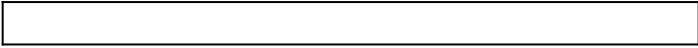# 54CDP

Pentium EISA/PCI System Board

USER'S MANUAL

Revision 1.0

PREFACE

Thank you for purchasing the 54CDP system board. This document will aid you to properly configure and install this system board. The document is prepared with our best knowledge; however, we make no representation or warranty concerning the contents or use of this manual, and specifically disclaim any expressly implied warranties or merchant ability or fitness of any particular purpose. The information in this document is subject to change without notice.

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- . Microsoft is a registered trademark of Microsoft Corporation.
- . PCI is a registered trademark of PCI Special Interest Group.
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Technical References

- . Pentium^tm Microprocessor Family User's Manual.
  (Intel Order No: 241428,241429,241430)
- . Intel 82430 PCIset Cache/Memory Subsystem.
  Intel 82430 PCIset EISA Bridge
  (Intel Order No: 290478-003, 290476-003)
- . The Adaptec AIC-7870 PCI SCSI Controller Data Book.
- . The SMC FDC37C665 Super I/O Controller Data Book
- . The Peripheral Component Interconnect (PCI) Specification
- . The EISA Specification published by:
  BCPR Services, Incorporated

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

PRODUCT OVERVIEW

The 54CDP system board represents a powerful combination of performance, quality, and innovative system board design to address the needs of today's high performance systems. Supporting Symmetrical Multi-Processor (SMP) Architecture with Dual Pentium 90/100MHz 64-bit Microprocessor with built-in 16KB of very high speed Cache Memory as Central Processing Unit (CPU), optional 256K/512KB external Level 2 fast write-back Cache Memory, and coupled with a BURST 64-bit bus DRAM Memory, the board brings an exceptional processing power that only achieved by Mainframe or Supermini-Computer to Personal Computer (PC) systems. To speed up I/O throughput, the board also incorporates the new emerging industrial standard 32-bit Peripheral Component Interfacing (PCI) Local Bus, the 32-bit Extended Industrial Standard Architecture (EISA) expansion bus. Built-in Fast and Wide PCI-to-SCSI ports, high performance I/O ports, that all together, the board dramatically boost system I/O throughput and expandability for even the most demanding application in today market.

Features

CPU Support

- Dual socket for Dual Intel Pentium 90/100MHz and Pentium Overdrives. Built-in 16KB or fast Cache Memory per CPU and Advanced Peripheral Interrupt Controller (APIC) for Symmetrical Multi-Processor support.

Cache Memory

- Supports 256K and 512K Fast External Write-back Cache memory.

System Memory DRAM

- 4 Banks of Memory that support 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36, 8Mx36, 16Mx36, 32Mx36 72-pin SIMMs.
- Up to 512MBytes on-board memory.

System BIOS

- 1024KB of AMI BIOS with Built-in Window CMOS Setup and Configuration Utilities and firmware for Built-in PCI-to-SCSI Controller.

System Chipset

- Intel Neptune^{tm} Pentium-to-PCI/EISA Chipset. Provides perfect PCI/EISA compatibility.

PCI/EISA Bus

- Three 32-bit PCI bus slots. Fast and Wide SCSI Ports also interface to PCI bus.
- Five EISA slots. All five slots support EISA bus mastering.

SCSI Ports

- Supports 8-bit Fast SCSI-2 Port for data transfer rate up to 10MB/s. (Single Ended Active Termination)
- 16-bit Fast and Wide SCSI-2 Port for data transfer rate up to 20MB/s. (Single Ended Active Termination)
- 32-bit PCI Local Bus interface with 128-byte data buffer for performance improvement.
- Based on Adaptec AIC-7870 PCI-to-SCSI controller chip that provide extensive drives supports for most of Operating System such as DOS, WINDOWS, WINDOWS NT, IBM OS/2, Novell Netware, SCO UNIX, UNIXWARE and other major operating systems.
- Supports Processor Programmed I/O.

- Multitasking ASPI manager for DOS.
- On-board BIOS supports boot capability, and 2 hard disk drives under DOS without a software driver.
- Supports wide range of both synchronous and asynchronous devices: disk, Tape, CD-ROM, WORM, DAT, and other SCSI peripherals.

Floppy Disk Controller Port:

- Fully IBM register set compatible.
- Supports up to two 3.5-inch or 5.25-inch floppy disk drives.
- Support Enhanced mode
- Supports up to two 3.5-inch or 5.25-inch floppy disk drives.
- Supports 360KB / 720KB / 1.2MB / 1.44MB / 2.88M densities.
- Floppy Disk Controller can be disabled via BIOS setup.

I/O Peripheral Ports:

- Supports two high speed Serial Ports with 16-bytes high performance FIFO buffers (16550-compatible) and one Parallel Port (EPP and ECP mode compatible).
- I/O ports can be selectively disabled via BIOS setup.

Real Time Clock and EISA Configuration RAM:

- BQ4287 or Dallas 1487 and a 8Kx8 low stand-by power consumption SRAM for EISA configuration CMOS.

Board Form Factor

- Standard XT form factor and mounting holes.

Product Specifications

Electrical

Power (System board only):   +5VDC +- 5%
                               8.0 Amps, max.

Environmental

Operating temperature (ambient): $O^0C/32^0F$ to $55^0C/131^0F$

Storage temperature $-20^0C/-4^0F$ to $70^0C/158^0F$

Operating Humidity: 10% to 90%
                                     (non-condensing)

Storage Humidity: 5% to 95%
                                     (non-condensing)

Dimensions

Width: 8.7 inches (221.0 mm)

Length: 13.07 inches (332.0 mm)

Interface Connections

Fast SCSI-2 Port   50-pin double-row connector

Fast and Wide SCSI-2 Port   68-pin micro-connector

Floppy Port   34-pin double-row connector

Two Serial Ports   10-pin double-row connectors

One Parallel Ports   26-pin double-row connectors

TECHNICAL OVERVIEW

Dual Pentium™ Microprocessor

The 54CDP supports Symmetrical Multi-Processor (SMP) Architecture with two Intel Pentium Microprocessors for Central Processing Unit (CPU). Symmetrical Dual-Processor CPU provides a processing power that almost double that of a single CPU. In Dual Processor system, the tasks of the application will be distributed to each CPU, and from there, each CPU will execute the tasks concurrently. Symmetrical Architecture ensures that systems and applications software execute the same regardless of the number of processors or the configuration of the I/O subsystem. In symmetrical Architecture, the system DRAM memory is shared by all processors, thus, all processors can execute a single copy of the OS kernel- that makes a multiprocessor system appear totally identical to a uniprocessor systems from the end-user's point of view. Symmetrical Architecture also provide symmetrical I/O that eliminate the bottleneck that normally seen on asymmetrical architecture systems.

Intel Pentium 90/100MHz Microprocessors, with built-in APIC, and a large on-chip 16KB of fast Cache memory, is the best choice that allows the simplified and less expensive implementation of Symmetrical Multi-Processor architecture on PC system board become reality. The microprocessor incorporates the following features:

- 16KB Internal Cache Memory in a 2-way 32-Byte Line Size. The Cache Memory is separated into two 8KB each for Data and Code for performance improvement.

- 32-bit Address and 64-bit Data interfaces

- 4 Gigabytes (Giga = 1,073,741,824) of physical address space

- 64 Terabytes (Tera = 2 to the power of 40) of virtual address space

- Binary Compatible with Large Software Base such as DOS, OS/2, UNIX, Windows, Netware, etc.,

- Advanced Design Features such as Branch Prediction, Virtual Mode Extensions

- Built-in 80387 Compatible high performance Floating-point Instruction Execution Unit.

Cache Memory

The increase in speeds of DRAM over the last few years have not kept pace with the increase in microprocessor speeds. This requires very fast and unavailable DRAMs or many wait states have to be inserted to the CPU memory cycles. System performance decreases as the number of wait states increases.

Cache memory is a small (so as not to greatly affect system cost) but can be accessed very fast. The code and data frequently accessed by the CPU normally is stored here. The Pentium Microprocessor has a built-in 16KB that separated into two 8KB of Code and Data Cache. When the Pentium accesses memory, it checks if data is in the cache memory and, if the data is there, it will get from there instead of go to much slower main system memory. This is a cache hit situation. It is possible that 95 to 99 memory accesses out of 100 memory accesses are cache hits depending on the application software.

An optional 256KB, or 512KB external write-back cache memory is provided on the 54CDP system board to achieve an even higher performance. This external cache requires eight pieces of 32Kx8 or 64Kx8 fast static RAM chips. With external cache memory, the memory hit rate of the system will be further improved so that the overall performance is higher. Please see Appendix section for system memory mapping with cached and non-cached locations.

Main System Memory (DRAM)

The main memory subsystem of the 54CDP consists of 640K of DRAM memory below 1 Mega Byte address space, 256K of I/O

ROM BIOS, 128KB of system BIOS ROM, and upto 511MB of extended system memory.

System ROM

The BIOS ROM is provided in a single 8-bit EPROM, which can hold up to 128KB of code and data. It is accessible at the top of the system's 4 GB memory address space and at the top of the first Megabyte of memory. The BIOS ROM support all PCI/EISA/ISA compatible features. In addition, Shadow RAM feature is provided to allow the BIOS code and VIDEO BIOS to be executed from 32-bit system DRAM resident at the same physical address. This feature significantly improves the performance in BIOS-call intensive applications.

The processor is reset when power is turned on or when the RESET switch is used. After RESET, the Pentium CPU is initialized to a known internal state and begins fetching instructions, out of the BIOS ROM, from the reset address FFFFFFF0. This address leads to the entry point of the power-on system initialization procedure stored in BIOS ROM. The BIOS system initialization procedure consists of the following functions:

- Power-on self-tests such as BIOS Check Sum Test, system DRAM Test, Battery- Backed CMOS RAM Test.

- Initializing all the standard compatible I/O components such as Interrupt Controllers (APIC and Intel 8259A register compatible), DMA Controllers (Intel 8237A register compatible), Keyboard Controller (Intel 8742 register compatible), Video Controller (CGA, EGA, VGA, etc..), System Timers (Intel 8254 register compatible).

- Initializing all the PCI/EISA/ISA add-on cards based on the information stored in the EISA CMOS, if the system is already configured previously.

- Built-in SETUP program, if allowed, is used for system configuration such as:

  . Day/Time setting

  . Selection for floppy disk and hard disk types

  . Shadow RAM, Cache Memory Enable, Disable options.

．	Auto Detect IDE Hard Drives

．	Virus Protection and Password for Security

Beside initializing the system, BIOS ROM also provides BIOS interrupt calls for such functions as video access, floppy disk access, printer access, etc...

DRAM control Logic

The DRAM control logic on the 54CDP system board is designed and optimized for the Pentium CPU. Unlike most other systems with a separate cache controller, the DRAM control logic is tightly coupled with the on-chip cache controller. When CPU address becomes available for a new memory cycle, both controllers operate in parallel. If the cycle is a read hit or a write hit, the cache controller will take control of the cycle while the DRAM controller stays in idle. If the cycle is a read miss, the DRAM controller will cooperate with the cache controller to generate appropriate cycles to write the data from the cache memory back to the system memory, if the cache data line is dirty, then read data from the system memory to the CPU and to update the cache memory. If the cycle is a write miss, the DRAM controller simply takes control to write the data to the system memory while the cache controller stays in idle. The DRAM controller and the system memory support the Pentium 128Byte-burst memory read cycles and fast-page mode cache write back cycles for the highest performance.

The Pentium on-board DRAM is configured in a 72-bit-wide arrangement consisting of 64 bits of data and 8 bits of parity. Each parity bit is directly associated with one of the 8 bytes in the 72-bit double long word.

The 54CDP system board supports 4 banks of by-36 SIMM DRAM memory on the system board. At least two SIMMs are required to have a system running at full 64-bit data path.

Shadow DRAM Feature

The 54CDP supports the Shadow DRAM feature which allows the BIOS ROM, VIDEO ROM, and I/O ROM codes to be

executed from the system DRAM resident at the same physical address space. Shadow DRAM feature significantly improves the system performance in BIOS-call intensive applications because executing code out of 64-bit DRAM is very much faster than from 8-bit of the EPROMs.

PCI/EISA/ISA Compatible Expansion Bus

The 54CDP system board has 3 32-bit PCI Expansion Bus connectors and 5 32-bit EISA/ISA Expansion Bus connectors for interfacing with all PCI and ISA/EISA compatible I/O, memory, and master adapters.

Introduction to PCI Local Bus

PCI is a electrical specification and logic requirement for a local bus standard, i.e. a multiplexed extension of the CPU bus. PCI defines a standard I/O component level interface that permits all PCI Local Bus products to be totally interchangeable and directly connected without using any glue logic.

What PCI Accomplishes

PCI is a way to physically interconnect highly integrated peripheral components and processor/memory systems.

PCI Features

- Up to 4 PCI loads can be used in the same system on the PCI expansion slots, not including the PCI Controller and an expansion bus controller for EISA, ISA, or MCA. PCI de-couples the CPU from the expansion bus and works at 33 MHz but can use either a 32-bit or 64-bit data connection path to the CPU is processor-independent.

- Has a multiplexed address, command, and data bus and supports burst mode operation on reads and writes.

- Runs synchronous with the CPU at speeds up to 33 Mhz, has a maximum data transfer rate of 120 MBs (with a peak rate of 132 MBs on a 32-bit data path).

- Has a maximum data transfer rate of 240 MBs (with a peak rate of 264 MBs on a 64-bit data path).

- Has an optional 64-bit data path that is transparently inter-operable with the 32-bit data path.

- Has low latency random accesses (about 60 ns write access latency) to slave registers from a PCI bus master on the PCI bus.

- Is capable of full concurrence with the processor and PCI bus masters.

- Has full multi-master capability, allowing any PCI Master peer-to-peer access to any PCI slave.

- Has hidden and overlapped central arbitration.

- Has a low pin count (master - 47; slave - 45),

- Has address and data parity, and uses three physical address spaces: 32-bit memory, 32-bit I/0, and a 256 byte-per-agent configuration space.

- The PCI Controller buffers reads and writes between the memory/CPU and PCI peripheral devices.

- The CPU in a PCI system runs concurrently with PCI bus mastering peripherals. Although bus mastering peripheral devices are arbitrated, significant data transfer rate improvements can be achieved without splitting resource utilization between the CPU and a bus mastering device. Peripheral devices can operate at up to 33 MHz in a PCI environment.

- PCI devices can be bus masters, slaves, or a combination of bus master and slave.

- The PCI specification also provides for burst mode of any length for both reads and writes.

- PCI is a multiplexed bus. Multiplexing allows more than one signal to be sent on the same electrical path. The control mechanisms have been modified and extended to optimize I/0 support.

- PCI components must be one of three classes: Bus master, Slave, or Master/slave combination.

Introduction to EISA BUS

The Extended Industry Standard Architecture(EISA) is a joint development effort by leading computer manufacturer to add 32-bit data transfer, 32-bit addressing and intelligent bus mastering capabilities to the original IBM PC AT Bus called Industry Standard Architecture(ISA) bus. Full compatibility with ISA bus is protected, i.e. all ISA cards can go into EISA slots.

EISA Features

- 32-bit addressing and data transfers

- Data transfer rates up to 33 MB/s.

- Intelligent Bus master support with multiple bus master arbitration.

- Interrupt sharing

- System automatic configuration

EISA connector has been specially designed to accommodate both ISA and EISA cards. The connector has 192 pins in a two-level arrangement. Upper level of contacts are ISA compatible and lower-level contacts are for EISA signals. Connector is keyed so that EISA cards can touch both levels of contacts.

For ease of use, EISA provides an automatic configuration facility with each EISA adapter having a manufacturer designated ID code. The ID code identifies the card type, allowing the set-up program to access a corresponding configuration file. Setup information is then written to system board battery backed CMOS RAM and to special I/O ports that can be addressed by physical slot number.

ISA Compatible Peripherals

The 54CDP system board provides the following standard peripherals:

- Enhanced DMA functions with seven independently programmable channel (Super set of Intel 8237A compatible DMA controller).

- Two 82C59A compatible Interrupt Controllers
- Five 82C54 compatible programmable interval timers
- One keyboard controller

CHAPTER 2: BOARD'S JUMPERS CONNECTORS

When working with the 54CDP, it is extremely important that you avoid Electrical Static Discharge (ESD). Always ground yourself by wearing a grounded wristband or ankle strap.

Figure 1 on the next page shows the component layout of the 54CDP system board with locations of the system board jumpers and connectors. Note that most jumpers and connectors on the system board are labeled with proper names with pin 1 marked as '**1**'. To avoid damaging the board and to have proper operation, caution should be taken when connecting these jumpers and connectors.

JUMPER DESCRIPTIONS

Jumpers are used to select between various operating modes. A jumper switch consists of two, three, or four gold pins projecting from the system board. Placing the plastic jumper cap over two pins connects those pins and makes a particular selection. Using the jumper cap to cover two pins in this way is referred to as shorting those pins. If the cap is not placed on any pins at all or placed on only one pin, this is referred to as leaving the pins open.

Note: When you open a jumper, leave the plastic jumper cap attached to one of the pins so you don't lose it.
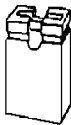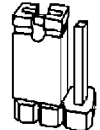
OPEN   SHORTED   PINS 1-2
                                    SHORTED

2-pin jumper   3-pin jumper

Figure 1: 54CDP Component Layout

Parallel Port Interrupt Jumper: JS6

Enhanced Floppy Jumpers: JS1, JS4

ECP Mode Jumper: JS5, JS7 &, JS8

CMOS Discharge Jumper: JS3

Holes for Plastic mountings or screws

J JS JS
JS5 J J5 J3
8 7 5 6 5

JS1

Keyboard Connector

Five 32-bit Bus Mastering EISA Slots

CO M2

CO M1

Power Connectors

FL P

PR

S I M M 4

S I M M 3

S I M M 2

S I M M 1

Four 72-Pin SIMM sockets support up to 128 Mbytes

Three 32-bit PCI local bus slots

Wide SCSI-2

SCSI-2

PCI 3

PCI 2

PCI 1

SCSI Port Selection Jumper: JS11

16 bits PCI Fast & Wide SCSI-2 Port

Adaptec AIC-7870P

J1 1

Intel S82374EB

Monitor Type Jumper: JS11

Intel S82433NX

3.3V External Power Connector

Intel S82375EB

Dual CPU Jumper: JS13

Flash BIOS Programming Mode Jumper: JS9

JS9

Secondary CPU

JS1 3 1

JS1 5

Intel S82433NX

Cache Memory Size Jumper: JS15

JS16

CPU Clock Frequency Jumper: JS18

BIOS

RTC CMOS

RESET

Intel S82434NX

Primary CPU

Cache Memory up to 512 KB

SPKR

TBS

I TBLE D

JS1 8

HDLE D

KLOC K

CPU Jumpers

CPU Clock Frequency Jumpers

The 54CDP supports both Pentium 90MHz and Pentium 100MHz. The jumper should be set corresponding to CPU speed.

Clock Frequency	JS18
90.0MHz	*OPEN*
100MHz	SHORT

Dual CPU Selection Jumpers

The 54CDP can be used with single Intel Pentium 90/100MHz microprocessor or with Dual Intel Pentium microprocessors. The jumper is set according to the number of CPU installed.

Clock Frequency	JS13
Single	*SHORT*
Dual	OPEN

Cache Memory Jumper

Cache Memory size Jumper

Two cache memory sizes are supported. The jumper is set according to the size of Cache Memory installed.

Cache Size	JS15
256K	*1-2*
512K	2-3

System Board Standard Jumpers

CMOS Discharge Jumper

The jumper JS3 is used to clear all information, including password, currently stored in the CMOS RAM. (BQ4287 on 54CDP board.). It is typically used when you forget the password that you selected previously and you cannot get into CMOS setup menu.

Function	JS3
Normal Operation (Default)	*OPEN*
Clear CMOS Data	SHORT

Monitor Type Select Jumper

This is PC/AT compatible jumper to inform the system BIOS that the graphic card installed is Mono-chrome type or Color type (EGA, VGA, CGA, etc.,.). Thus, the jumper should be set accordingly to the type of graphic card installed in the system.

Display Type	JS16
VGA, EGA, or Monochrome (Default)	*SHORT*
CGA	OPEN

Flash BIOS Programming Mode Select Jumper

This jumper is used to select the appropriate voltage supplied to the FLASH EPROM in Normal operation mode or Programming mode. Please refer to Programming the Flash BIOS instruction section for more detail information.

FLASH BIOS Function	JS9
Programming Mode	1-2
Normal Operating Mode (Default)	*2-3*

Peripheral Jumpers

SCSI Bus Width Select Jumper

The 54CDP supports both 8-bit and 16-bit data bus SCSI ports. Both of the connectors can be used at the same time because the SCSI controller firmware can detect the Bus size of the devices connected to the SCSI bus and generate appropriate data bus size cycles. This is specially useful because you can you concurrently SCSI Tape or CD-ROM devices that typically are 8-bit bus type and 16-bit hard drives.

SCSI Selection	JS11
Both 8-bit/16-bit Fast-Wide SCSI (Default)	*SHORT*
8-bit Fast SCSI	OPEN
16-bit Fast Wide SCSI	SHORT

Enhanced Floppy Mode Select Jumpers

The onboard Floppy Drive Controller supports both Normal and Enhanced Floppy mode. In Normal mode, two floppy drives are supported. In Enhanced Mode, up to four floppy drives are supported.

Enhanced Floppy	JS4	JS1
Normal (Default)	*OPEN*	*OPEN*
Enhanced	SHORT	2-3

Extended Capabilities Port (ECP) Jumpers

The onboard Parallel Port Controller supports PC/AT Compatible Mode (Normal mode), High Speed HP and Microsoft Compatible Extended Capabilities Port mode (ECP). In Normal mode, system CPU will handle data transfer from the FIFO buffers of the Parallel Port Controller to system memory. In ECP mode, to improve data transfer rate, system DMA will be used to handle the data transfer. (For more information about ECP mode, please refer to Extended Capabilities Port Protocol and ISA Interface Standard specification that is available from Microsoft Corporation)

ECP Mode	JS7	JS8	JS5
Normal Mode (Default)	*OPEN*	*OPEN*	*OPEN*
DMA 1 Selected	1-2	1-2	SHORT
DMA 3 Selected	2-3	2-3	SHORT

Parallel Port Interrupt Select Jumper

Interrupt for Parallel Port can be optionally set to IRQ7 or IRQ5 by this jumper.

Parallel Port Interrupt	JS6
IRQ7 for Parallel port. (Default)	*2-3*
IRQ5 for Parallel port.	1-2

CONNECTOR DESCRIPTIONS

Following is the list of 54CDP system board connectors required to be installed for proper system operation. For detailed descriptions of these components, please refer to the next section. To avoid damaging the board and to have proper operation, caution should be taken when connecting these components.

- Power supply connectors (PS1 and PS2)
- Keyboard connector (CN3)

- Reset connector (JC1)
- Power LED and keyboard lock connector (JC3)
- Speaker connector (JC6)
- Turbo Switch connector (JC4)
- Turbo LED connector (JC2)
- SCSI Harddisk Activity LED connector (JC5)

- Parallel Port connector (CN7)
- Serial Port 1 & 2 connector (CN4) (CN5)
- Floppy Interface connector (CN6)
- SCSI Interface connector (CN8 and CN9)

PC/AT Standard Connectors

Power Supply Connectors (PS1 and PS2)

The two Power Supply connectors (PS1 and PS2) are 6-pin AT standard power connectors. Most power supplies have two six-wire connectors, two of the wires on each connector are black. Align the two six-wire connectors so that the two black wires on each connector are in the middle as shown below.

Pin	Connector PS2	Connector PS1
1	Power Good	Ground
2	+5 VDC	Ground
3	+12 VDC	-5 VDC
4	-12 VDC	+5 VDC

Pin	Connector PS2	Connector PS1
5	Ground	+5 VDC
6	Ground	+5 VDC
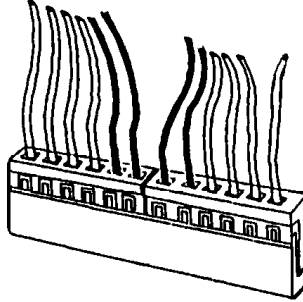
Keyboard Connector

The keyboard connector (CN3) is a 5-pin, circular-type DIN socket. It is used to connect the system board keyboard interface to any standard AT-compatible keyboard. (84 or 101 - key type keyboards). The pin assignments are listed below:

Pin	Description
1	Keyboard Clock Signal
2	Keyboard Data Signal
3	Not Used
4	Ground
5	+5V Fused VDC

Reset Connector

The system RESET connector (JC1) is a 2-pin BERG strip. It is used to connect the push button reset switch located on the front panel to the system board. System reset can be done by shorting pin 1 to pin 2 with the same effect as turning the power off and then on again.

Pin	Description
1	Reset Input
2	Ground

Power LED and Keyboard Lock Connector

The Power LED and Keyboard Lock connector (JC3) is 5-pin keyed BERG strip. It is used to connect +5 VDC power to the power indicator LED at the front panel and connect security keyboard lock to the keyboard controller. This allows you to switch off the keyboard and so provide limited security against casual intruders. The pin assignments are indicated below:

Pin	Description
1	LED Power
2	Key (No Connection)
3	Ground
4	Keyboard Lock
5	Ground

Speaker Connector

The Speaker connector (JC6) is a 4-pin keyed BERG strip. It is used to connect an external 2-inch, 8-ohm speaker to the system board to provide sound capability. The pin assignments are defined below:

Pin	Description
1	Speaker Data Out
2	Key (No Connection)
3	Ground
4	+5 VDC

Speaker Connection
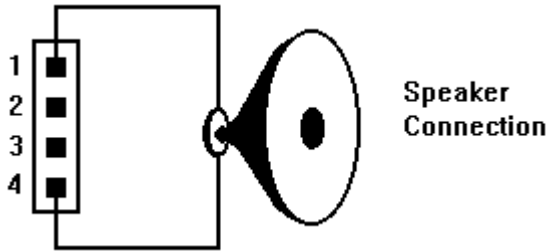
Turbo Switch Connector

The Turbo switch (JC4) is a 2-pin BERG strip. It is used to connect the front panel 2-position push switch to the system board speed switching circuitry. The Turbo mode is set as default on the 54CDP

Turbo LED Connector

The Turbo LED connector (JC2), marked as 'TB/LED', is a 2-pin BERG strip. It is used to connect a CPU operating frequency indicator LED from the front panel to the system board. The pin assignments are indicated below:

Pin	Description
1	LED Anode
2	LED Cathode

Hard Disk Activity LED Connector

The hard disk activity LED connector (label as JC5) is a 2-pin keyed BERG strip. The LED will be on whenever there is data transfer activity on on-board SCSI bus. The connector should be connected to the case's front panel hard disk LED.

Pin	Description
1	LED Anode (+)
2	LED Cathode (-)

Peripheral Connectors

Parallel Port Connector

The on-board parallel port connector (CN7) is a 2x13-pin male header connector. The On-board Parallel Port can be disabled through the BIOS Setup. Please refer to Chapter 3 "Peripheral Management Setup" section for more detail information. The pin assignment is shown below:

Pin	Description	Pin	Description
1	STROBE	14	AUTO FEED XT
2	Data Bit 0	15	ERROR
3	Data Bit 1	16	INIT
4	Data Bit 2	17	SLCT IN
5	Data Bit 3	18	Ground
6	Data Bit 4	19	Ground
7	Data Bit 5	20	Ground
8	Data Bit 6	21	Ground
9	Data Bit 7	22	Ground
10	ACK	23	Ground
11	BUSY	24	Ground
12	PE	25	Ground
13	SLCT	26	No Connection

The 54CDP's Integrated Parallel Port supports Extended Capabilities Port protocol (ECP) to provide a number of advantages for the parallel port as listed below:

- Use DMA channel 1 or 3 to transfer data across the Parallel port in both forward and reverse directions; therefore, processor time is saved for other tasks. This is especially important in multi-tasking operating systems such as the coming Windows Chicago.

- Peer-to-peer capability for networking.

    Single byte run length encoded (RLE) compression for improved throughput (64:1.)

Serial Port 1 & 2 Connectors

The Serial Port 1 and 2 connectors are the 2x5-pin male headers COM1 (CN4) and COM2 (CN5). Users should use a flex cable with a 9 or 25 -pin male D-subminiature receptacle at one end and a 2x5-pin female header at the other end to provide RS-232 serial interface. The On-board Serial Ports can be disable through BIOS setup. Please refer to Chapter 3 "Peripheral Management Setup" section for more detail information. The pin assignment for COM1/COM2 is defined below:

Pin	Description	Pin	Description
1	Carrier Detect (RLSD)	6	Receive Data (RXD)
2	Transmit Data (TXD)	7	Data Terminal Ready (DTR)
3	Signal Ground	8	Data Set Ready (DSR)
4	Request To Send (RTS)	9	Clear To Send (CTS)
5	Ring Indicator (RI)	10	No Connection

Floppy Interface Connector

The On-board Floppy Interface connector (CN6) is a 2x17-pin male header. This interface supports two 5.25" or 3.5" floppy drives in any combination and also can be disabled if no floppy drives are present on the system. The On-board Floppy Port can be disabled through the BIOS setup. Please refer to Chapter 3

"Peripheral Management Setup" section for more detail information.   Pin assignment is as follow:

Pin	Description	Pin	Description
2	RPM	1	Ground
4	No Connection	3	Ground
6	No Connection	5	Ground
8	Index	7	Ground
10	Motor 1	9	Ground
12	Drive 2	11	Ground
14	Drive 1	13	Ground
16	Motor 2	15	Ground
18	Direction	17	Ground
20	Step	19	Ground
22	Write Data	21	Ground
24	Write Enable	23	Ground
26	Track0	25	Ground
28	Write Protect	27	Ground
30	Read Data	29	Ground
32	Head Select	31	Ground
34	Disk Change	33	Ground

SCSI Interface Connectors

The 54CDP supports two SCSI Port connectors. The 2x25 pin header CN8 is for 8-bit Fast SCSI-2 interface. The 68-pin Female Miniature receptacle header CN9 is for 16-bit Fast and Wide SCSI-2 interface. The SCSI Ports can be disabled through BIOS setup. Please refer to Chapter 4 "Peripheral Management Setup" section for more detail information. Pin assignment of CN8 is as follow:

Pin	Description	Pin	Description
2	Data 0	1	Ground
4	Data 1	3	Ground
6	Data 2	5	Ground
8	Data 3	7	Ground
10	Data 4	9	Ground
12	Data 5	11	Ground
14	Data 6	13	Ground
16	Data 7	15	Ground
18	Data Parity	17	Ground
20	Ground	19	Ground
22	Ground	21	Ground
24	Ground	23	Ground
26	Terminator Power	25	Ground
28	Ground	27	Ground
30	Ground	29	Ground
32	Attention	31	Ground
34	Ground	33	Ground
36	Busy	35	Ground
38	Acknowledge	37	Ground
40	Reset	39	Ground
42	Message	41	Ground
44	Select	43	Ground
46	Command/Data	45	Ground
48	Request	47	Ground
50	In/Out	49	Ground

Pin assignment for 68-pin receptacle header CN9 is as follow:

Pin	Description	Pin	Description
35	Data12	1	Ground
36	Data13	2	Ground
37	Data14	3	Ground
38	Data15	4	Ground
39	Data Parity(8-15)	5	Ground
40	Data0	6	Ground
41	Data 1	7	Ground
42	Data 2	8	Ground
43	Data 3	9	Ground
44	Data 4	10	Ground
45	Data 5	11	Ground
46	Data 6	12	Ground
47	Data 7	13	Open
48	Data Parity(0-7)	14	Ground
49	Ground	15	Ground
50	Ground	16	Ground
51	Terminator Power	17	Terminator Power
52	Terminator Power	18	Terminator Power
53	Reserved	19	Reserved
54	Ground	20	Ground
55	Attention	21	Ground
56	Ground	22	Ground
57	Busy	23	Ground
58	Acknowledge	24	Ground
59	Reset	25	Ground
60	Message	26	Ground
61	Select	27	Ground
62	Command/Data	28	Ground
63	Request	29	Ground
64	In/Out	30	Ground
65	Data8	31	Ground
66	Data9	32	Ground

| Pin	Description	Pin	Description
67	Data10	33	Ground
68	Data11	34	Ground

CHAPTER 3: HARDWARE INSTALLATION

BUILDING A HIGH PERFORMANCE SYSTEM

The dimensions of the 54CDP system board are designed to fit perfectly in a PC/XT (or PC/AT) standard case. To build a complete high performance system based on the 54CDP system board, the following equipment are needed:

1. A chassis with dimension similar to PC/XT/AT standard chassis.
2. A standard AT 230W power supply which is capable to provide a continuous power within a +4.75 VDC to +5.25 VDC range. A power line filter may be needed for areas with noisy transmission.
3. A 2-inch, 8-Ohm speaker to provide sound capability.
4. A 2-position switch with a 2-pin connector for speed function.
5. A push button switch with 2-pin connector for reset function.
6. One or two floppy drives (360K/1.2M/1.44M/2.88M).
7. SCSI Hard disk drive or IDE hard disk drive with IDE hard disk controller.
8. Video card (Monochrome, CGA, EGA, VGA).
9. A video display monitor.
10. An AT-compatible keyboard (84 or 101 Keyboard).
11. Following additional peripherals will be useful to enhance the system:
    - A bus or serial mouse.
    - A tape back up drive.
    - A CD-ROM drive.
12. Cables
    - A set of flat cables for floppy drive and hard disk drive.
    - AC Power cable (Usually Comes with power supply in case)
13. Tools
    - Set of Screw drivers, Cutter, Pliers

CPU INSTALLATION

Care should be taken when installing the CPU into the Zero Insertion Force (ZIF) socket on the system board. Lift the handle of ZIF socket up. Place the Pentium processor into ZIF socket. No force should be required to insert the CPU. On Pentium processors pin 1 is with the square base and it goes to particular hole on the socket. Match the hole and pin one first and then easily insert the processor into socket. Press the handle gently down.

Pin No. 1

CPU
Socket
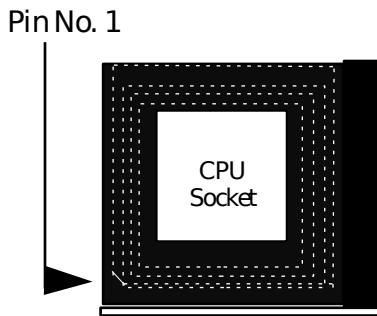
!! Important !!

Cooling fan installation

Mount the cooling kit with fan on top of the CPU. Connect power to fan from power supply. Make sure the cooling kit's bottom surface makes proper contact with top surface of CPU.

!! Warning !!

Manufacturer of the board or CPU is not responsible for damage to CPU because of improper handling during installation or cooling kit with fan is not used.

INSTALLING DRAM SIMMS

STOP — ***When working with DRAM SIMMs, it is extremely important that you avoid Electrical Static Discharge (ESD). Always ground yourself by wearing a grounded wristband or ankle strap.***

1. Power must be off while installing SIMMs.
2. The SIMM module should face to the right with pin 72 next to the power supply connectors.
3. Insert the SIMM at a 45 degree angle, tilted towards ISA slots.
4. Gently push the SIMM to an upright position until it "snaps" into place.
5. Repeat above steps until the entire bank is filled.
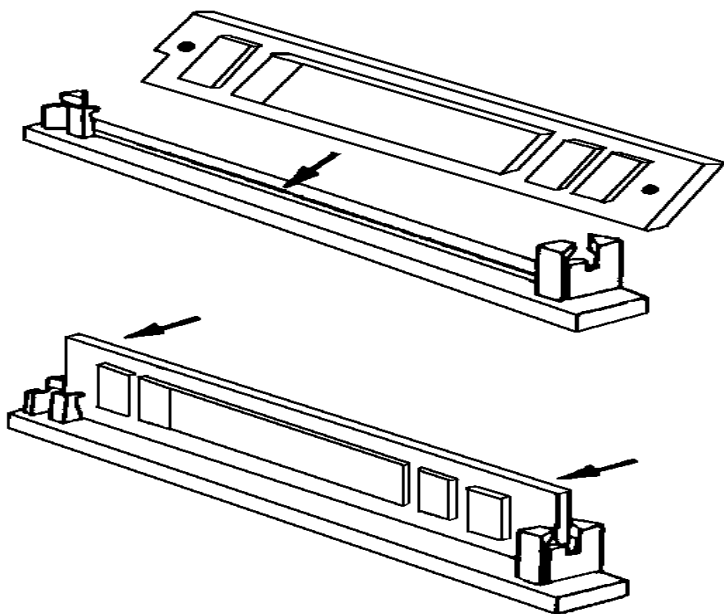
DRAM SIMMs Configuration

The on-board DRAM memory sub-system has four module mounting sockets which are divided into "banks" of two sockets each. Sockets labeled SIM1 and SIM3 constitute bank 0. Sockets labeled SIM2 and SIM4 constitute bank 1. They support 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36, 8Mx36, 16Mx36 and 32Mx36 DRAM SIMMs. DRAM speed must be 70ns or faster. You can configure the memory of the 54CDP in a variety of ways as follows.

Total Memory	SIM1 & SIM3	SIM2 & SIM4
2MB	256Kx36	None
4MB	256Kx36	256Kx36
6MB	256Kx36	512Kx36
10MB	256Kx36	1Mx36
18MB	256Kx36	2Mx36
34MB	256Kx36	4Mx36
66MB	256Kx36	8Mx36
4MB	512Kx36	None
8MB	512Kx36	512Kx36
12MB	512Kx36	1Mx36
20MB	512Kx36	2Mx36
36MB	512Kx36	4Mx36
68MB	512Kx36	8Mx36
8MB	1Mx36	None
16MB	1Mx36	1Mx36
24MB	1Mx36	2Mx36
40MB	1Mx36	4Mx36
72MB	1Mx36	8Mx36
16MB	2Mx36	None
32MB	2Mx36	2Mx36
48MB	2Mx36	4Mx36
80MB	2Mx36	8Mx36
32MB	4Mx36	None
64MB	4Mx36	4Mx36
96MB	4Mx36	8Mx36

Total Memory	SIM1 & SIM3	SIM2 & SIM4
64MB	8Mx36	None
128MB	8Mx36	8Mx36
128MB	16Mx36	None
144MB	16Mx36	4Mx36
192MB	16Mx36	8Mx36
256MB	16Mx36	16Mx36
256MB	32Mx36	None
512MB	32Mx36	32Mx36

Peripheral Device Connection

SCSI Device Connection

The 54CDP supports both 8-bit and 16-bit SCSI ports. If the SCSI devices of the system are regular 8-bit type, using the provided 50-pin cable to connect the SCSI devices such as hard drives, CD-ROM, etc.,. to the 50-pin double row connector CN8 on the board. Make sure the colored stripe on the cable (indicating the location of pin 1) matches Pin 1 of the connector on the mother board as well as Pin 1 of the SCSI devices' connectors.

If the SCSI devices of the system are 16-bit type, the optional Fast and Wide SCSI cable must be purchased to connect the devices to the Miniature receptacle connector CN9 on the system board. Note that to hook up the regular 8-bit external SCSI devices, the special extension connector card named QAX must be used. Contact your dealer of distributor to purchase this card. For 16-bit Fast and Wide external SCSI devices, the cables already has built-in external connector.

Terminate the endpoints of the SCSI bus.

The SCSI bus must be terminated correctly to ensure proper operation. The first and last physical SCSI devices on the SCSI cable must have terminators installed or enabled. All other

SCSI devices in middle must have terminators removed or disabled.

Terminators on motherboard are active type and enabled by default. To disable the onboard SCSI termination, use SCSI Select Utility built-in the SCSI firmware as described in later section.

Floppy Disk Drives Connection

The 54CDP supports to 2 floppy drives. The floppy ribbon-cable is provided with the system board. Using the cable to connect the floppy drives into 34-pin double-row connector CN6 on the board. Make sure the colored stripe on the cable (indicating the location of pin 1) matches Pin 1 of the connector on the mother board as well as Pin 1 of the floppy drives.

Serial Port and Parallel Port connection

The 54CDP motherboard is shipped with a set of ribbon-cable and mounting bracket for two Serial Ports and one Parallel Port. Connect the 10-pin double-row connectors of the ribbon cable to the 10-pin double row headers CN4 and CN5 on the motherboard. CN4 is for COM1 and CN5 is for COM2. You can optional select COM1 to the 9-pin external connector or to the 25-pin external connector accordingly to the connection. Parallel Port connection should be done through the 26-pin double row header CN7 on the motherboard. The external connectors bracket can be either mounted as is into regular I/O slot brackets or to the system case by removing the brackets.

Peripheral Add-on Card installation

The 54CDP support both PCI slots and EISA slots. You can install the corresponding add-on cards into any of these slots. Make sure these add-on cards' interrupts or DMA channels are not conflicted with each other. The best way to remember is writing down the information of all the installed cards into the back of this manual for later reference.

. PCI Add-on cards normally can be automatically configured by system BIOS during boot up. However, some PCI add-

on cards do have jumper setting for INTA or INTB. Write down the information if it is available for later reference.

. EISA Add-on cards can be configured automatically by EISA Configuration Utility (ECU); thus, you only need to write down the slot number that the card installed into.

. ISA Add-on cards' memory mapping, interrupt level, or DMA channels are normally configured by jumper settings or switches and they cannot be detected during running configured by ECU. You should write down the information of the cards in detail for later reference.

Please refer to the manuals shipped with the add-on cards for more information. Care should be taken during insert the cards into the slots to make sure the connectors slots are not damaged.

SYSTEM CMOS

You need to setup a system CMOS once every time:

- You start a new and un-configured system

- You receive a start-up error message indicating the configuration information stored in the non-volatile CMOS RAM has somehow become corrupted.

- You add, remove, or change peripherals from your system.

You add, remove, or change DRAM from your system.

The first time you power up the system, the configuration information stored in the battery-backed CMOS RAM may not be correct. The BIOS detects this condition and prompts user to go through the SETUP section. This chapter explains how to use the BIOS SETUP program and make the appropriate entries.

STOP

Some of the parameters are already factory preset and do not need to be changed. Please read the instructions carefully and only change the settings if necessary.

Entering CMOS Setup

AMIBIOS provides a Built-in Setup utility that can be accessed by pressing < Del > key at the appropriate time during system boot up. Setup configures data is stored in system CMOS RAM. Following windows will appear in AMIBIOS Setup main screen. Details of setup options in each window is given following sections.

Setup

AMIBIOS Setup
(C) 1994, American Megatrends, Inc.

Password   A   s   Chm Original   De Optimal CHD Fail-safe

```
┌─────────────────────────────┐
│         Security            │
├─────────────────────────────┤
│                             │
│                             │
│                             │
│                             │
│                             │
│                             │
└─────────────────────────────┘
```
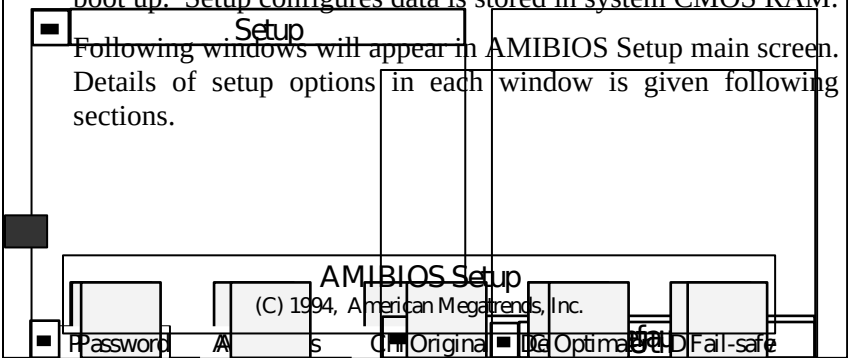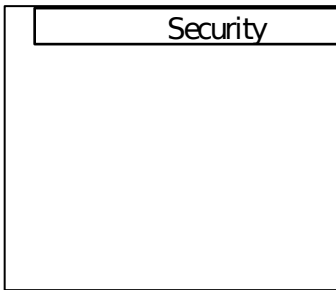
Setup Window

Types of Setup	Description
Standard Setup	Sets time date, hard disk type, types of floppy drives, display type, and if Keyboard is installed.
Advanced Setup	Above 1 MB Memory Test, Parity Error check, System Boot Up Numlock, System Boot Up Sequence, Cache Memory, Adapter Shadow Cacheable, and many others.
Chipset Setup	Sets chipset-specific options and features.
Peripheral Setup	Controls I/0 Controller-related options.

Standard Setup

Standard Setup is selected from the Setup window in the main screen. Standard setup options described in this section are selected by choosing the appropriate high-level icon from the Standard Setup screen.   All displayed icons are described in this section, although the screen display is often all you need to understand how to set the option.

Date, Day and Time Configuration

Select the Standard option. Select the Date and Time icon. The current values for each category are displayed. Enter new values through the keyboard.

Master Hard Disk:

Slave Hard Disk:

Select one of these hard disk drive icons to configure the drive named in the option. A scrollable screen that lists all valid disk drive types is displayed. Select the correct type and press < Enter >. Note that a hard drive will not work properly if you enter incorrect drive parameter. If the hard disk drive is an IDE type, select *Detect C: or Detect D:* from the Utility section of the BIOS Setup main menu to automatically detect the IDE drive parameters and report them to this screen.

You can also manually enter the hard disk drive parameters. The drive parameters are:

Parameter	Description
Type	The number for a drive with certain identification parameters.
Cylinders	The number of cylinders in the disk drive.
Heads	The number of heads.
Write Precompensation	The size of a sector gets progressively smaller as the track diameter diminishes. Yet each sector must sill hold 512 bytes. Write precompensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for

Parameter	Description
	sectors on inner tracks. This parameter is the track number where write precompensation begins.
Landing Zone	This number is the cylinder location where the heads will normally park when the system is shut down.
Sectors	The number of sectors per track. MFM drives have 17 sectors per track. RLL drives have 26 sectors per track. ESDI drives have 34 sectors per track. SCSI and IDE drive may have even more sectors per track.
Capacity	The formatted capacity of the drive is (Number Of heads) x (Number of cylinders) x (Number of sectors per track) x (512 bytes per sector)

Floppy Drive A:

Floppy Drive B:

Move the cursor to these fields and press <Enter> then select the floppy type. The settings are 360 KB 5.25", 1.2 MB 5.25", 720 KB 3.5", 1.44 MB 3.5", or 2.88 MB 3.5".

Primary Display Monitor

Select the type of display monitor and Display controller card. The VGA/EGA, CGA 40x25, CGA 80x25, or Monochrome are supported. 'Absent' option could be used if the system does not have display card installed or for display cards that use TSR files instead of BIOS firmware.

Above 1 MB Memory Test

During system boot up, the system BIOS can either perform or not perform thoroughly test the system memory above standard 1MB area. Since thorough test takes a long time, disable this option can speed up power-on initialization process because the BIOS will only scan the extended memory of every 32K locations to determine the on-board memory size. The default setting is "Disabled"

System Boot Up Num Lock

When the computer boots up, BIOS can either select Numeric value or Cursor control functions for the numeric keypad of IBM compatible keyboards. Most extended compatible keyboards have separate cursor control keys. Therefore, the default setting should be "On" to select Numeric value function for the numeric keypad.

System Boot Up Sequence

System can either boot up from floppy drive or from hard disk drive. Selecting option A:, C: will force the BIOS to look for bootable operating system files from floppy drive A: first before look for files from drive C:. Reverse this sequence by selecting "C:, A:". The default setting is " C:, A:"

Cache Memory

This option enables internal (on the microprocessor) and secondary (external) cache memory. If *Both* is selected, internal cache and external cache memory is enabled. If *Internal* is chosen, only the internal cache memory in the Pentium CPU is enabled. If *Disabled* is chosen, all cache memory is disabled. The settings are *Internal, Disabled,* or *Both*. The Optimal default setting is *Both*. The Fail-Safe default setting is *Internal*.

Adapter Shadow Cacheable

The Video ROM code can be cached into CPU Internal Cache Memory or system board External Cache memory to enhance the display performance. However, some display cards may not work properly when their ROM are cached. The default setting is "Disabled".

System BIOS Shadow Cacheable

The System BIOS ROM code can be cached into CPU Internal Cache Memory or system board External Memory to enhance the performance of the system. However, some software application may not operate properly when system BIOS ROM is cached. The default setting is "Disabled".

Password Checking

If the "Always" option is chosen at Setup, each time the system is turned on, the prompt request for user password will appear.

If the "Setup" option is chosen at Setup, the Password prompt will not appear when the system is turned on, but will appear if the user attempts to enter the Setup program.

The board is shipped with the Password Checking option disabled. To enable this option, you have to select your password by select the Password icon in the Security window of the main menu screen.

If you want to 'disable the Password Checking option, go to the Security Menu and select Password icon to change to new password. You will be asked to enter the old password before you can enter the new password. However, do not enter any character when you are asked to enter new password, simply

press <Enter> key two times. The message to indicate that the Password Checking is disabled will appear.

ISA Video ROM C000,32K

When this option is set to *Enabled,* the video ROM code, that normally mapped into memory address space from C0000h - C7FFFh is copied (shadowed) from ROM to the system DRAM for faster execution. This will significantly improve the display performance of the system. The settings are *Absent, No Shadow,* or *Shadow*. Optimum default setting is Enabled.

ISA Adapter ROM C800,16K

....

ISA Adapter ROM D800,16K

These options are to selectively shadow the ROM code on the add-on cards, that mapped into the corresponding memory address space, into the respectively system DRAM address space, for faster execution. However, since some of add-on cards may not work properly if their ROM code are shadowed, care should be taken when select these option. The default setting is Disabled.

IDE Block Mode

Select *Enabled to support* some latest IDE hard disks that supporting multiple sector data transfer for faster performance. In Auto mode, the BIOS will detect if the IDE drives can handle fast data transfer mode and then programs the controller accordingly. Optimal default setting is *Auto* and Fail-Safe default setting are *Disabled*.

Primary Master LBA Mode

Most of early IDE hard drives' size are less than 528MB because of the limitation from PC/AT standard specification. In order to support more than 528MB, the Logical Block Access (LBA) mapping mode must be used. When Primary IDE controller card is installed, Select *Enabled* for Master IDE hard

disk that supports LBA mode for larger than 528MB capacity. Optimal and Fail-safe default setting for this option is *Disabled*.

Primary Slave LBA Mode

This option is for secondary IDE hard drive that connected to Primary IDE controller card. Select *Enabled* for Slave IDE hard disk that supports LBA mode for larger than 512MB capacity. Optimal and Fail-safe default setting for this option is *Disabled*.

Secondary Ctrl Drive Present

This option support Second IDE controller present in the bus or some IDE controllers that support dual IDE ports. Optimal and Fail-safe default setting for this option is *None*.

Chipset Setup

The BIOS Setup options described in this section are selected by choosing the option from the Chipset Setup screen. Chipset Setup is selected from the Setup section on the BIOS Setup main menu.

Base Memory Size

The base of system memory DRAM size is 640KB. The address space from 640KB to 1MB is reserved for I/O ROM and I/O RAM. Since this reserved area is normally occupied by Video RAM, Video ROM, and system BIOS ROM, there will be no 128KB of contiguous address space available. However, some add-on cards may need 128KB of contiguous address space. This option is provided so that the area from 512MB to 640KB of the system DRAM can be disabled to create a 128KB hole of address space for this purpose. The default setting is 640KB. The setting 512KB should be selected only when the add-on card above is installed.

ISA VGA Frame Buffer Size

Some graphic display cards requires a frame buffer for the Video RAM. This option sets the size of the VGA frame buffer. The settings are *Disabled, I MB, 2 MB,* or *4 MB.* The frame buffer address space will be automatically set right below 16MB address. The Optimal and Fail-Safe default settings are *Disabled*.

PCI VGA Palette Snooping

This option should be *Enabled* when running with a Multimedia Video Processor Card. Once enabled, the address space of PCI VGA Palette can be snooped. Optimal and Fail-Safe default setting are *Disabled*.

On-board SCSI Controller

Available options are *Enabled* or *Disabled*. When you want to use on-board SCSI, set this option to *Enabled* otherwise set it to *Disabled.* Optimal setting is *Enabled.*

PCI IDE Card Present in

Available Options are *Slot 1, Slot 2, ..., Slot F* or *Absent.* If there is and IDE card on PCI slot, set it to corresponding PCI Slot Number. Otherwise set it to Absent.

PCI IDE IRQ Connected to

Available options are *INTA* or *INTB*. This setting must be the same as the setting on PCI IDE card. Normally, interrupt on the IDE card is connected to INTA and shared with other PCI devices that using INTA. However, if some application specifically required IDE device to use different IRQ, such as PCI IDE, the interrupt of the devices should be connected to INTB and properly routed to ISA interrupt by software by the next option.

....

INTA, INTB, INTC, INTD

These option allow user to manually select interrupt routing from PCI bus to ISA bus. Note that all PCI interrupt can be shared by different PCI devices and must be routed to ISA interrupt. However, PCI interrupt should not conflict with interrupts that being used by of ISA add-on cards. Default setting as follow:

INTA to ISA INT10
INTB to ISA INT9
INTC to ISA INT11
INTD to ISA INT15

Peripheral Setup

The BIOS Setup options described in this section are selected by choosing the option from the Peripheral Setup screen. Peripheral Setup is selected from the Setup option on the BIOS Setup main menu.

....

Programming Mode

The settings are *Auto or Manual.* When set to *Auto,* BIOS automatically detects all adapter cards installed in the system and configures the onboard I/O (Serial and Parallel controller, Floppy controllers, and IDE controller) automatically. All other Peripheral Setup option settings are ignored. Serial and Parallel controller, Floppy controller, or IDE controller on adapter cards installed in expansion slots are configured before those I/O ports built-in onboard. If *Auto* is selected, BIOS also attempts to avoid I/O address conflicts. If the off-board Serial ports are configured to specific starting I/O ports via jumper settings, BIOS will configure the onboard Serial ports by software to avoid conflicts. For example, if the default Serial port starting I/O ports (Serial port 1 - 3F8h, Serial port 2 - 2F8h, Serial port 3 - 3E8h, Serial port 4 - 2E8) are, the following configurations are possible:

If there are...	the ports	the on-board

	are.....	serial ports are
two off-board serial ports	3F8h and 2F8h	3E8h and 2E8h
two off-board serial ports	3F8h and 3E8h	2F8h and Disabled
one off-board serial ports	3F8h	2F8h and Disabled
one off-board serial port	2F8h	3F8h and Disabled

The Optimal and Fail-Safe default settings are A*uto.*

The following options are applied only when the option above is set to Manual:

On-Board FDC

This option enables the use of the FDC (Floppy Drive Controller) on the motherboard (if installed). The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default setting are Enabled.

Serial Port 1

This option enables serial port I on the motherboard (if installed).   The settings are 3F8h, 2F8h, 3E8h, 2E8h and Disabled. The Optimal and Fail-Safe default settings are 2F8h.

Serial Port 2

This option enables serial port 2 on the motherboard, if installed. Available options are 3F8h, 2F8h, 3E8h, 2E8h and Disabled. The Optimal and Fail-Safe default settings are 2F8h.

Parallel Port

This option enables the parallel port on the motherboard, if installed. Available options are *3BCh, 378h, 278h and Disabled*. The Optimal and Fail-Safe default settings are 378h.

IRQ Active State

This option specifies if the Parallel and Serial port IRQs are active high or active low. The settings are *Low or High.* The Optimal and Fail-Safe default settings are *High.*

Parallel Port Mode

This option specifies the Parallel port mode. The settings are *Normal* or *Extended.* The Optimal and Fail-Safe default settings are *Normal.*

Utility Window

Detect Master Drive

This utility detects parameters for IDE hard drive configured as first drive (master) in dual drive system or the only drive in system. The parameter detected will be automatically transfer into Standard setup menu. This utility will work with most of later IDE hard drives. However, some old IDE hard drives may not be detected correctly. If this is the case, you should enter the parameters of the hard drives manually.

Detect Slave Drive

This option is to detect the parameter of the secondary drive.

Color Set

This utility allows you to select the comfortable color sets for the CMOS Setup and Utility screens.

Security Setup Window

Password

Allows to set password user will be asked to enter before entering into AMIBIOS setup

Anti-Virus

When Virus Protection is enabled, the system BIOS will display a warning message every time any program tries to write into the disk boot sectors.

Default Setup Window

The Default Setup windows has following options. Every option in BIOS Setup contains two default values: a Fail-Safe default and the Optimal default value.

Original Defaults

Restores old values of setup if user decides to abandon changes.

Optimal Defaults

The Optimal default values provide optimum performance settings for all devices and system features. If onboard SCSI, floppy controller, I/O controller are used in the system, Optimal default setting should be loaded to simplify the CMOS setup process.

Fail-Safe Defaults

The Fail-Safe default settings consist of the safest set of parameters. Use them if the system is behaving erratically. They should always work but do not provide optimal system performance characteristics.

Once this option is loaded, user should go back to the first selection setup menu to manually select other options.

SYSTEM BOARD CONFIGURATION

Programming Flash BIOS

To support FLASH BIOS, component at location U45 must be FLASH EPROM. Follow these steps to reprogram FLASH BIOS:

1. Turn the system power OFF.
2. Open the system cover and change JS9 jumper block to 1-2 position.
3. Turn the system power ON.
4. Boot up the system and run AMIFLASH.COM Program from the Utility Diskette to load the new BIOS code into the FLASH EPROM.
5. After programming is completed, shut the system off.
6. Set the JS9 jumper block to 2-3 position and close the system cover.
7. Turn the system power ON.

EISA Adapter Setup

All EISA Add-on cards required software setup.

Shipped with the board is a floppy diskette containing EISA CONFIGURATION UTILITY files (ECU) and configuration files for the board which extension name ".CFG". The configuration file for the 54CDP is !AIR0701.CFG. You should copy all the files with extension name ".CFG" from the diskettes provided with the EISA adapter boards, into this diskette.

Turn on system power and boot up into DOS from floppy drive A. Remove the boot diskette and insert the system board EISA Setup diskette into drive A. Invoke the EISA Configuration Utility file by typing:

CFG <Enter>

The CFG.EXE program displays the current configuration information on the slot screen. Check to be sure all the EISA adapters are represented in the display. If not, ensure that all necessary configuration (*.CFG) files are present on the current diskette.

From the setup screen, follow the interactive instructions to set up the system EISA configuration. All of the features of the system board are set to default mode so that you do not have to change them. Please read the AMI EISA Configuration Utility manual for more details.

SCSI SETUP

Features

PCI BUS Interface

- Up to 133 Mbytes / sec data transfer rate on the PCI bus

- PCI Single and dual address cycles support

- PCI bus address and data parity generation

- PCI bus master for data transfer

Fast Data Transfer Rates

- Up to 6Mbytes/sec asynchronous SCSI data transfer rate.

- Up to 10Mbytes/sec synchronous Fast 8-bit SCSI data transfer rate.

- Up to 20Mbytes/sec synchronous Fast Wide (16-bit) SCSI data transfer rate.

Maximum Off-loading the Host CPU

- Onboard RISC Sequencer (SCSI PhaseEngine processor) automates SCSI Protocol

- Low SCSI processing overhead

- Bus Master DMA implementation

- Task scheduling and message-based communication

- 32-, 24-, 16-, and 8-bit host PCI bus data transfers

Fully Disk Array Capable

- Ability to boot from any disk on the SCSI bus

Fast SCSI Implementation

- Concurrent support for fast SCSI synchronous and asynchronous devices

- Concurrent support for 8-bit and 16-bit SCSI devices

- Single-ended output

- Scatter / Gather

- Disconnect / reconnect

- Fully Multi-tasking / Multi-threading

- Tagged Queuing support

- SCSI termination power-down control

- Multiple LUN support

- Parity handling in Data, Message, Status, Selection / Reselection and Command phases

Multiple Devices and Applications Support

- Supports up to seven devices on 8-bit bus and 15 devices on 16-bit bus.

- Onboard BIOS supports disk drives capacities up to 8Gbytes

- Managers and device drivers for all major operating system, i.e. DOS, Windows, OS/2, Windows NT, Netware, SCO Unix and Unixware.

> **Note :** In this section about SCSI, whenever you see **term "Host Adapter"**, it applies to SCSI port on the motherboard. If you have any additional Adaptec AHA-2940 or AHA-2940W it applies to those controllers because they use the same chipset.

Hardware Setup

Hardware Installation involves following steps:

- Prepare Devices to be used

    - Terminating SCSI Bus

    - Setting SCSI ID

- Connecting Cables and Devices

Preparation of Devices

SCSI ID Setup

Set each SCSI device ID to unique number (0-6). The 54CDP SCSI port is given to the highest priority ID 7. Devices with higher ID numbers have a higher priority in communicating with the computer. Make sure that there is no duplication of the ID from the target devices. Refer to SCSI device documentation for information on changing SCSI ID on devices.

Cable and Power Connection

Colored strip on one edge of the ribbon cable indicates pin no. 1. It should match to pin no. 1 on all devices connected. One end of the cable connects to SCSI port on motherboard and another end goes to the end device which has termination on it. All other devices with termination removed connects to connectors in the middle. Apply power to all SCSI devices.

SCSI Default Settings

The 54CDP SCSI port is shipped with the following factory default settings:

SCSI Disconnection	Enabled
SCSI Address	7
SCSI Parity	Enabled
Terminators	Installed

Terminator Power	Enabled
Synchronous Negotiation	Enabled
PCI INT	A
System IRQ	10
Port Address	340H
BIOS Address	C8OOOH, Enabled

SCSI Select Configuration Utility

You can enter into this utility by pressing **Ctrl + A** during power on self test when it displays following message on the screen.

⋘ Press <Ctrl> <A> for SCSI Select(TM) Utility! ⋙

This utility displays options menu with necessary instructions at the bottom of the screen. In upper right hand side corner it will display PCI bus number and PCI Device number of the host adapters. If there is only one SCSI controller in the system it will directly display options menu otherwise in case of multiple host adapters, it will display list of host adapters first.

In the first option menu there would be two options

- Configure/View Host Adapter settings

- SCSI Disk Utility

Configure/View Host Adapter settings

Selection of Configure/View Host Adapter settings will list three settings under SCSI Channel Interface Definitions, as under.

Host Adapter SCSI ID:

Allows to change Host adapter SCSI ID from its default value of 7. In most cases Host Adapter should be set to ID 7. Only when two host adapters are connected to the same SCSI bus, they should have different SCSI IDs.

SCSI Parity Checking:

Enables or disables host adapter SCSI parity checking. Host Adapter checks parity for correct transmission of data. Only when any of the SCSI device does not support parity, you need

to disable SCSI parity. Most of the SCSI devices available today support SCSI parity. The default setting is Enabled.

Host Adapter SCSI Termination:

Configures host adapter SCSI termination. When external and internal devices are connected to SCSI port, termination need to be disabled. See terminating SCSI bus. The default setting is Enabled.

Additional Options:

Advanced users can go to SCSI Device Configuration and Advanced Configuration options through this menu.

> **Note** : Press **F6** to reset all settings to the host adapter defaults.

SCSI Device Configuration

Initiate Sync Negotiation

When set to **yes**, the host adapter initiates synchronous negotiation with the SCSI device and when set to no, the host adapter does not initiate synchronous negotiation. The host adapter, however, always responds to synchronous negotiation if the SCSI device initiates it. The default setting is **yes**.
Data is transferred in asynchronous mode if neither the host adapter nor the SCSI peripheral negotiates for synchronous data transfers.

Note : Some older SCSI-1 devices do not support synchronous negotiation. Set synchronous negotiation to **no** when any of device of this kind is connected to SCSI bus..

Maximum Sync Transfer Rate

This option determines maximum synchronous data transfer rate that the host adapter can support. Fast SCSI-2 support maximum up to 10.0 MB/s and Fast-W SCSI-2 supports up to 20.0 MB/s. Maximum synchronous data transfer rate must be set such that

all devices on SCSI bus are capable to support that synchronous data transfer rate.

Enable Disconnection

When set to **yes**, SCSI device is allowed to disconnect from the SCSI bus. The SCSI device, however, may choose not to disconnect, even if permitted by the host adapter. Disconnect/Reconnect allows the host adapter to perform other operations on the SCSI bus while the SCSI device is temporarily disconnected. When set to no, SCSI device is not allowed to disconnect from the SCSI bus. The default setting is **yes**.

You should set to **yes** when there are more than one device connected to the host adapter. This optimizes performance. If only one device is connected to the Host adapter, set Enable Disconnection to **no** to achieve slightly better performance.

Send Start Unit Command

When set to **yes**, the start unit command is sent to the SCSI device during boot-up. When set to no, each SCSI device power-ups in its normal fashion. The default setting is **no**.

Enabling this option reduces load on the power supply by allowing the host adapter to power-up SCSI devices one-at-a-time when you boot your computer. Otherwise, all devices power-up at the same time. Most devices require you to set a jumper before they can respond to this command.

If this option is enabled for more than one device, the Start Unit Command is sent first to the device with the lowest SCSI ID. When device responds to the host adapter, the Start Unit Command is sent to device with next higher SCSI ID. The process continues until all devices respond to the host adapter. If many drivers are set to **yes** for Send Start Unit Command, the boot time varies depending upon how long it takes a device to spin up.

Note: This command is valid only when the BIOS is enabled.

Include in BIOS Scan

When set to **yes**, the host adapter BIOS controls the SCSI device. When set to **no**, BIOS does nor search devices to control; device driver software is needed to control the SCSI device. The default setting is **yes**.

Advanced Configuration Options

When you select advanced configuration options, a screen with following five options will appears. Do not change these five options unless it is absolutely necessary to do so.

Reset SCSI Bus at Host Adapter Initialization

If enabled, the SCSI bus is reset the first time the host adapter is initialized. If the host adapter BIOS is enabled, it resets the SCSI bus, then wait two seconds before scanning the bus for SCSI devices. The default is **enabled.**

Host Adapter BIOS

The host adapter BIOS must be enabled if you want to boot computer from SCSI HDD connected to the host adapter. Several SCSI Select utility options can not be used unless the BIOS is enabled.

Support Removable Disks Under BIOS as Fixed Disks

This option allows you to control which removable-media drivers are supported by the host adapter BIOS. It is valid only if the host adapter BIOS is enabled. The default setting is Boot Only. The following choices are available.

Boot Only: Only removable-media drive designated as the boot device is treated as a hard disk drive.

All Disks: All removable-media drives supported by BIOS are treated as hard disk drives.

Disabled: No removable-media drives are treated as hard disk drives. In this case, software drivers are needed to control drives.

> **Caution**:   Support for removable-media drives means only that the host adapter BIOS allows you to use a removable-media drive as if it were a hard disk drive; it does not mean you can remove the disk media during operation. If a removable-media SCSI device is controlled by the host adapter BIOS, do not remove the media while drive is powered-on or you may loose data! If you want to be able to remove media while power is on, install removable-media device driver and set this option to **disabled**.

Extended BIOS Translation for DOS drives >1 GByte

This option allows you to enable or disable extended translation for SCSI hard disks with a capacity larger than 1 Gbyte. It is valid only if the BIOS is enabled. Default setting is enabled. When this option is enabled, following shame is used.

SCSI hard disks <= 1 Gbyte use a translation scheme of 64 heads, 32 sectors per track.

SCSI hard disks > 1 Gbyte use a translation scheme of 255 heads, 63 sectors per track.

> **Note** : This option is needed for DOS only. Netware and any Unix do not need this option to be enabled even though drive is > 1 GByte.

BIOS Support More Than 2 Drives

This option allows you to enable or disable BIOS support for more than two, and up to eight, SCSI hard disk drives. It is only valid if the host adapter BIOS is enabled. The default is **enabled.**

SCSI Disk Utilities

When you select SCSI Disk Utilities from option menu the SCSI Select utility scans SCSI bus and list all SCSI devices installed on the SCSI Bus. This list helps determine which SCSI ID is assigned to which SCSI device. There are two utilities as under.

Format Disk

Format Disk utility performs a low-level format on disk devices. Fixed disk media must be low-level formatted before you can use your operating system's partitioning and file preparation utilities such as MS-DOS FDISK and Format.

> **Note** : Generally all SCSI hard disks comes low level formatted from factory and do not need to be formatted again. You might need to use this utility to format the disks used with non-Adaptec controllers before.

> **Caution** : Low level formatting destroys all data

Verify Disk Media

The Verify Disk Media utility scans the selected device's media for defects. If the utility finds bad blocks, it prompts to reassign them; if you say yes, those blocks will no longer be used.

More Than one SCSI Controller

AIC-7870 supports existence of more than one SCSI controller in system. Following parameters must be set carefully in case of multiple SCSI controllers.

- BIOS on only one controller can be Enabled, the others must be disabled if all the cards are the same model.

- BIOS addresses must be different if the cards are different.

- I/O ports addresses must be different.

- All SCSI controllers SCSI ID can be 7 because they are not on the same SCSI bus.

- You need to load different software drivers for each controller if they are from different manufacturers.

- If there are two controllers of the same kind, software drivers need to be loaded only once.

CMOS Setup

Set Hard disk type C: to **SCSI** if you have one SCSI drive and set D: to SCSI if you have second SCSI drive. For more than two drives there is no need to set anything in CMOS setup.

Power-on-Test

During Power-on test SCSI BIOS version and devices.

SCSI SOFTWARE INSTALLATION

There are three disks shipped with the board :

1. Drivers for DOS/Windows
2. Drivers for OS/2, Netware and Windows NT
3. Drivers for SCO Unix and Unixware

DOS/WINDOWS DRIVERS

DOS must be installed on your computer before you can run *Install* program.

You can access hard disks without any drivers under DOS but these drivers provides:

- Support for more than two physical DOS drives

- Increased performance running from memory (compared to running from ROM BIOS)

- Data and Audio CD-ROM support and application software

- Ability to run ASPI-capable application software

If you have DOS & MS-Windows installed

1. Load Windows.

2. From file menu, choose Run

3. Type a:setup or b:setup and press enter.

4. Follow the instructions.

If you only have DOS installed

1. Type a:\dosinst or b:\dosinst

2. Follow the instruction.

Understanding DOS ASPI Manager

An ASPI Manager is a software module that provides an interface between ASPI device drivers, a host adapter board, and SCSI devices connected to the adapter. A single ASPI manager can handle multiple I/O requests from multiple ASPI device drivers. ASPI managers are written for a specific operating system-such as DOS, OS/2 or Netware 386- and for a specific host adapter board or family of boards.

ASPI8DOS is the name of ASPI manager for SCSI on this board. ASPI8DOS is used in following cases:

- When computer has more than two hard disk drives, because host adapter BIOS can control only up to two drives.

- When computer has more than one host adapter.

- To install removable media. ASPIDISK is also required.

- When interfacing to ASPI modules that control devices such as SCSI tape drives, CD-ROMs printers, plotters or other types.

- To change default configuration using command line options.

DOS/Windows drivers formatting utilities

DOS/WINDOWS DRIVERS includes two Hard disk preparation utilities: *scsifmt* and *afdisk.*

You can use *scsifmt* to low-level format SCSI fixed disks, removable fixed disks (e.g., Bernoulli removable media) and magneto optical drives. You can also use it to scan disk devices for surface defects to make sure the devices are reliable before you store data on them.

You can use *afdisk* to partition SCSI disk devices and to perform high-level formatting. *afdisk* allows you to add or delete DOS partitions or to delete a non-DOS partition You must use this utility to partition SCSI disks that are not mounted by the 54CDP SCSI BIOS.

These utilities and the two other utilities described in this chapter are automatically copied to your fixed disk by the DOS/WINDOWS DRIVERS *Install* program.

Low-level Formatting with SCSIFMT

When you run *scsifmt* it automatically detects and lists the disk devices installed on your system. You then select a device from the list and either format it or scan it for defects.

scsifmt Command Line Options

There are two *scsifmt* command line options you can use when starting the program. The syntax of the *scsifmt* command is:

[path]scsifmt [/m or /mono] [L] [/?]

You can type command line options in either lowercase or uppercase letters. Each option is preceded by a forward slash and should be separated from other options by at least one blank space.

The command line switches operate as follows:

/m or /mono

This switch forces *scsifmt* to run in black and white mode. This capability is provided because *scsifmt* screens do not display properly on some laptop, monochrome VGA and other types of displays.

If the /m option does not correct any screen display problem, try executing the DOS mode **bw8O** command before running *scsifmt.* Remember to issue a DOS mode **co8O** command after you are finished with the program.

Example: scsifmt /mono

/L

This switch enables you to format SCSI disk devices such as Iomega's Bernoulli dual media multi-drive that supports more than one LUN (Logical Unit number)

Example: scsifmt / L

/?

This option displays the currently supported command line options.

Example: scsifmt /?

Running scsifmt

Before you start *scsifmt,* be sure all disk devices you want to format are physically connected to your PC and are powered. If you want to format removable media, make sure it is in the disk device.

You cannot run *scsifmt* from the MS-DOS prompt under Microsoft Windows. Exit from Windows entirely before starting the utility, or you will get an error message.

You can view on-line help information for any *scsifmt* screen by pressing **F1**. Press **Esc** to exit the Help screens.

Change to the directory where *scsifmt* is located (the default directory is *c:lAIR)* and enter scsifmt to start the program.

Partitioning & High-Level Formatting with AFDISK

afdisk is a SCSI disk partitioning and high-level formatting utility. You must use this utility to partition SCSI disks that are not mounted by the 54CDP BIOS. *afdisk* allows you to add or delete a DOS partition or to delete a non-DOS partition.

afdisk.exe and its accompanying files *afdisk.hlp* (the help file) and *afdisk.cwa* (the system file) are copied automatically to your fixed disk when you run the DOS/WINDOWS DRIVERS Install program.

afdisk disk partitions are mounted when you boot your machine with the *aspidisk* driver. Partitions that you create with *afdisk* are completely compatible with DOS partitions.

Partitions that are moved to 54CDP BIOS control are bootable if they were high-level formatted to include the system files (e.g., using the **/s** option of DOS *format.com).* In order for a SCSI disk to be bootable, the DOS version used must be 3.3 or later. We recommend that you do a DOS high-level format (using *format*) on all media partitioned with *afdisk* before you use it.

afdisk Command Line Options

There are two *afdisk* command line options you can use when starting the program. The syntax of the afdisk command is:

[path]afdisk [/m or /mono] [/?]

You can type command line options in either lowercase or uppercase letters. Each option is preceded by a forward slash and should be separated from other options by at least one blank space.

/m or /mono

This option forces *afdisk* to run in black and white mode. This capability is provided because *afdisk* screens do not display properly on some laptop, monochrome VGA and other displays.

If the **/m** option does not correct any screen display problem, try executing the DOS mode **bw80** command before running *afdisk.* Remember to issue a DOS mode **co80** command after you are finished with the program.

Example: afdisk /mono

/?

This option displays the currently supported command line options.

Example: afdisk /?

Running afdisk

Before you start *afdisk,* be sure the disk devices you want to format or partition are physically connected to your PC and are powered. If you intend to format a removable fixed disk, make sure there is removable media in the device before running *afdisk.*

You can view on-line help information for any *afdisk* screen by pressing **F1**. Press **Esc** to exit the Help screens.

To run *afdisk* change to the directory where *afdisk.exe* is located (the default directory is *C:IAIR)* and enter afdisk to start the program.

Using DOS CD Player Utility

cdplayer, CD-ROM audio play utility for DOS, provides full audio support for music CDs through either the keyboard or a mouse interface. In order to use c*dplayer*, you must configure your DOS environment to run with the Microsoft CD-ROM Extensions *(mscdex)* and you must install a CD-ROM driver, such as *aspicd* (The DOS/WINDOWS DRIVERS *install* program takes care of this automatically.)

Here is a list of *cdplayer's* audio functions:

- Play, Pause, Eject, and Stop

- Fast Forward and Reverse

- Next Track and Previous Track Selections

- Time Display, showing Elapsed Time or Remaining Time for either the current playing track or for the entire CD

- Stereo, Left Channel, Right Channel, and Mute

- Sequential or Shuffled Continuous play ordering

cdplayer requires a VGA (or higher) graphics controller and either a color or a monochrome display. The program consists of two files which are automatically copied to your fixed disk when you run the DOS/WINDOWS DRIVERS *lnstall* program: the executable **file** *cdplayer.exe* and a font file c*dplayer.fon.*

cdplayer Command Line Options

By default, *cdplayer* accesses the CD-ROM drive with the lowest drive letter. If your system has more than one CD-ROM drive and the one with the lowest drive letter is not the one you want *cdplayer* to access, you can use a command line option to direct it to another drive.

For example, if you have two CD-ROM drives assigned to drive letters *E* and *F*, and you want to play an audio CD in drive *F*, simply start the program with this command line:

CDPLAYER /F:

You can type the command in uppercase or lowercase letters. Be sure to include the colon after the drive letter.

Running cdplayer

To start *cdplayer*, change to the directory where *cdplayer.exe* and *cdplayer.fon* are located (C:\SCSI is the default) and enter CDPLAYER.

If there is no CD in the drive when you start the program, the message **No CD!** appears in the time display area. If a command to the drive fails, the message **Drive Fault!** appears in the time display area. As you select each function, the Status indicator shows the current disc status. Whenever you insert a new CD in the drive, the program displays the CD's total track count and run time.

The *cdplayer* screen simulates the control panel of a CD player. You select functions either by clicking the mouse on the appropriate control, or by pressing the Hot Key letter for that function (for example, **P** or **p** to play and **Q** or **q** to quit the program). The Hot Key letter is highlighted in white on each button. When you select a button, the icon inside it is displayed in yellow until you select another butt on.

cdplayer Functions

Here are brief explanations of each *cdplayer* function.

- **Stop -** Stops the CD from playing. The track will be displayed at its 00:00 Elapsed Track Time.

- **Play -** Starts play operation at the current displayed track. If a CD is already playing, audio playing continues.

- **Pause -** Stops audio playing at its current position. Play will proceed if you select **Pause** a second time or if you select **Play**.

- **Fast Forward/Fast Reverse** - Moves forward or backward from the current track position in 15-second increments. If the new play position crosses a track boundary, *cdplayer will* access the next or previous track.

- **Eject -** Sends an **eject command** to the CD-ROM drive. Most drives support a CD **eject** function. You can select **Eject** even if a CD is still playing.

- **Next/Previous Track -** Increases or decreases the current track number, wrapping around to the first track from the last (or vice versa) if necessary. If the CD is playing, play will continue at the new track's starting location.

- **Audio Mode -** Allows you to select either **Stereo, Left Channel, Right Channel,** or **Muted** play.

- **CD-Time** Mode _ Allows you to change the time display to Elapsed CD Time, Elapsed Track Time, Remaining CD Time, or Remaining Track Time.

- **Play Order -** Allows You to select either **Sequential** or **Shuffled Continuous** play.

- **Quit -** Exits *cdplayer.* if a CD is playing, it will continue playing to the end of the CD and will then stop. (You can also exit the Program by pressing the **Esc** key.)

You can enter the *cdplayer* utility, start playing a CD, then quit the utility while the CD continues playing. If you re-start *cdplayer* before the CD is finished playing, the screen will display the current playing time. You can then switch to a different track and playing, change a setting, or eject the CD and start playing a different one.

WINDOWS APPLICATIONS PROGRAMS

Adaptec SCSI Interrogator

Adaptec SCSI interrogator allows you to view information about the SCSI port and SCSI peripherals installed in computer system. This utility is installed during installation and icon is created under windows in AIR group. Then you can double-click it at any time to view SCSI device information. Follow these steps:

1. Double-click on the **Showscsi** icon, and the **AIR SCSI Interrogator** window will appear. Each installed SCSI device is represented by an icon and is labeled with a SCSI ID number. A crossed-out **No Device** icon indicates that no device is installed at that SCSI ID.

2. Double-click on any icon in the **SCSI Interrogator** window to view information about a SCSI device.

   Different kinds of information screens will appear in the Inquiry window, depending on the type of SCSI device.

- **SCSI Host Adapter:** A single information screen lists the model number of the adapter, the ASPI manager drivers it uses, and the SCSI programming interface it uses.

- **Disk Devices:** The first screen lists vendor and model number information, device type, storage capacity and bytes per sector. If the disk is a SCSI-2 device the screen lists available SCSI features, such as synchronous mode and SCSI linking.

   If the disk device uses removable media, such as a CD-ROM, you can click on the **Eject Media** button to eject the CD. **Lock Media** and **Unlock Media** buttons allow you to lock removable media in devices that support this command and unlock it when you want to remove it. These three

buttons are grayed-out if the SCSI device you are viewing does not support the commands.

You can click on the Read Defect List button to view information about disk defects. The notes in this window explain the meaning of the primary defects and grown defects that are listed. The SCSI Interrogator supports reading the defect list for most, but not all, disk devices. A few disk devices do not present the defect list in a format that the SCSI Interrogator can interpret.

- **Other SCSI Devices:** There is only one screen of information for CD-ROM drives, tape drives, and other devices that do not have defect information.

1. To exit from the **Inquiry** window, click on the OK button.

   To close the **SCSI Interrogator** window, double-click on the Control-menu box in the upper left-hand corner of the window, or select **Inquiry/Exit** from the menu.

Playing Audio CDs with CD Player and Mini CD Player

Adaptec CD player and Mini CD player are two versions of the same audio CD-play application. Both versions have essentially same functions, but the Mini version occupies less space on monitor.

Note :

Windows **[MCI] CD Audio** must be installed in order to use this application. If there is no sound or it says no CD, start the windows control panel and double-click on. If **[MCI] CD Audio** is not listed under installed drivers, click on **Add** and select this driver from the list. Insert required windows disk when the prompt appears. After installing the driver, restart windows to activate it.

Adaptec CD player simulates a CD-player control panel. Controls can be activated by clicking on button with the mouse. A timer windows shows timing of current track. Control includes Play, Pause, Stop, Eject, Go to next track, and Go to previous track. A side bar allows you to move forward and

backwards in the current track. You can click the left button inside the timer window to see a selectable list of all the tracks on the CD.

Adaptec Mini Cdplayer includes all the same functions except the slide bar You can switch back and forth between the mini and regular versions of CD player via the Option menu of the full-size version or the control menu box of the mini version. By default, the mini version appears on top of windows applications. While running full-size version of CD player you can select Help-About-Tips to read more information.

OS/2 V2.X DRIVERS

The following files are supplied for drivers installation.

- README.TXT An ASCII text file describing the OS/2 v2.x

- AIC7870.ADD OS/2 2.x driver fully compliant with IBM OS/2 2.x specifications

- AIC7870.DDP Installation instruction for ddinstall.exe

- 7870PRES.EXE The program that searches for AIC-7870

OS/2 and Drives over 1 Gbyte

If you are using a SCSI disk drive larger than 1 Gbyte on your OS/2 system, we recommend that you leave the Extended BIOS translation feature enabled. If you format a partition using the FAT file system, it must be within the first 1024 cylinders of the drive to ensure compatibility with DOS. However if you are running Netware and Unix on the same SCSI disk drive (that is larger than 1GB), disable the Extended BIOS translation feature.

Any time you change this feature from enabled to disabled or visa versa, be sure to re-partition and high-level format the drive. This statement does not apply to drives less than 1GB.

Installation

1. Use Diskcopy to create backup copies of all IBM OS/2 and Drivers disks. Use backup copies as your working diskettes.

2. Copy the **AIC7870.ADD** file from the 54CDP SCSI driver diskette   (OS/2 sub-directory) to the root directory on the backup copy of OS/2 Diskette 1. If there is not enough space on Disk 1 delete all files matching arguments **AHA*.ADD**(These are the driver files for other AIR SCSI controller cards).

3. Modify the config.sys file on disk 1 to add the following line:

basedev=AIC7870.add

4. Begin OS/2 installation by inserting the Installation Diskette into drive A and restarting the system. When prompted to insert Diskette 1, insert the back up copy that you modified.

5. Follow instructions from IBM for further installation.

Command Line Usage

Caution : Computer may not boot if you use the command line options incorrectly. Device driver is installed automatically and normally does not require any adjustments.

The standard command line syntax for the ADD command line switches is

basedev-AIC7870.add [Universal Parameters] [Adapter ID] [Unit Parameters : [SCSI Target ID]]

The command and switches must be placed in the config.sys file. Switch settings take effect after the computer is rebooted. OS/2 command line switches are not case sensitive.

The options listed below apply to all host adapters controlled by the AIC7870.ADD driver.

Replace the italicized letters (x,y,z etc.) in the switch descriptions below with the SCSI target ID(s) of the devices that you want to effect. The Ids must be separated by commas(x,y).

Universal Parameters

/et
Embedded targets are allowed. Makes the driver assume that all targets have more than one Local Unit Number (LUN) defined.

/!et
No embedded drivers are allowed. Makes the driver assume that all targets have only one LUN defined. (This is the default setting.)

/v
Verbose mode. Information such as the driver name, version

number, and other information appears if the driver loads successfully. Also displays information about all targets found in the computer.

Adapter ID

/a:n
Adapter numbers are assigned based on BIOS address (starting from the lowest first) and then Device number (PCI Device number in hex as seen at the upper right hand corner of the first SCSI select screen) if the BIOS is disabled. Built-in single-channel adapters are generally assigned ID 0 (Zero), as the first adapter found.

Unit Parameters

/dm:x,y,z
Enables Direct Access Storage Device (DASD) manager support. Allows os2dasd.dmd to control the specified target(s) when they are identified as DASD devices.

/!dm:x,y,z
Disables DASD manager support. Prevents os2dasd.dmd from controlling the specified target(s).

Caution : Do not remove DASD manager support from the boot drive , or the computer will not be able to boot.

/sm:x,y,z
Enables SCSI manager support for the target device(s) x,y,z. Allows os2dasd.dmd to control the specified target(s) if they are identified as non-DASD SCSI devices. All SCSI hard drives are controlled by os2dasd.dmd (This is the default setting.)

/!sm:x,y,z
Disables SCSI manager support. Prevents os2dasd.dmd from controlling the specified target(s).

/tag:x
Specifies maximum number of tagged commands for all target devices on the SCSI bus. A value of 1 disables tagged queuing. The maximum number allowed is 16. (The default is 16.)

/I

Ignores the host adapter. The device ignores the host adapter do that another driver may control it. Specifies maximum number of tagged commands for all target

/ur

Enables reporting of under runs.

/!ur

Disables reporting of under runs. (This is the default setting.)

MICROSOFT WINDOWS NT DRIVERS

Drivers supplied with the board are always latest. So if you know that drivers for AIC-7870 are supplied with Windows NT version , follow these procedures exactly to install new driver. The install program tries to access the old driver on other windows NT floppy disks or from CD during installation.

1. If you choose to install Windows NT from floppy drive, locate the Windows NT disk 1 for floppy installation. Make a backup copy of this disk.

    If you are installing from CD-ROM drive, locate Windows NT setup disk for CD-ROM installation. Make a backup copy of this disk.

2. Delete the file AIC7870.sys on the backup disk you just created. This file may not be on the disk; if not, skip this step.

3. Put the backup disk into drive A (not drive B) and turn on your computer.

4. When prompted, select custom setup.

    Caution :   If you select Express setup, the installation process is unable to detect SCSI controller and installation fails.

5. Windows NT can't recognize SCSI controller and displays none. Press S to configure additional SCSI adapters.

6. From the list of additional SCSI adapters, select **Other (Requires disk provided by a hardware manufacturer).**

7. Insert AIC-7870 driver disk for Netware, OS/2, and Windows NT into drive A and press **Enter**.

8. The screen displays the adapter similar to **Adaptec Driver for AIC78XX SCSI Controller**. Press **Enter**.

9. Only one driver needed for one or more than one AIC-7870 family controllers.

10. Proceed with the Windows NT installation following the instructions in the manual for operating system.

Updating a Device Driver

When a software update is available in future you can update the drivers without any hardware or software configuration changes by following these steps.

1. Copy the new device driver to the directory ***Xxxxx*/System32/Drivers** where ***Xxxxx*** is the system root of the Windows NT (Typically named ***/winnt*.**)

2. If your computer boots from the device connected to AIC-7870 SCSI controller, copy the same driver to the file **c:\ ntbootdd.sys**

NOVELL NETWARE 3.1X, 4.0X

AIC-7870 family drivers for Novell Netware 386 are fully Novell Netware Tested and Approved. These device drivers are located on the driver disk for Netware, OS/2 and Windows NT; they are in ***netware*** directory and a sub directory usually named ***V4_0 or V3_1x***.

Readme.txt   An ASCII text file describing drivers for Novell Netware 386 V3.11 or V4.x or later.

AIC7870.dsk   Drivers for Novell Netware 386 V3.11 or V4.x or later.

aspitran.dsk   ASPI transport layer driver for Novell Netware 386 V3.11 or V4.x or later.

AIC7870.ddi   A driver definition information file (for Novell Netware V4.x only) to provide setup information to Netware during installation;

Netware can then prompt you with parameters to be configured for the device driver during installation process.

Installing drivers for Netware 386 V3.11 or later

Follow the instruction in this section to load SCSI drivers for use with Novell Netware 386 V3.11 or V3.12. The netware install program prompts you for the required slot number.

Note : For installation using the CD-ROM you must setup the computer to access the CD-ROM by using the necessary software, like DOS drivers.

1. Make backup copies of all Driver disk using DOS "DISKCOPY" command and use those backup copies as your working disk.

2. Find out which PCI bus and slot(s) SCSI port is connected to by running the SCSI Select utility. Look on the first screen of SCSI Select in the upper right corner for **Bus:Device xx:xxh**. Write down the Bus and Device numbers, you need it during the installation process. Bus refers to the PCI on system. Default for Bus is 0. Usually only one PCI bus is supplied with a system; however, systems may counting more than one PCI bus. If a bus number is other than 0, specify the command line option as bus_num=x when loading the driver.

   Device refers to slot number on PCI bus (Default is 13 on 54CDP)

3. Run the Netware 386 file SERVER.EXE to start the installation process. You will be prompted for a file server name and an IPX internal network number. Consult the Netware 386 User's manual for this information.

4. The Netware 386 prompt (":") will now be displayed. Insert the 54CDP Driver Diskette into drive A:. Use the LOAD command to install the driver.

The correct syntax to load the AIC7870 Netware V3.11 driver is:

```
:load [pathname] AIC7870 [options] slot=x bus_num=x
```

5. The module "ASPITRAN.DSK" also needs to reside in the same directory because Netware attempts to load this file automatically..

6. Load device driver once for each installed SCSI controller. If you have additional SCSI controller you must load the driver for corresponding controller.

Continue with the Netware installation by entering the following line at the colon (:) prompt.

```
:load [pathname] install
```

There are several command line [options] that can be specified when the driver is loaded. These are described below.

Option	Possible Values	Description
Slot	1 - 21	Defines SCSI Controller port location. If none is given you are prompted for 1.
Bus_num	0 - 7	Defines PCI Bus number. Default is 0. Usually only one PCI bus is supplied with system; however, systems may contain more than one PCI bus.
Verbose	Y	With this option, the driver will display 54CDP SCSI configuration information during load time.
Removable	Off	This option disables support for removable media. By default,

Option	Possible Values	Description
Fixed_disk	Off	removable media devices are supported. A user may want to disable "removable" media support in order to load another ASPI Removable Disk Module. This option disables support for fixed disk drives. By default, fixed disk drives are supported. A user may want to disable "fixed" disk support in order to load another ASPI Fixed Disk Module.
Dev_enable	00-FF *	Allow you to enable the driver's registration of SCSI devices on a per target basis. This enable bit mask is entered in hex(see bit mask operation)
Lun_enable	00 - FF	Enables LUN scanning for a specific target. This is a bit mask and takes a hex value determined in the same way as for the dev_enable option. By default driver scans for LUN 0 only.
Tag_enable	00 - FF	Disables tagged queuing for specific targets. This disable bit mask is entered in hex(see bit mask options)
Io_combine	0 - FF	Specifies maximum number of segments in a scatter/gather list.
Max_sectors	0 - FF	Specifies maximum number of sectors in a single scatter/gather segment
Max_tags	0 - FF	Specifies maximum number of tagged commands.
Max_nontags	0 - FF	Specifies maximum number of non-tagged commands.
Read_after_ write	0|1|2	Specifies default verify mode, 0 = No verify on writes 1 = Software verify

Option	Possible Values	Description
		2 = Hardware verify

*   If Fast and Wide SCSI bus also used, these values become FFFF

The command line options are NOT case sensitive, and not white-space sensitive.

Bit Mask Options

Use this example to aid in calculating bit-mask option hex values. Each SCSI device (ID 0-15) is enabled by a 1 in its corresponding bit position. In this example, dev_enable=05 enables driver registration pf the devices at SCSI IDs 0 and 2.

	Bit Position							
SCSI ID	7	6	5	4	3	2	1	0
0 , 2	0	0	0	0	0	1	0	1
Convert to HEX								
05h	0				5			

Installing drivers for Netware 386 V4.x

Follow the instruction in this section to load SCSI drivers for Novell Netware 386 V4.x. Load the driver by selecting the disk module (*Adaptec AIC-7870 ASPI Manager and Disk Module*) from a list in the Netware *install* program. The netware install program prompts you for the required slot number.

Note : For installation using the CD-ROM you must setup the computer to access the CD-ROM by using DOS drivers.

1. Make backup copies of all Driver disk using DOS "DISKCOPY" command and use those backup copies as your working disk.

2. Find out which PCI bus and slot(s) SCSI port is connected to by running the SCSI Select utility. Look on the first screen of SCSI Select in the upper right corner

for **Bus:Device xx:xxh**. Write down the Bus and Device numbers, you need it during the installation process. Bus refers to the PCI on system. Default for Bus is 0. Usually only one PCI bus is supplied with a system; however, systems may counting more than one PCI bus. If a bus number is other than 0, specify the command line option as bus_num=x when loading the driver.

Device refers to slot number on PCI bus.

3. Make sure the hardware is installed and configured correctly, as explained in the previous sections.

4. Boot DOS on your computer.

5. Change the directory where installation files are found. For a CD-ROM, the sub-directory is similar to

   C:\netware4.0\english

6. Run **install** to start the installation process. Follow the netware installation manual to enter options.

7. When screen to **Load Disk Driver** appears, press **Insert.** Press F3 and specify the path for the driver disk and insert the diskette labeled Netware, OS/2, Windows NT.

   Select **AIC7870.DSK** and press **Enter**.

   Specify the slot number. The slot number can be detected by SCSI Select Utility.

8. Note : Do not select ASPITRAN.DSK; that is loaded automatically. Enter the information asked by installation routine. If you have multiple SCSI controllers repeat driver installation for each and enter corresponding slot number where SCSI controller is located.

9. In **startup.ncf** you can use command line options given at the end of Netware 3.1x installation section.

   The correct syntax to load the NetWare V4.x driver is:

:load [pathname] AIC7870 [options] slot=x bus_num=x

Mirroring and Duplexing

Mirroring and Duplexing are two techniques for protecting your server against drive failure. In both cases disk drives contain same data. If one disk fails, the other disk(s) continues to function without interruption to the end user, thus minimizing network down time. In the case of duplexing, a drive or host adapter can fail and the system continues to work. Here is the difference between Mirroring and Duplexing :

In mirroring installation, two drives are installed on the same SCSI bus and host adapter continuously mirror an another data.

In Duplexing, drives installed on different SCSI buses mirror an another.

Mirroring :

1. Connect two drives to the same SCSI controller. Set different SCSI IDs on both drives. Netware partitions should be nearly the same size.

2. Follow netware installation procedure. When it came to Disk options, select mirroring options. Follow Netware installation manual.

Duplexing

1. Connect two drives to different controllers. Partition sizes on two drives should be nearly same size.

2. Install drivers for both controllers.

3. Repeat all steps for mirroring.

SCO UNIX INSTALLATION

1. Insert SCO Unix or ODT N1 (Boot) disk into primary floppy drive and turn on the computer.

2. At the following prompt, type link and press **Enter.**

   SCO Unix System V/386

   Boot

   :

3. The screen will display following message :

   What packages do you need linked in the system,

   or 'q' to quit ?:

4. Type **alad** and press Enter. **alad** is the package name for the driver for SCSI.

5. When you see this message

   Please insert the fd(x) alad volume and press <Return>,

   or 'q' to quit:

   Insert driver disk for SCO Unix in floppy drive and press Enter.

6. Follow the SCO UNIX manual for further installation instruction.

APPENDIX A: AMI BIOS HARD DISK TYPE

Type	Cylinder	Heads	Write Precomp	Landing Zone	Sectors	Size
1	306	4	128	305	17	10MB
2	615	4	300	615	17	20MB
3	615	6	300	615	17	31MB
4	940	8	512	940	17	62MB
5	940	6	512	940	17	47MB
6	615	4	65535	615	17	20MB
7	462	8	256	511	17	31MB
8	733	5	65535	733	17	30MB
9	900	15	65535	901	17	112MB
10	820	3	65535	820	17	20MB
11	855	5	65535	855	17	35MB
12	855	7	65535	855	17	50MB
13	306	8	128	319	17	20MB
14	733	7	65535	733	17	43MB
16	612	4	0	663	17	20MB
17	977	5	300	977	17	41MB
18	977	7	65535	977	17	57MB
19	1024	7	512	1023	17	60MB
20	733	5	300	732	17	30MB
21	733	7	300	732	17	43MB
22	733	5	300	733	17	30MB
23	306	4	0	336	17	10MB
24	925	7	0	925	17	54MB
25	925	9	65535	925	17	69MB
26	754	7	754	754	17	44MB
27	754	11	65535	754	17	69MB
28	699	7	256	699	17	41MB
29	823	10	65535	823	17	68MB
30	918	7	918	918	17	53MB

Type	Cylinder	Heads	Write Precomp	Landing Zone	Sectors	Size
31	1024	11	65535	1024	17	94MB
32	1024	15	65535	1024	17	128MB
33	1024	5	1024	1024	17	43MB
34	612	2	128	612	17	10MB
35	1024	9	65535	1024	17	77MB
36	1024	8	512	1024	17	68MB
37	615	8	128	615	17	41MB
38	987	3	987	987	17	25MB
39	987	7	987	987	17	57MB
40	820	6	820	820	17	41MB
41	977	5	977	977	17	41MB
42	981	5	981	981	17	41MB
43	830	7	512	830	17	48MB
44	830	10	65535	830	17	69MB
45	917	15	65535	918	17	114MB
46	1224	15	65535	1223	17	152MB
47	USER'S	TYPE				

APPENDIX B: ISA I/O ADDRESS MAP

I/O ADDRESS (HEX)	I/O DEVICE
000 - 01F	DMA Controller 1, 8237A-5
020 - 03F	Interrupt Controller 1, 8259A
040 - 05F	System Timer, 8254-2
060 - 06F	8742 Keyboard Controller
070 - 07F	Real-Time Clock/CMOS and NMI Mask
080 - 09F	DMA Page Register, 74LS612
0A0 - 0BF	Interrupt Controller 2, 8259A
0C0 - 0DF	DMA Controller 2, 8237A-5
0F0 - 0FF	i486 Math Coprocessor
1F0 - 1F8	Fixed Disk Drive Adapter
200 - 207	Game I/O
20C - 20D	Reserved
21F	Reserved
278 - 27F	Parallel Printer Port 2
2B0 - 2DF	Alternate Enhanced Graphic Adapter
2E1	GPIB Adapter 0
2E2 - 2E3	Data Acquisition Adapter 0
2F8 - 2FF	Serial Port 2 (RS-232-C)
300 - 31F	Prototype Card
360 - 363	PC Network (Low Address)
364 - 367	Reserved
368 - 36B	PC Network (High Address)
36C - 36F	Reserved
378 - 37F	Parallel Printer Port 1
380 - 38F	SDLC, Bisynchronous 2
390 - 393	Cluster
3A0 - 3AF	Bisynchronous 1
3B0 - 3BF	Monochrome Display and Printer Adapter
3C0 - 3CF	Enhanced Graphics Adapter

I/O ADDRESS (HEX)	I/O DEVICE
3D0 - 3DF	Color/Graphics Monitor Adapter
3F0 - 3F7	Diskette Drive Controller
3F8 - 3FF	Serial Port 1 (RS-232-C)
6E2 - 6E3	Data Acquisition Adapter 1
790 - 793	Cluster Adapter 1
AE2 - AE3	Data Acquisition Adapter 2
B90 - B93	Cluster Adapter 2
EE2 - EE3	Data Acquisition Adapter 3
1390 - 1393	Cluster Adapter 3
22E1	GPIB Adapter 1
2390 - 2393	Cluster Adapter 4
42E1	GPIB Adapter 2
62E1	GPIB Adapter 3
82E1	GPIB Adapter 4
A2E1	GPIB Adapter 5
C2E1	GPIB Adapter 6
E2E1	GPIB Adapter 7

APPENDIX C: EISA I/O ADDRESS SPACE

ADDRESS (Hex)	DESCRIPTION	COMMENTS
0000 - 00FF	ISA System Board I/O	
0100 - 03FF	ISA Expansion Adapter	EISA System Board
0400 - 04FF	EISA System Board Controller	ISA I/O Space
0500 - 07FF	Alias of 0100 - 03FF	(0 to 4KB Range)
0800 - 08FF	EISA System Board I/O	
0900 - 0BFF	Alias of 0100 - 03FF	
0C00- 0CFF	EISA System Board I/O	
0D00- 0FFF	Alias of 0100 - 03FF	
1000 - 10FF	Slot 1 I/O	
1100 - 13FF	Alias of 0100 - 03FF	
1400 - 14FF	Slot 1 I/O	
1500 - 17FF	Alias of 0100 - 03FF	EISA Slot 1 I/O Space
1800 - 18FF	Slot 1 I/O	
1900 -1BFF	Alias of 0100 - 03FF	
1C00 -1CFF	Slot 1 I/O	
1D00 -1FFF	Alias of 0100 - 03FF	
z100 - z3FF	Alias of 0100 - 03FF	
z400 - z4FF	Slot "z" I/O	
z500 - z7FF	Alias of 0100 - 03FF	EISA Slot "z" I/O Space

ADDRESS (Hex)	DESCRIPTION	COMMENTS
z800 - z8FF	Slot "z" I/O	z = 2, 3, 4, 5, 6, 7, 8, 9
z900 - zBFF	Alias of 0100 - 03FF	A, B , C, D, E, or F
zC00 - zCFF	Slot "z" I/O	
zD00 - zFFF	Alias of 0100 - 03FF	

APPENDIX D: INTERRUPT LEVEL ASSIGNMENTS

LEVEL on SYSTEM	LEVEL on IO BUS	TYPICAL INTERRUPT SOURCE
NMI	None	Parity, ISA/EISA Channel Check, Bus Time Out, Fail Safe Timer Timeout
IRQ0	None	Interval Timer 1, Counter 0 Out
IRQ1	None	Keyboard Controller
IRQ2	None	Cascade Interrupts from IRQ8 to IRQ15
IRQ3	IRQ3	Serial Port 2
IRQ4	IRQ4	Serial Port 1
IRQ5	IRQ5	Parallel Port 2
IRQ6	IRQ6	Diskette Controller
IRQ7	IRQ7	Parallel Port 1
IRQ8	None	Real Time Clock
IRQ9	IRQ2	Expansion Bus Pin
IRQ10	IRQ10	Expansion Bus Pin
IRQ11	IRQ11	Expansion Bus Pin
IRQ12	IRQ12	Expansion Bus Pin
IRQ13	None	Coprocessor Error, DMA Chaining
IRQ14	IRQ14	Fixed Disk Drive Controller Expansion Bus Pin
IRQ15	IRQ15	Expansion Bus Pin

PRODUCT INFORMATION RECORD

Record all the above information as you received the product and provide to your supplier in writing to obtain technical support assistance. This will help to speed up the response and get your problem solved.

System Board

Date Purchased or Received: _____

Purchased From: _____

Product Name: _____PCB Ver:_____ Rev: ___

Serial Number: _____

CPU Processor Speed: _____Memory Size: _____

BIOS Version: _____ Software Driver Rel #: _____

PCI Add-on Cards:

Model #_____   Interrupt:_____ Slot #:_____

Model #_____   Interrupt:_____ Slot #:_____

Model #_____   Interrupt:_____ Slot #:_____

EISA and ISA Add-on Cards:

Model #_____Interrupt:____ DMA: ____ Slot #:_____

Model #_____Interrupt:____ DMA: ____ Slot #:_____

Model #_____Interrupt:____ DMA: ____ Slot #:_____

Model #_____Interrupt:____ DMA: ____ Slot #:_____

For More Information .