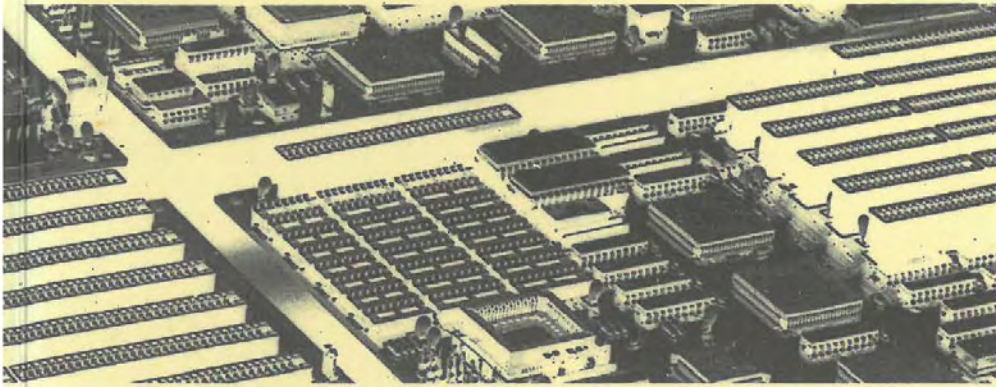
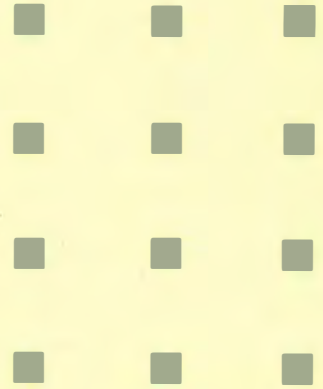


SA 486P AIO



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



INTRODUCTION

This manual has been designed to be useful in several purposes. If the SA486P AIO is already set up in a functioning system, it will be helpful to review the manual to become familiar with the features of the board and where things are. This will be helpful in the unlikely event there is a problem with the system.

For those who want to alter the board's configuration or to upgrade it, the manual will serve as a guide to both procedure and specifications. With the necessary information included in the manual, we recommend that unless you feel confident of your ability to do the work, it would be best to have your dealer or a local service shop do it. Before making alterations to the system, check to see that doing so will not violate the system warranty. If it does, have the work done by an authorized dealer.

IMPORTANT:

The chipset requires correct configuration information; otherwise a malfunction may result.

CAUTION:

Static electricity can cause serious damage to integrated circuit chips. To avoid building up a static electric charge on your body, touch a grounded object before touching the chips and at frequent intervals as you handle the chips. If chips are handed from one person to another, the two should touch hands first before passing the chips.

Information presented in this publication has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

Contact your dealer for warranty details.

Trademarks

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Appendix A Setting the System Speed

Chapter 1

Introduction

This chapter will cover the general specifications and features of the SA486P AIO.

1.1 General Specifications and Features

The mainboard has three major chipsets namely:

System Chipset :	Intel 82420 "SATURN" chipset
Multi I/O chip :	SMC 37C665 at bus multi I/O chip. (#661 temporary)
SACS chip :	NCR 53C810 PCI SCSI chip

Features

Processor:	80486SX/80486DX/80486DX2/80487SX/P24T
Chipset:	Intel 82420 "Saturn" chipset SMC FDC 37C665 super I/O controller NCR 53C810 PCI SCSI chip UM82C 865F I/O TTL integration
Memory Size:	DRAM Size 4 Banks of memory configuration that support memory from 2MB to 128MB
Cache Size:	256KB for 2 Banks (32K*8 20ns) 128KB for 1 Bank (32K*8 20ns)
Memory type DRAM:	For 72 pins SIMM socket double size
Slots:	Support three 16-bit ISA slots Support one share slot which including one 16-bit ISA slot and one PCI slot PCI3, please choose one slot only at the same time Support two PCI slots, one master and one slave or 2 slaves

■ Intel 82420 "SATURN" Chipset

S82424TX (CDC) Cache DRAM Controller

Features

- Supports 25/33 MHz Intel 486SX, Intel 487SX, Intel 486DX, Intel 486 DX2, OverDrive and P24T
- Fully Synchronous, 25/33 MHz PCI Bus Capable of Supporting Bus Masters
- Supports OverDrive Upgrade Socket
- Programmable Attribute Map for First 1MB of Main Memory
- Posted Write Buffers for Improved Performance
- Integrated DRAM Controller
- Integrated Cache Controller
- PCI Bridge

S82423TX (DPU) Data Path Unit

Features

- A 32-bit High Performance Host/PCI/Memory DATA Path
- Operates Synchronous to the CPU and PCI Clocks
- Dual-Port Architecture Allows Concurrent Operations on the Host and PCI Buses
- Burst Read of Memory from the Host and PCI Buses
- Host-to-Memory and Host-to-PCI Post Buffers Permit Zero Wait State Write Performance
- Byte Parity Support for the Host and Memory Buses
- Force Bad Parity to Memory Capability for Diagnostic Purposes

S82378IB System I/O

Features

- Provides the Bridge Between the PCI Bus and ISA Bus
- 100% PCI and ISA Compatible
- Enhanced DMA Functions
- Integrated Data Buffers to Improve Performance
- Integrated 16-bit BIOS Timer
- Arbitration for PCI Devices
- Arbitration for ISA Devices
- Utility Bus (X-Bus) Peripheral Support
- Integrates the Functionality of one 82C54 Timer
- Integrates the Functionality of two 82C59
- Non-Maskable Interrupts (NMI)

SMC 37C665 AT BUS MULTI I/O CHIP

Features

- 2.88MB Super I/O Floppy Disk Controller
- Hardware/Socket Compatible with FDC37C651 and FDC37C661 (Standard and Enhanced Parallel Port Modes)
- Enhanced Digital Data Separator
- Multi-Mode Parallel Port with Chipprotect Circuitry
- Serial Ports
- IDE Interface
- General Purpose 11 Bit Address Decoder

UM82C865 I/O TTL INTEGRATION

- It supports 2 serial ports without any additional TTL devices.

■ NCR 53C810 PCI SCSI CHIP

Features

- Supports variable block size and scatter/gather data transfers
- Supports 32-bit word data bursts with variable burst lengths
- Performs complex bus sequences without interrupts including restore data pointers
- Unique interrupt status reporting-reduces ISR overhead
- High-speed async/sync single-ended SCSI bus transfers
- 64-byte DMA FIFO
- Full 32-bit PCI DMA bus master
- Integrated SCRIPTS processor
- Allows tailored SCSI sequences to be executed from main memory or from a host adapter board
- Flexible sequences to tune I/O performance or to adapt to unique SCSI devices
- Accommodates changes in the logical I/O interface definition
- Low level programmability (register oriented).
- Allows a target to disconnect and later reselect with no interrupt to the system processor
- Allows a mulatto-threaded I/O algorithm to be executed in SCSI SCRIPTS with fast I/O context switching
- Allows relative jumps
- Allows indirect fetching of DMA address and byte counts so that SCRIPTS can be placed in a PRON
- Separate SCSI and system clocks

Chapter 2

Memory Configuration

In this chapter, the SA486P AIO DRAM configurations are discussed, followed by instructions for DRAM module installation and removal. Users are recommended to read through this chapter before installing or removing memory.

2.1 System Memory

The SA486P AIO DRAM provides tremendous flexibility to support a number of different on-board DRAM configurations. The on-board DRAM is installed with SIMM (Single-In-Line Memory Module). There are four banks of DRAM module capable of supporting 2MB up to 128MB of on-board memory.

The location and layout of all the memory is illustrated below and shown in Figure 3.1.



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

SIM 0.1	Type	SIM 2,3	Type	Memory Amount
256K*36	Single			2M
256K*36	Single	256K*36	Single	4M
256K*36	Single	512K*36	Dual	6M
256K*36	Single	1M*36	Single	10M
256K*36	Single	2M*36	Dual	18M
256K*36	Single	4M*36	Single	34M
256K*36	Single	8M*36	Dual	66M
512K*36	Dual			4M
512K*36	Dual	256K*36	Single	6M
512K*36	Dual	512K*36	Dual	8M
512K*36	Dual	1M*36	Single	12M
512K*36	Dual	2M*36	Dual	20M
512K*36	Dual	4M*36	Single	36M
512K*36	Dual	8M*36	Dual	68M
1M*36	Single			8M
1M*36	Single	256K*36	Single	10M
1M*36	Single	512K*36	Dual	12M
1M*36	Single	1M*36	Single	16M
1M*36	Single	2M*36	Dual	24M
1M*36	Single	4M*36	Single	40M
1M*36	Single	8M*36	Dual	72M
2M*36	Dual			16M
2M*36	Dual	256K*36	Single	18M
2M*36	Dual	512K*36	Dual	20M
2M*36	Dual	1M*36	Single	24M
2M*36	Dual	2M*36	Dual	32M
2M*36	Dual	4M*36	Single	48M
2M*36	Dual	8M*36	Dual	80M
4M*36	Single			32M
4M*36	Single	256K*36	Single	34M
4M*36	Single	512K*36	Dual	36M
4M*36	Single	1M*36	Single	40M
4M*36	Single	2M*36	Dual	48M

SIM 0.1	Type	SIM 2.3	Type	Memory Amount
4M*36	Single	4M*36	Single	64M
4M*36	Single	8M*36	Dual	96M
8M*36	Dual			64M
8M*36	Dual	256K*36	Single	66M
8M*36	Dual	512K*36	Dual	68M
8M*36	Dual	1M*36	Single	72M
8M*36	Dual	2M*36	Dual	80M
8M*36	Dual	4M*36	Single	96M
8M*36	Dual	8M*36	Dual	128M

2.1.1 DRAM Module Insertion

The SIMMs must be seated on the sockets as firmly as possible, and, because of the fragility of the slot, you must be careful when inserting or removing the module.

1. Align the module so that the pin 1 marking and corner notch of the module correspond to the SIMM socket pin 1 marking at the rear of the board. The module can fit in the socket one way only. Do not force it!
2. Push the module against the clip arms with your thumbs until a “clicking” sound is heard; the little plastic tabs appear in the latching holes on the RAM module board, and the clip arms fully grab the module board.

2.1.2 DRAM Module Removal

If possible, use a SIMM extraction tool; otherwise use the following method:

1. Carefully use your thumbs to bend outward the plastic tab ends on both sides of the slot.
2. The RAM module board will be automatically ejected off the clip arms.
3. Take it out of the socket.
4. Repeat steps 1 through 3 to release the other RAM modules.

Chapter 3

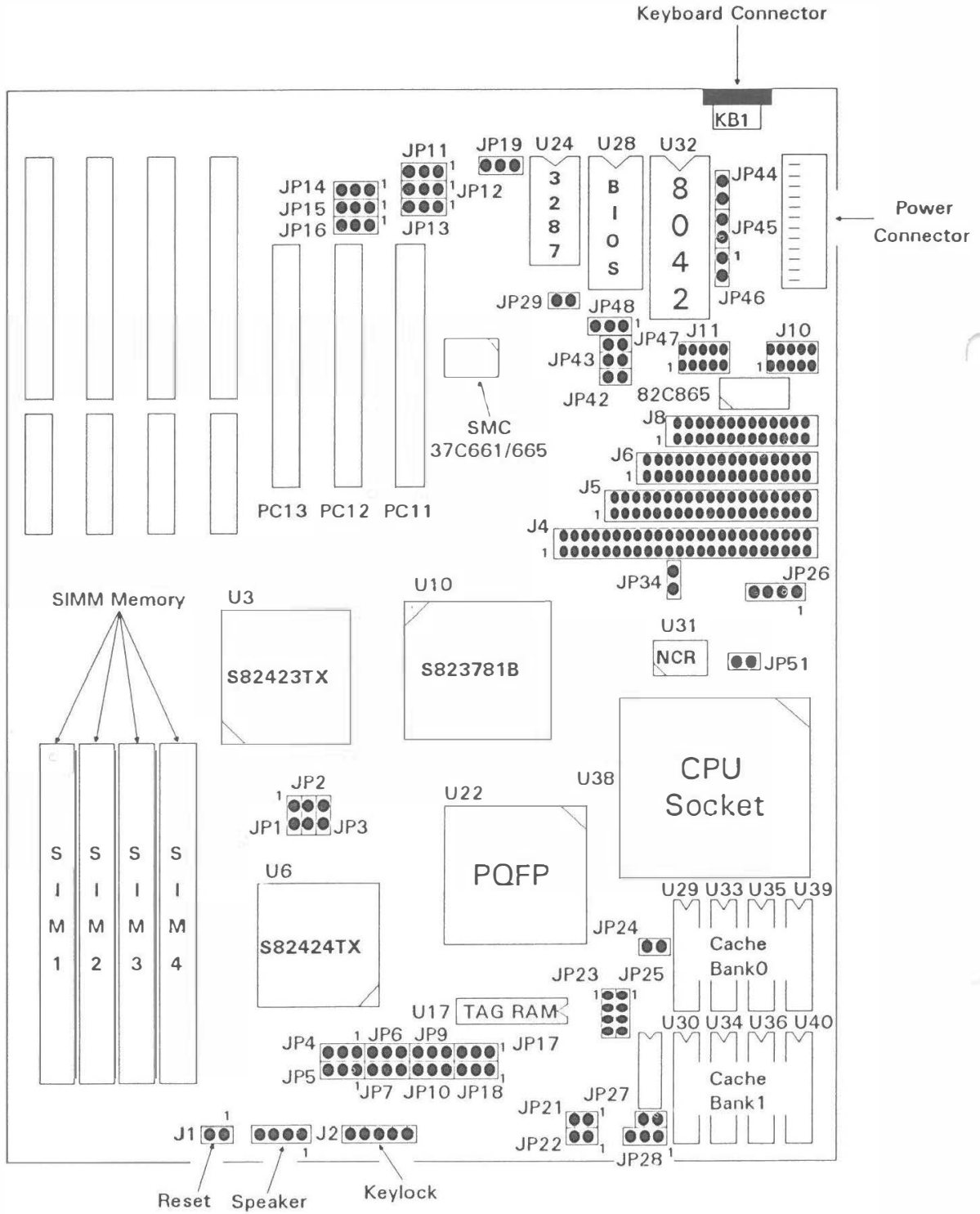
Jumper Settings and Connectors

This chapter will assist you in setting up the SA486P AIO before you install it in a system case. If your SA486P AIO has already been installed and you do not wish to change the configuration settings, you can skip over this section.

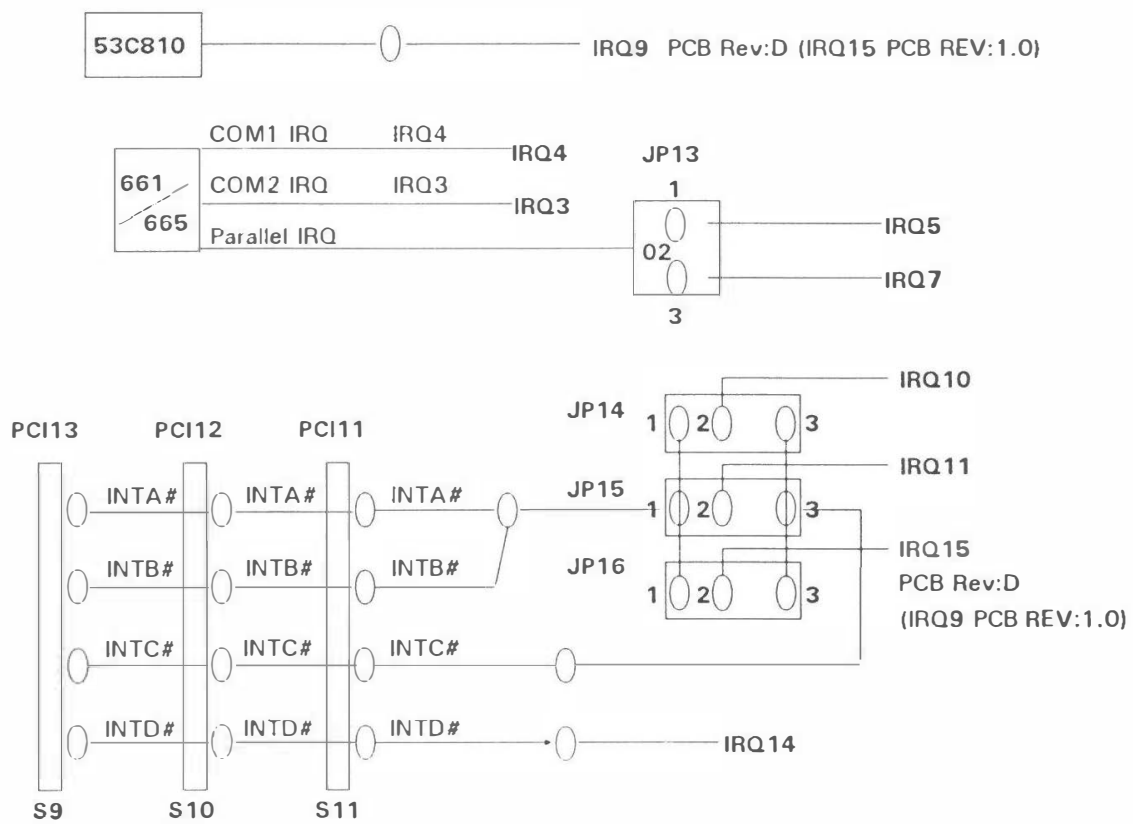
3.1 Jumper Settings

The SA486P AIO has several jumper switches that must be set to define a system configuration. These switches are 2-pin, 3-pin, 4-pin components on the main-board. They are turned off and on by placing or removing a cover cap over the pins. This is called a short or closed jumper. All jumpers must be set to one of the possible two settings.

Figure 3.1 on the following page shows the location of the jumpers and connectors.



IRQ Layout



- Note:**
1. INTD# is for IDE HDD IRQ (IRQ14).
 2. INTC# is reserved for those device that use IRQ but can not share with other device.
 3. INTA#, INTB# are reserved for those devices supporting shareable IRQ.

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The following table summarizes the function and settings of each jumper on the SA486P AIO.

Function		Jumper Settings
Type of CPU used	80486DX,DX2(PGA)	JP23 pins 3,4 short JP24 short JP25 pins 1,2 & 3,4 short JP51 short
	80486SX (PGA)	JP23 pins 2,3 short JP24 short JP25 pins 2,3 short JP51 short
	487SX (PGA)	JP23 pins 1,2 short JP24 short JP25 pins 1,2 & 3,4 short JP51 short
	ON-BOARD PQFP CPU	JP24 open
	P24T	JP23 pins 1,2 short JP24 short JP25 pins 1,2 & 3,4 short JP51 open
CPU Speed Selector	25MHz	JP2 open JP3 short JP1 short JP17 pins 2,3 short JP18 pins 2,3 short
	33MHz	JP2 open JP3 short JP1 open JP17 pins 2,3 short JP18 pins 1,2 short
P24T WB MODE	Enable	JP27 short
	Disable	JP27 open
BIOS	Flash ROM	JP19 pins 1,2 short
	EPROM BIOS	JP19 pins 2,3 short
EPP/EPC Support	SA10 Decode	JP29 short (default)
	DRQ3 DACK3	JP11 pins 2,3 short JP12 pins 2,3 short
	DRQ1 DACK1	JP11 pins 1,2 short JP12 pins 1,2 short

Jumper Settings and Connectors

Function		Jumper Settings
Cache Memory Size Setting	W/O External Cache	JP6 pins 2,3 short
	128K	JP4 pins 2,3 short JP5 pins 1,2 short JP6 pins 1,2 short JP7 pins 1,2 short JP9 pins 2,3 short JP10 pins 1,2 short JP21 open JP22 open
	256K	JP4 pins 1,2 short JP5 pins 2,3 short JP6 pins 1,2 short JP7 pins 1,2 short JP9 pins 2,3 short JP10 pins 1,2 short JP21 short JP22 short
Default		JP28 pins 2,3 short
SCSI TERMPWR	Use on-board	JP34 short
	Don't use on-board	JP34 open
MULTI I/O	Default	JP42 short JP48 pins 2,3 short
INTA#, INTB#	IRQ10	JP14 pins 1,2 short
	IRQ11	JP15 pins 1,2 short
	IRQ15	JP16 pins 1,2 short
INTC#	IRQ10	JP14 pins 2,3 short
	IRQ11	JP15 pins 2,3 short
	IRQ15	JP16 pins 2,3 short
Parallel Port IRQ	IRQ5	JP13 pins 1,2 short
	IRQ7	JP13 pins 2,3 short

Note: JP11, JP12, JP13, JP29, JP43, JP44, JP45, JP46, JP47 are reserved.

3.2 Connectors

There are several connectors located on the SA486P AIO. They are used to connect with some peripheral devices to enhance the operating performance of the system.

Refer to Figure 3.1 for the positions of all the connectors on the mainboard. Their functions are listed below.

Connector	Function
KB1	AT Keyboard Connector
JP26	IDE HDD LED Connector
J1	Reset Connector
J2	Speaker Connector
J3	Keylock Connector & Power LED
J4	SCSI Connector
J5	IDE HDD Connector
J6	FDC Connector
J8	Parallel Port Connector
J10	Com2 Port
J11	Com1 Port

Chapter 4

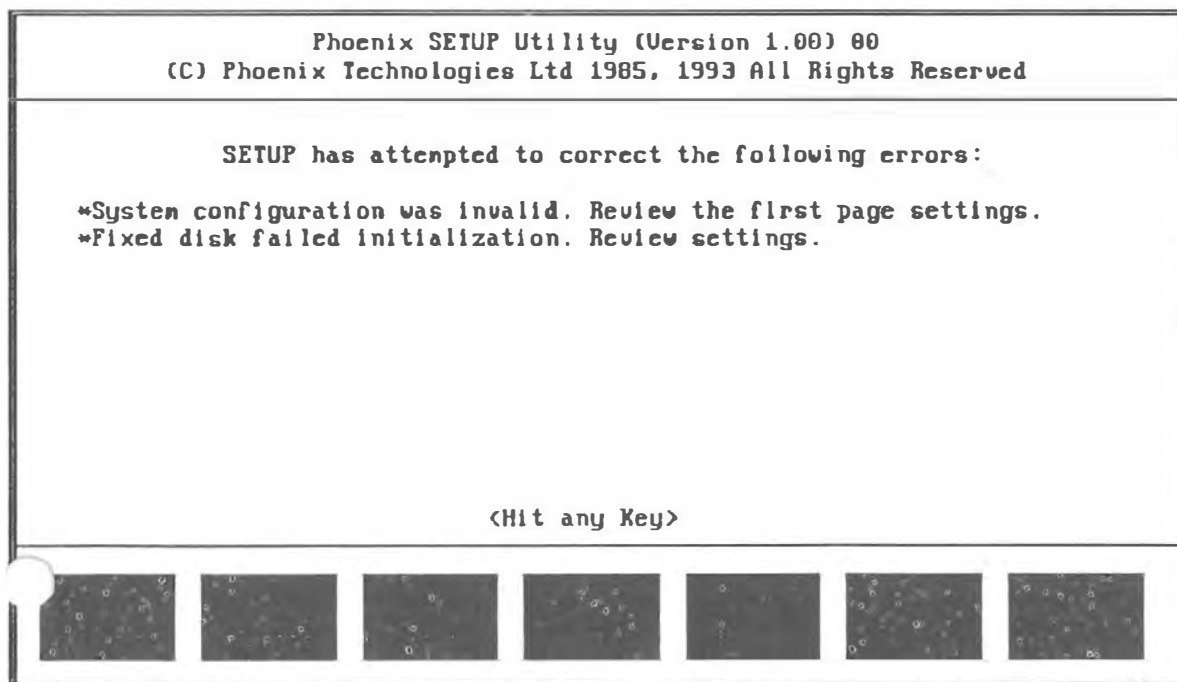
Built-in BIOS Setup Program

BIOS Setup Utility

Use the Phoenix BIOS Setup program to record changes in your hardware and to control its special features. The Setup program uses a number of menus in which you can specify the changes and turn the special features to on or off.

To display the BIOS Setup utility, take the following steps:

1. Turn on your system. The BIOS displays this message:
There is no device available. Press the <F1> key to retry boot, <F2> for setup utility:
2. Press the <F2> key and the following screen will appear.



Note: Pressing the <Ctrl> <Alt> <S> key combination during any stage of the system's operation will also allow access into the Setup utility program.

4.1 The Standard System Parameter

Upon hitting any key shown in the previous screen, the screen will automatically display the Standard System Parameters page as shown below.

Phoenix SETUP Utility (Version 1.00) 00 (C) Phoenix Technologies Ltd 1985, 1993 All Rights Reserved	
Page 1 of 4	
Standard System Parameters	
System Time: 12:52:20	Setup Password: Disabled
System Date: Aug 06, 1993	
Diskette A: 5.25", 1.2MB	
Diskette B: Not Installed	
Hard Disk 1: Not Installed	
Hard Disk 2: Not Installed	
Base Memory: 640KB	
Extended Memory: 35840 KB	
Video Card: EGA/UGA	
Keyboard: Installed	
CPU Speed: Fast	NumLock on at boot: Yes
Esc Menu	F1 Help
F2 Sys Info	+↑↓+ Fields
	+/- Value
	PgUp/PgDn Page

Select an item by moving the highlight with your <Up> and <Down> arrow keys and press the <+> and <-> keys to scroll forward/backward to the selections of each item.

Pressing the <F1> key will provide you with the on-line help with the current screen displayed. Pressing the <ESC> key will display a different menu giving the options of continuing with Setup <ESC>, saving the values then exiting and rebooting the system <F4>, loading the default values for all the pages of the Setup utility program <F5>, and aborting Setup without saving the values <F6>. Hitting the <F2> key will show the system information. This screen is for viewing purposes only, no modifications are allowed.

4.2 PCI Device Configuration

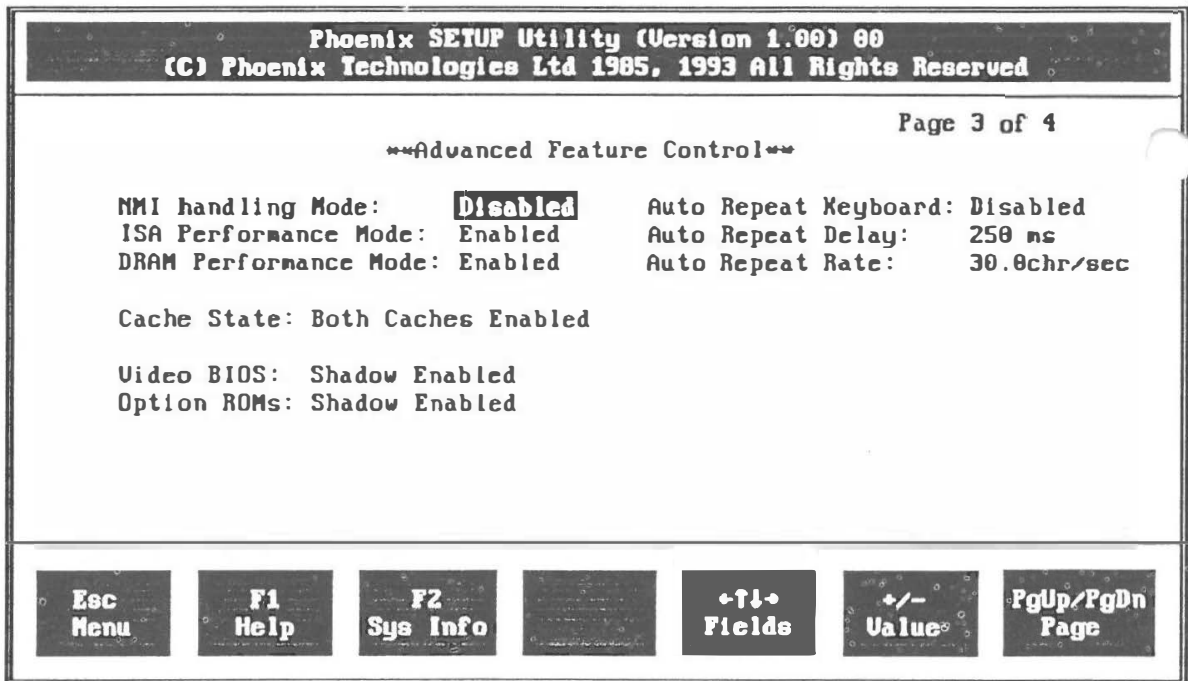
Once the modifications on the Standard System Parameters are done, press the <PgDn> key and the PCI Device Configuration screen will appear as shown below.

Phoenix SETUP Utility (Version 1.00) 80 (C) Phoenix Technologies Ltd 1985, 1993 All Rights Reserved					
PCI Device Configuration					Page 2 of 4
Parity Checking:	Disabled	NCR SCSI	IRQ:	None	
I/O Address:	D00h	PCI Slot 1	IRQ:	None	
Memory Address:	B0000000h	PCI Slot 2	IRQ:	None	
		PCI Slot 3	IRQ:	None	
Device Select:	NCR SCSI				
Latency Timer:	Default				
Enable Device:	Disabled				
Enable Master:	Disabled				
Esc Menu	F1 Help	F2 Sys Info	←↑↓→ Fields	+/- Value	PgUp/PgDn Page

Note: *The contents of this menu depends on the chipset installed on your mainboard. Consult your dealer or the <F1> help screens before changing any of the items. If you set them incorrectly, they may cause the system to malfunction.*

4.3 Advanced Feature Control

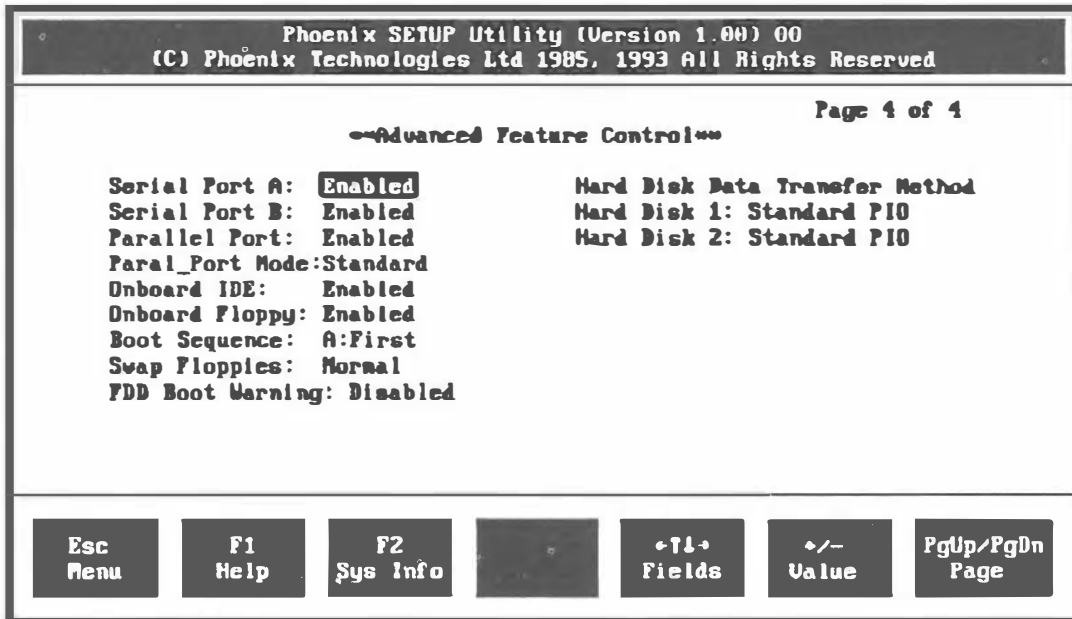
Press the <PgDn> key after modifying the settings in the PCI Device Configuration screen and the third page of the program, the Advanced Feature Control's first menu, will be displayed on the screen.



Note: *The contents of this menu depends on the chipset installed on your motherboard, and chipsets vary widely. Consult your dealer or the <F1> help screens before changing the items on this menu. If you set them incorrectly, they may cause your system to malfunction.*

Built-in BIOS SETUP Program

To enter the Advanced Feature Control's second menu, simply press the the <PgDn> key again after modifications are done on the first menu and the screen will show the following screen.



When saving the new values, press the <ESC> until a pop-up menu appears on the right side of the screen. Press the <F4> key to save the changes made and the system will automatically exit the Setup utility program and reboot.

Chapter 5

Device Drivers Installation

5.1 DOSCAM.SYS Installation Procedure

1. Use the COPY command to copy the appropriate driver from the SDMS SCSI Drivers diskette to your hard drive.
2. Add the following line to your CONFIG.SYS:

```
Device=C:<Path>DOSCAM.SYS
```

Important : *If the computer system is using the DOS HIMEM.SYS and EMM386 memory managers, the device drivers should be listed before these entries.*

For example, the line "Device=C: < Path > EMM386.EXE" must come after the device drivers in your CONFIG.SYS. Listed below is the proper ordering sequence.

```
Device=C:<Path> HIMEM.SYS  
DOS=High,UMB  
Device=C:<Path> DOSCAM.SYS  
Device=C:<Path> EMM386.EXE
```

Note : *The Device Drivers Diskette bundled with the SA486P AIO mainboard contains the README text file which provides a detailed description of the installation procedure.*

5.2 SCSIDISK.SYS Installation Procedure

1. Use the COPY command to copy the appropriate driver from the SDMS SCSI Drivers diskette to your boot drive.
2. Add the following line to your CONFIG.SYS:

```
Device=C:<Path> SCSIDISK.SYS
```

Important : *If the DOSCAM driver is also desired, list the drivers in your CONFIG.SYS in the following sequence:*

```
Device=C:<Path> DOSCAM.SYS
```

```
Device=C:<Path>SCSIDISK.SYS
```

Note : *The Device Drivers Diskette bundled with the SA486P AIO mainboard contains the README text file which provides a detailed description of the installation procedure.*

5.3 CDROM.SYS Installation Procedure

1. Use the COPY command to copy the appropriate driver from the SDMS SCSI Drivers diskette to your boot drive.
2. Add CDROM.SYS to your CONFIG.SYS file. It comes after DOSCAM and SCSIDISK (if these drivers are also being used) in the following order:

```
Device=C:<Path>DOSCAM.SYS
```

```
Device=C:<Path> SCSIDISK.SYS
```

```
Device=C:<Path> CDROM.SYS /D:NAME
```

Important : *The /D: is not a drive letter designation; it indicates the name you wish assigned to your CD-ROM. The NAME must be included and can be of any combination with 8 characters.*

3. Add the MS-DOS LASTDRIVE command to the CONFIG.SYS file.

```
LASTDRIVE=x
```

with "x" specifying a drive letter in the range C through Z.

4. Microsoft's CD-ROM Extension (MSCDEX.EXE) should be executed from the AUTOEXEC.BAT file in order to access your drive. Add the following line to your AUTOEXEC.BAT file:

MSCDEX /D:NAME

For example, if the line "Device=C:<Path> CDROM.SYS /D:MY_CD" is in the CONFIG.SYS, then the line "MSCDEX /D:MY_CD" should also be in the AUTOEXEC.BAT file.

Note : *The Device Drivers Diskette bundled with the SA486P AIO mainboard contains the README text file which provides a detailed description of the installation procedure.*

5.4 ASPICAM.SYS Installation Procedure

1. Use the COPY command to copy the ASPICAM.SYS driver from the SDMS SCSI Drivers diskette to your boot drive.
2. Add ASPICAM.SYS to your system's CONFIG.SYS file after DOSCAM. The lines in your CONFIG.SYS file might look like the following:

Device=C:<Path> DOSCAM.SYS

Device=C:<Path> ASPICAM.SYS

Note : *The Device Drivers Diskette bundled with the SA486P AIO mainboard contains the README text file which provides a detailed description of the installation procedure.*

5.5 Windows 3.0 & 3.1 Installation Procedures

NCR SCSI drivers are compatible with Windows 3.0 and 3.1. Additional drivers or configuring are no longer needed.

5.6 Netware 3.1 Installation Procedure

Install Netware as explained in the Novell Netware 386 Installation Manual. The following information is provided to assist in the installation.

1. Use the COPY command to copy the DOS device driver from the SDMS SCSI Drivers diskette to your boot drive. The DOS device drivers are DOSCAM.SYS and SCSIDISK.SYS.

2. Modify your CONFIG.SYS file on the boot disk by adding the following lines at the bottom:

```
Device=C:<Path>DOSCAM.SYS
```

```
Device=C:<Path> SCSIDISK.SYS
```

3. Create a directory called NET311. Copy into this directory the files SCSI_DSK.DSK, SCSI_SIM.NLM, and SCSI_XPT.NLM from the SDMS Device Drivers diskette.

4. Copy all the files from the Netware system disks into the NET311 directory.

5. Reboot the computer from the hard disk drive. To start the server program, type:

```
SERVER..... <Enter>.
```

6. When prompted, enter the name of the file server. See the chapter on file server installation in the Netware Installation Manual for restrictions.

7. At the Netware prompt, type:

```
Load SCSI_DSK.
```

This command will cause all the drivers to be listed.

8. To bring up the installation menu, at the Netware prompt type:

```
Load INSTALL.
```

Continue with the installation according to the file server installation chapter in the Novell Netware Installation Manual.

Note : *The Device Drivers Diskette bundled with the SA486P AIO mainboard contains the README text file which provides a detailed description of the installation procedure.*

Appendix A

Setting the System Speed

There are two methods to select the system processing speed. You can change the speed during operation while you are working with your application program.

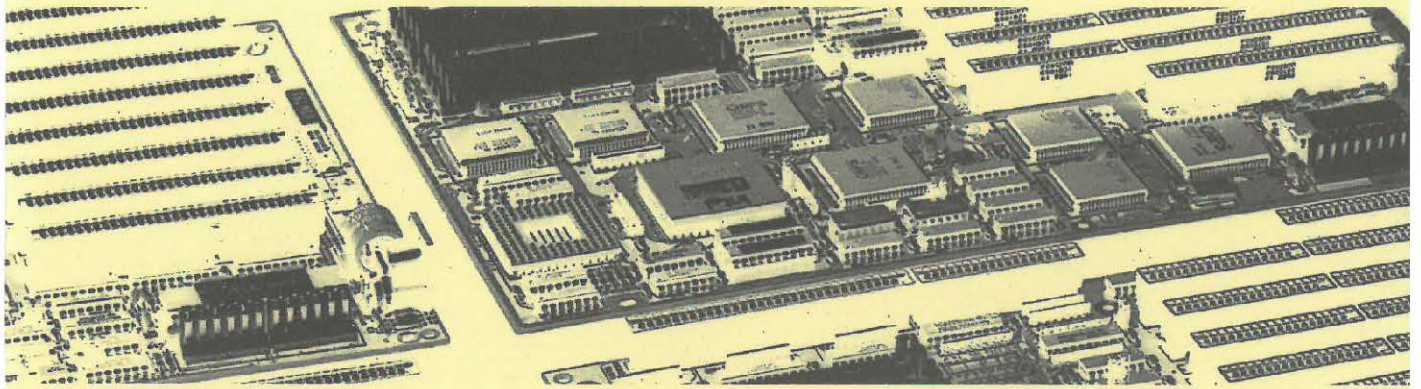
■ High Speed



■ Low Speed



* "+" means one must press the keys simultaneously.



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