set this option to "EDGE" triggered.

PCI Device, Slot #1/#2/#3/4#:

Enable Device - enables the I/O and memory cycle decoding.

- Disabled (default)
- Enabled

Enable Master - enables selected device as a PCI bus master and checks whether the PCI card is a master or not.

- Disabled (default)
- Enabled

Use Default Latency Timer Value - determines whether or not the default value for the Latency Timer will be loaded or the succeeding Latency Timer Value will be used. If set to "Yes", no further programming is needed in the Latency Timer Value option.

- Yes (default)
- No

Latency Timer Value - pertains to the maximum number of PCI bus clocks that the master may burst. The available options are:

- 0040 (default)
- 0000 - 00F8

4.5 Boot Options

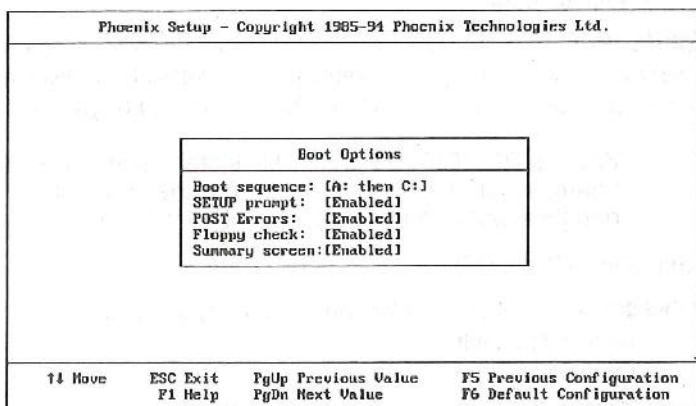


Figure 4-15. Boot Options Screen

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

- A: then C: (default)
- C: then A:

SETUP prompt - displays the message during boot-up that gives you the chance to load the SETUP program. The available options are:

- Enabled (default)
- Disabled

POST Errors - activates the Power-On-Self-Test error messages to be displayed on the screen when detected. The available options are:

- Enabled (default)
- Disabled

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

Summary screen - enables (default) or disables the Summary Screen display. The Summary Screen describes the system H/W configuration.

4.6 Security Setup

Figure 4-16. Security and Anti-Virus Screen

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.		
Security Setup		
Supervisor Password is	Disabled	
User Password is	Disabled	
Set Supervisor Password	[Press Enter]	
Set User Password	Press Enter	
Password on boot:	[Disabled]	
Diskette access:	[Supervisor]	
Fixed disk boot sector:	[Normal]	
↑↓ Move F1 Help	Enter Set/Change Password ESC Exit	F5 Previous Configuration F6 Default Configuration

Supervisor Password Is - shows whether the supervisor password is enabled or disabled (default).

User Password Is - shows whether the user password is enabled or disabled (default).

Set Supervisor Password - requires a password when entering Setup. the passwords are not case sensitive. Pressing the <Enter> key will display a message requiring for the supervisor password which can be up to seven alphanumeric characters. This option also gives full access to the Setup menus.

Set User Password - Pressing the <Enter> key will display a message requiring for the user password which can be up to seven alphanumeric characters. This option also gives restricted access to the Setup menus and requires the setting of the Supervisor Password first.

Password on boot - determines whether the password is required on boot. The option needs the setting of the Supervisor Password. If Supervisor Password is set and this option is disabled (default), BIOS assumes that the user is booting.

Diskette access - restricts the use of floppy drives only to the supervisor when set as Supervisor (default). Also, choosing Supervisor for this option will require the setting of the Supervisor Password. Setting it as User allows access to the floppy drives at any time.

4.7 Green PC Feature

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.

Green PC Features

Power Saving Mode:	[Disabled]
System Doze Timer:	[20 sec]
System Standby Timer:	[15 min]
System Suspend Timer:	[10 min]
Hard Disk Standby Timer:	[Disabled]
VGA with Power Down feature:	[None]
Power Saving in Doze Mode:	[Save 1/2]
Power Saving in Standby Mode:	[Save 2/3]

Advanced Power Management Setup
System timer reload or stop clock break select

Suspend Switch Select:	[Enabled]
------------------------	-----------

↑↓ Move ESC Exit PgUp Previous Value F5 Previous Configuration
PgDn Next Value F6 Default Configuration

Figure 4-17. Green PC Features Screen 1

Phoenix Setup - Copyright 1985-94 Phoenix Technologies Ltd.

Green PC Features

APM SMI Function Support:	[Disabled]
VGA Access Detection:	[Disabled]

PN monitor IRQ1-IRQ15 Activity

IRQ3 (CON2):	[On]
IRQ4 (CON1):	[On]
IRQ5 (Alt. printer):	[On]
IRQ6 (Diskette):	[On]
IRQ7 (Printer):	[On]
IRQ9 (IRQ2 Redir):	[On]
IRQ10 (User defined):	[On]
IRQ11 (User defined):	[On]

↑↓ Move ESC Exit PgUp Previous Value F5 Previous Configuration
PgDn Next Value F6 Default Configuration

Figure 4-18. Green PC Features Screen 2

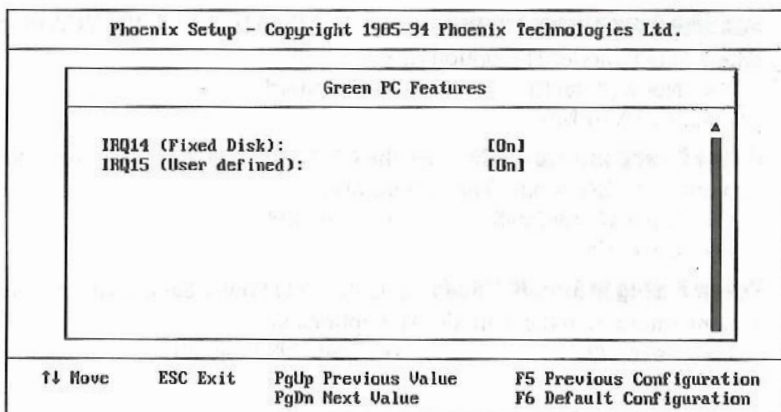


Figure 4-19. Green PC Features Screen 3

Power Saving Mode - enables or disables (default) the power saving mode feature of the chipset. Once enabled, the values of the following options can be set.

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

- 20 sec (default)
- 40 sec
- 1 min
- 90 sec
- 3 min
- Disabled

System Standby Timer - sets the time interval after system inactivity when the system enters STANDBY mode. The options are:

- 20 sec
- 1 min
- 5 min (default)
- 10 min
- 15 min
- 20 min
- 30 min
- Disabled

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

- 20 sec
- 1 min
- 5 min
- 10 min (default)
- 15 min
- 20 min
- 30 min
- Disabled

Hard Disk Standby Timer - sets the time interval after HDD inactivity when the HDD enters standby mode. The options are:

- Disabled (default)
- 1-15 min

VGA with Power Down feature - sets the method by which the VGA chip enters SLEEP mode. The options are:

- None (default)
- VESA DPMS
- Standard

Power Saving in Doze Mode - sets the CPU power Saving rate when system enters DOZE mode. The options are:

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

Power Saving in Standby Mode - sets the CPU Power Saving rate when system enters STANDBY mode. The options are:

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

Suspend Switch Select - enables or disables the function of Suspend Switch.

- Enabled (default)
- Disabled

APM SMI Function Support - enables APM Function control from Operating System(OS) APM Function.

- Enabled (default)
- Disabled

VGA Access Detection - The available options are:

- Enabled
- Disabled (default)

PM monitor IRQ1-IRQ15 Activity. (Switch the following parameters to on or off)

- IRQ3 (COM2)
- IRQ5 (Alt. printer)
- IRQ7 (Printer)
- IRQ10 (User defined)
- IRQ14 (Fixed Disk)
- IRQ4 (COM1)
- IRQ6 (Diskette)
- IRQ9 (IRQ2 Redir)
- IRQ11 (User defined)
- IRQ15 (User defined)

4.8 Load ROM Default Values

If, during bootup, the BIOS program detects a problem in the integrity of the CMOS, it will display a message asking you to either press the key to run Setup or the <F1> key to resume booting. This probably means that the CMOS values have been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS.

Press the <F1> key to resume the boot or to run Setup with the ROM default values already loaded in the menus. You can make other changes before saving the values to CMOS.

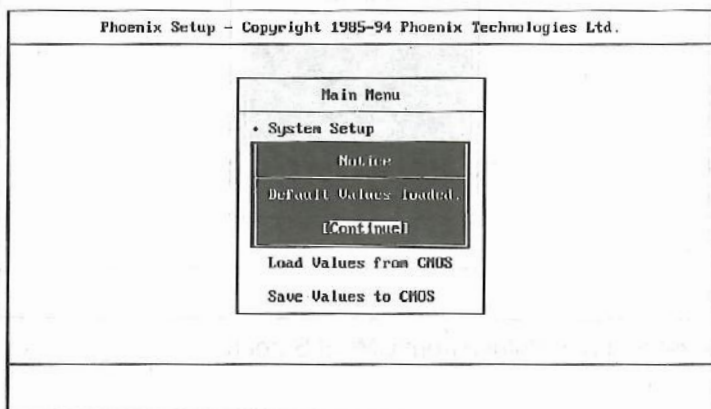


Figure 4-20. Load ROM Default Values Screen

4.9 Load Values from CMOS

If, during a Setup session, you change your mind about your selections and have not yet saved the values to CMOS, you can restore the values you previously saved to CMOS.

Select Load Values from CMOS on the Main Menu and the program will display the following screen.

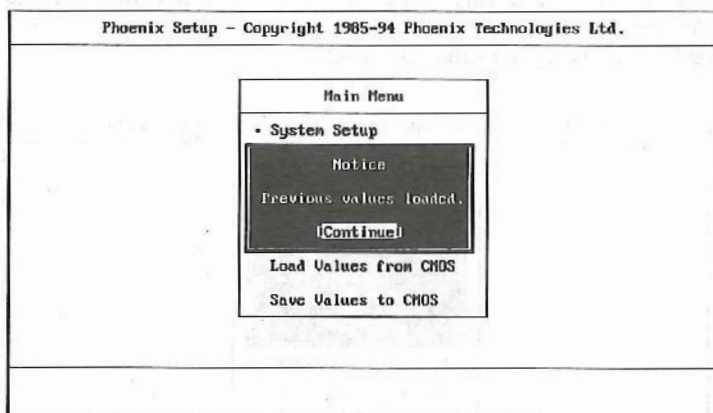


Figure 4-21. Load Values from CMOS Screen

4.10 Save Values to CMOS

After making your selections on the Setup menus, always select Save Values to CMOS in order to make them operative. Unlike standard RAM memory, CMOS RAM is sustained by an on-board battery and stays on after you turn your system off.

After you save your selections, the program will display the following screen.

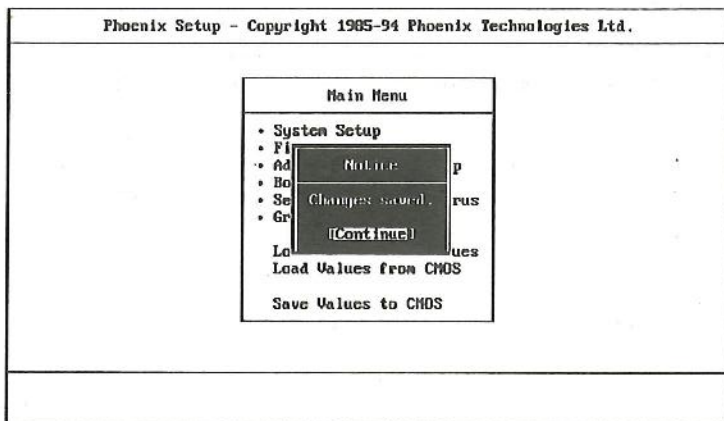


Figure 4-22. Save Values to CMOS Screen

If you attempt to exit without saving, the program will ask you if you would like to save the changes made before exiting.

During bootup, BIOS for the chipset attempts to load the values you saved in the CMOS RAM. If the values saved in the CMOS cause the system boot to fail, reboot and press the key to enter Setup. In Setup, you may load the ROM default values (as described in the section 4.8) or try to change the values that caused the boot to fail.

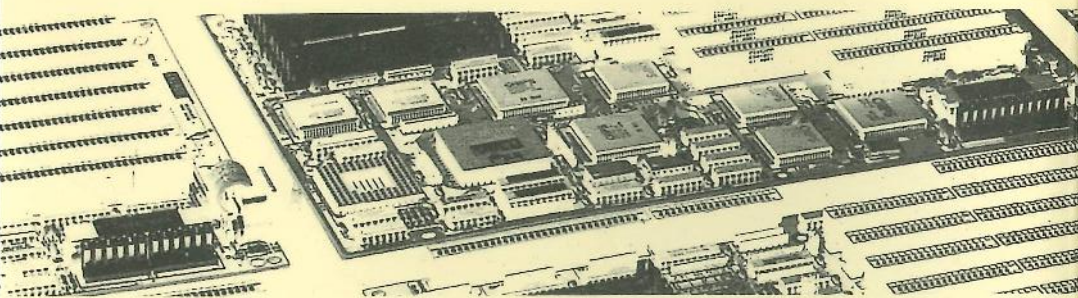
4.11 Quitting Setup

After making all modifications in the Setup program, go to the option "Save Values to CMOS" then press the <Enter> key or simply press the <F10> key. The screen will then display a message asking you whether you would like to save and exit or not.

Use the arrow keys or press <Y> for Yes then the <Enter> key to save your settings before exiting. Press <N> for No then the <Enter> key to exit without saving.

If you made changes to the CMOS values and then press the <ESC> key, the program will prompt you whether you would like to Quit without saving or not.

Press <Y> for Yes then the <Enter> key to quit without saving, or press <N> then the <Enter> key to save your settings first before exiting Setup.



40-012-819111
Version 1.1



RECYCLABLE

Addendum to **SI54P AIO** User's Manual (for Phoenix BIOS)

V1.1->V1.2

There are a number of pages on version 1.1 of the SI54P AIO (for Phoenix BIOS) User's Manual that have to be modified. The relative changes are as follows.

1. Modifications on page 1:

BIOS: Award



BIOS: Phoenix

2. Modifications on page 5:

The data SRAM column of table 2-2 (Second Level Cache Memory Configurations) on the top of the page 5 must be changed as below.

Data (U23-26) (U34-U37)
32Kx8 (3.3V)
64Kx8 (3.3V)
128Kx8 (3.3V)



Data SRAM (U23-U26, U34-U37)
32Kx8 (3.3V/5V) ☆
64Kx8 (3.3V/5V) ☆
128Kx8 (3.3V/5V) ☆

☆: Please refer to the Appendix A.

3. Modifications of page 6:

We added the Note 4 below to the bottom of page 6.

Note4: *If your SI54P AIO PCB version is v1.3 or after v1.3, the JP8 is removed. As for, the voltage controller is determined by the "Flash Utility" but not JP8.*

4. Add the Appendix A:

Appendix A

What kind of Data SRAM should you use ?

SI54P AIO mainboard supports either pure 3.3V data SRAM or 3.3V/5V mixed mode data SRAM. Using the wrong type of SRAM could cause severe damage to the mainboard. (Tag and dirty SRAM uses the 5V standard SRAM.)

The following descriptions help you to identify the SRAM type that your SI54P AIO supports.

- 1) PCB rev. 1.0 supports the pure 3.3V SRAM only.
- 2) PCB rev. 1.3 supports pure 3.3V SRAM if there is a label on the center area of PCB shows "PURE 3.3V SRAM ONLY."
- 3) PCB rev. 1.3 supports 3.3V/5V mixed mode SRAM if there is a label on the center area shows "3.3V/5V MIXED MODE SRAM ONLY."

■ Pure 3.3V SRAM list for reference:

UMC: 61L256-15 (32Kx8), 61L512-15 (64Kx8)
Alliance: AS7C3256-15 (32Kx8), AS7C3512-15 (64Kx8),
AS7C31024-15 (128Kx8)
Samsung: KH68V257P-17 (32Kx8)

■ 3.3V/5V mixed mode SRAM list for reference:

Winbond: W24M257AK-15 (32Kx8), W24M512AK-15 (64Kx8)
UMC: UM61M256-15 (32Kx8), UM61M512-15 (64Kx8)