

SUPER[®]

Dual Pentium[®] Pro Processor

SUPER P6DNH

SUPER P6DNH2

USER'S MANUAL

Revision 1.1

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Preface

About This Manual

This manual is written for system houses, PC technicians and knowledgeable PC end users. It provides information for the installation and use of the SUPER® P6DNH/P6DNH2 motherboard, which supports the 200/180/166/150, >200 MHz Intel® Pentium® Pro processors, and the i960® RP IO processor.

The Pentium Pro processor has two 64-bit data buses. One bus interconnects to the built-in L2 cache and the other is an external bus that interconnects with the system memory, I/O and the other processor. Both come with ECC (Error Checking and Correction) allowing for the correction of single-bit data errors and detection of 2-bit errors on the data bus.

Manual Organization

Chapter 1, Introduction, describes the features, specifications and performance of the SUPER P6DNH/P6DNH2 system board, provides detailed information about the chipset, and offers warranty information.

Refer to Chapter 2, Installation, for a list of the equipment needed for a system based on the SUPER P6DNH/P6DNH2 system board. This chapter provides you with the instructions for handling static-sensitive devices, checking and/or configuring the jumpers. Read this chapter when you want to install or remove SIMM memory modules and to mount the system board in the chassis. Also refer to this chapter to connect the floppy and hard disk drives, USB, IDE interface, parallel port, serial ports, as well as the cables for the power supply, reset cable, Keylock/Power LED, speaker and keyboard.

If you encounter any problem, please see Chapter 3, Troubleshooting, which describes troubleshooting procedures for video, memory, and the setup configuration stored in memory. Instructions are also included on contacting a technical assistance support representative and returning merchandise for service and the BBS# for BIOS upgrades .

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Chapter 1

Introduction

1-1 Overview

SUPER P6DNH/P6DNH2 is a high performance, I₂O™ enabled computer system board based on Intel® Pentium® Pro 200/180/166/150 MHz processors. They incorporate Intel's 440FX chipset and support dual processing. SUPER P6DNH uses the 33 MHz i960® RP I/O processor while SUPER P6DNH2 uses the 66 MHz i960 RD I/O processor.

The Pentium Pro processor is Intel's top-of-the-line generation of performance for servers, workstations, and high-end desktops. It delivers its superior performance through its Dynamic Execution microarchitecture which allows multiple branch prediction, dataflow analysis and speculative execution.

The Pentium Pro processor includes 16KB of internal cache and an integrated 256KB or 512KB non-blocking secondary cache in the same package. Having the L2 cache inside the package will not only save space, it will also have the CPU core communicating with the L2 cache at full speed. Non-blocking means that the transactions on the processor bus do not block subsequent bus transactions. For example, when a cache miss occurs, the processor will continue to process other instructions while initiating a bus transaction to satisfy the cache miss. These instructions could generate additional cache misses which could cause more bus transactions. The Pentium Pro processor can maintain up to four concurrent requests of the bus.

The general purpose registers of the Pentium Pro processor are the same as on previous generations. The processor bus achieves high bus efficiency by providing support for multiple, pipelined transactions and deferred replies. A single processor may have up to 4 outstanding transactions at the same time. There are a variety

of wider datapaths both inside and outside the chip. It has an external 64-bit bus in order to communicate more efficiently with the system memory. The package have two cavities with about 21 million transistors. The larger one is the CPU core with 5.5 million transistors. The smaller one is the non-blocking cache which contains 15.5 million transistors.

The i960 RP/RD I/O processor is a highly integrated intelligent I/O subsystem on a chip. Mode 3 is the default setting for its normal operation. The i960 RP/RD has two main functions. As a local processor, it offloads interrupt-intensive I/O tasks from the host CPU. Its architecture is composed of a RISC core surrounded by peripherals essential to the I/O function. The on-board PCI-to-PCI bridge enables designers to connect I/O components directly to the PCI bus and also add additional PCI slots. The bridge improves overall system performance by reducing bus traffic. SUPER P6DNH/P6DNH2 supports four primary and four secondary PCI buses.

I₂O is an open software-interface standard for I/O devices, independent of the specific device and operating system. It is implemented on the i960 RP/RD I/O processor. With I₂O, I/O hardware vendors do not have to write drivers in countless variation, one for each operating system version.

To attain portability across multiple operating systems and host platforms, I₂O drivers are divided into the OS Services Module (OSM), and Hardware Device Module (HDM). The first module interfaces with the host operating system. The second interfaces with the particular device, media or server managed by the driver. The two modules interface with each other through a two-layered communications system. A Message Layer sets up a communications session. A Transport Layer defines how information will be shared. The Message Layer resides on the Transport Layer.

Peripheral Component Interconnect (PCI) provides industry-leading performance and compatibility. The 32-bit, 33 MHz pathway to the CPU offers performance unmatched by other bus architectures. The

PCI standard is clearly defined to ensure complete compatibility. A PCI add-on card available today will work in any PC-compliant system in the future. The PCI add-on card interface is processor independent. This will enable an efficient transition to future processor generations and use with multiple processor architecture.

In addition to the security of a true standard, PCI add-on cards feature auto-configurability for easy integration. The user-friendly BIOS automatically allocates system resources for add-on cards and configures hard disk, memory, and other peripherals. No more hassles with settings, jumpers, or switches. Just plug in the card and go (Plug and Play or PnP).

The motherboard's eight 32-bit slots with industry standard PCI design have a very high performance capability that provides an ideal system board solution for a wide range of demanding applications; such as networking multiuser environments, computer aided design (CAD), computer aided manufacturing (CAM), computer-aided engineering (CAE), database management, desktop publishing, image processing, and artificial intelligence. The motherboard's additional three ISA slots provide standard 16-bit compatibility for AT-type add-on card expansion.

Figure 1-1 shows the layout of the SUPER P6DNH/P6DNH2 motherboard. Figure 1-2 shows the architecture of the SUPER P6DNH/P6DNH2 motherboard.

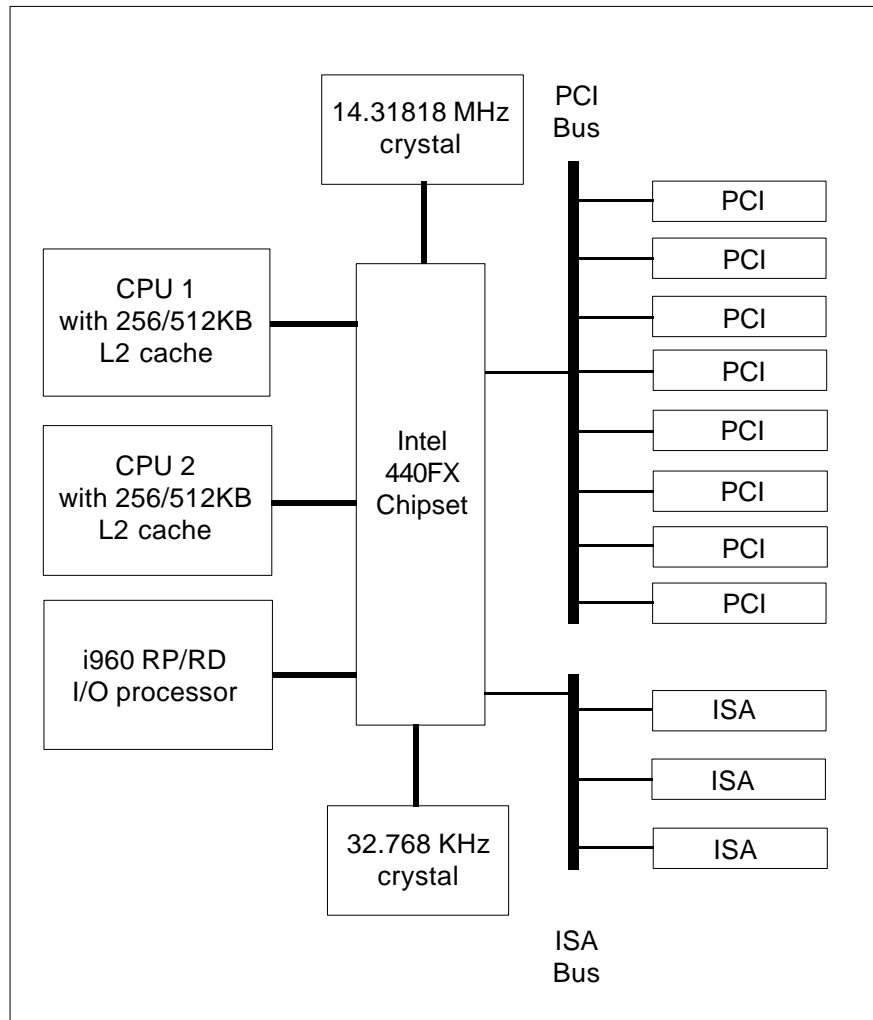


Figure 1-2. P6DNH/P6DNH2 System Board Architecture

Features

The following list covers the general features of the SUPER P6DNH/P6DNH2 motherboard.

CPU

- Dual Pentium Pro 200/180/166/150 MHz processors with integrated 256 or 512KB non-blocking secondary cache
- 16KB internal cache
- 387-pin ZIF (Zero Insertion Force) socket 8

Intelligent i960 RP/RD IOP

- I₂O™ enabled
- 64 MB local I/O memory
- 8 Mb Flash I/O BIOS
- Wind River Systems Ix Works™ RTOS

Bus Speed

- 66/60 MHz external bus with 64-bit data plus 8 bits ECC

Memory

- 64-bit wide data bus of up to 1GB
- Supports 1 MB, 2 MB, 4 MB, 8MB, 16MB and 32MB (x32 or x36 60ns, 72-pin) Fast Page DRAM or EDO
- Error Checking and Correction and Parity Checking support

Dimensions

- Full AT size
- 13.2" x 12.3"

EIDE support

- Integrated IDE controller provides two IDE interfaces for hard disk(s) and/or CD ROM(s)
- Supports Mode 4

Super I/O

- Supports EPP (Enhanced Parallel Port) and ECP (Extended Capabilities Port) parallel port, floppy interface, USB and 2 Fast UART 16550 serial ports

Expansion

- Three 16-bit ISA slots
- Eight 32-bit PCI slots

BIOS

- AMI® Flash BIOS with built-in setup
- Plug and Play (PnP) with boot block support

Software Compatibility

- 100% IBM® PC/AT® compatible
- DOS, OS/2, SCO UNIX® Open Server, XENIX®, Novell® SMP, Windows™, Windows NT™ and Windows™ 95

Testing

- 50°C, 48-hour, dynamic burn-in with system-level testing

Manufacturing and Support

- Made in U.S.A.
- Design-level Technical Support and Service in U.S.A.

1-2 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for high CPU clock rates like 200, 180, 166, 150 MHz and future Pentium Pro processors for the SUPER P6DNH/P6DNH2 system board.

SUPER P6DNH/P6DNH2 can accommodate 5V power supplies. An additional 5V power is provided on J20B. It is necessary to use this extra 5V power when the PCI slots are heavily loaded. The SC801-S chassis has the connector for the extra 5V power.

Although most power supplies generally meet the specifications required by the CPU, some power supplies are not adequate. To obtain the highest system reliability, be certain that your power supply provides +5 VDC with a voltage range between +4.95 VDC (minimum) and +5.25 VDC (maximum).

It is highly recommended that you use a high quality power supply. Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to separate noise from the computer. You can also install a power surge protector to help avoid problems caused by power surges.

1-3 Chipset Overview

The Intel 440FX chipset is a high-performance PCIset that supports full symmetric multi-processor protocol for up to two processors. It is compliant to the PCI Rev. 2.1 specification. The memory controller provides capability for auto-detection of EDO/FPM DRAM type installed in the system. It also provides data integrity features including ECC in the memory array and parity error detection. Memory is upgradable up to 1GB for the SUPER P6DNH/P6DNH2.

1-4 National Semiconductor Super I/O Controller

The National Semiconductor 87306 Super I/O Controller incorporates an IDE control logic, two full function serial ports, an IEEE 1284 parallel port, industry standard floppy disk controller with 16 byte FIFO, Real Time Clock and an 8042 compatible keyboard controller all in one chip.

The IDE interfaces provide up to Mode 4 support. The two serial ports are software compatible with the Fast UART 16550. The parallel port is EPP (Enhanced Parallel Port) and ECP (Extended Capabilities Port) compatible, including level 2 support. It includes a protection circuit against damage caused when the printer is powered up. EPP mode provides for greater throughput than Compatible or Extended modes by supporting faster transfer rates and a mechanism that allows the host to address peripheral device registers directly. Faster transfers are achieved by automatically generating the address and data strobes. EPP is compatible with both Compatible and Extended mode parallel-port devices.

1-5 Voltage Regulator Modules (VRM)

The Voltage Regulator Module (VRM1 and VRM2) is a DC-to-DC converter with a standardized interface to the system. The standardization allows a variety of Voltage Regulator Modules to support the Pentium Pro processor family and to provide a cost effective support for CPU upgrade. It is necessary to have the VRM for the motherboard to be functional.

1-6 System Overheat Thermal Control

A back-up cooling fan can be hooked up to JP91, JP92 or JP93. If the power supply fan or the processor cooling fan goes down, the circuitry will detect an overheat temperature depending on the user setting. It will then trigger the backup cooling fan or alarm. The alarm can be turned on or off using JP88. JP90 is used to connect the overheat LED. The user can set the temperature range using JP95. A buzzer is connected on JP89 that will sound off that it is time to replace the power supply fan or the CPU cooling fan. It is important that the back-up cooling fan be installed correctly in such a way that it will not only cool down the processor but the whole system as well.

1-7 Warranty, Technical Support, and Service

The manufacturer will repair or exchange any unit or parts free of charge due to manufacturing defects for one year (12 months) from the original invoice date of purchase.

Parts

Defective parts will be exchanged or repaired within one year (12 months) from the manufacturer's original invoice purchase date.

BIOS

The manufacturer will exchange the BIOS free of charge (shipping and handling excluded) due to existing incompatibility issues within one year from the manufacturer's original invoice purchase date.

Labor

Mail-in or carry-in service is available for one year (12 months) from the manufacturer's original invoice purchase date.

Returns

If you must return products for any reason, refer to Chapter 3 in this manual, "Returning Merchandise for Service."

Chapter 2 Installation

2-1 SUPER P6DNH/P6DNH2 System Components

The equipment listed in this section is required to build a high performance system based on the SUPER P6DNH/P6DNH2 motherboard. The minimum configuration for a standard system is listed below. To create the full enhanced configuration, add the enhanced system configuration equipment listed on the next page to the equipment listed below.

Standard System Configuration

- 300 watt (minimum) 5V power supply
- Chassis with a speaker connected to a 4-pin connector, a push button switch with 2-pin connector for the reset function, and a keylock connected to a 5-pin connector
- SUPER P6DNH/P6DNH2 system board
- AT-compatible keyboard (84 or 101 style keyboard)
- 8 MB or 16 MB of system memory
- One 1.2 MB 5.25" and/or one 1.44 MB 3.5" floppy disk drive
- Use PCI Fast SCSI card and hard disk drive or the on-board IDE interface
- PCI VGA card

Enhanced System Configuration

- Tape drive (for backups)
- Sound card
- Modem/FAX card
- CD-ROM drive
- Add SIMM modules for 32 MB, 64 MB, or 128 MB of system memory
- Use one or two PCI Ultra Wide Fast SCSI cards
- Use up to four PCI Fast Network cards

2-2 Static-Sensitive Devices

Static-sensitive electric discharge can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed for static discharge.
- Touch a grounded metal object before you remove the board from the anti-static bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules, or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the system board and peripherals back into their anti-static bags when not in use.
- Be sure your computer system's chassis allows excellent conductive contacts between its power supply, case, mounting fasteners, and the system board for grounding purposes.

Unpacking

The system board is shipped in anti-static packaging to avoid static damage. When unpacking the board, be sure the person handling the board is static-protected.

2-3 Configuring System Board Jumpers

Use the following settings to configure your system board. Refer to Figure 1-1 for an illustration of the jumpers. Manufacturing jumpers are permanently fixed or preset in place on the system board. You cannot move them. These jumpers are labeled on the system board and are listed below as Manufacturer Settings.

Manufacturer Settings

J86:	1-2
J88:	1-2
J827:	ON
J828:	ON
J829:	ON
JP13:	2-3
JP15:	2-3
JP26:	OFF
JP27:	ON
JP38:	OFF
JP88:	OFF
JP917:	ON
JP924:	1-2
JP925:	1-2
JP880:	1-2 Default
	2-3 CMOS Clear
JP42:	ON (ISA CLK=PCI CLK/4)
	OFF (ISA CLK=PCI CLK/3)

Changing the CPU Speed

SUPER P6DNH/P6DNH2 supports Intel Pentium® Pro 200/180/166/150 MHz and future Pentium Pro processors. To change the CPU speed, change the jumpers shown below on Table 2-1:

Table 2-1. CPU Speed Selection

	150	166	180	200
JP29	OFF	OFF	ON	ON
JP30	ON	ON	OFF	OFF
JP31	ON	ON	ON	ON
JP32	ON	ON	ON	ON
JP36	ON	OFF	ON	OFF
JP37	OFF	ON	OFF	ON

2-4 Mounting the Motherboard in the Chassis

The motherboard has eight standard mounting holes to fit all different types of chassis. Chassis may come with a variety of mounting fasteners, made of metal or plastic. Although a chassis may have both metal and plastic fasteners, metal fasteners are the most highly recommended because they ground the system board to the chassis. Therefore, use as many metal fasteners as possible for better grounding.

2-5 Connecting Cables

After you have securely mounted the motherboard to the chassis, you are ready to connect the cables.

Table 2-2. 5V Power Supply Connector Pin Definitions

Connector Number	Pin Number	Function
J20	1	Power Good (Power on reset, TTL signal)
	2	+5 VCC
	3	+12 VCC
	4	-12 VCC
	5	Ground (Black wire to be connected)
	6	Ground (Black wire to be connected)
	7	Ground (Black wire to be connected)
	8	Ground (Black wire to be connected)
	9	-5 VCC
	10	+5 VCC
	11	+5 VCC
	12	+5 VCC

Power Supply Connectors

Attach power supply cables to J20 for a 5V power supply or J21 for a 3.3V power supply (optional for OEM customers only). Do not force the cables, but make sure they are fully seated. The two black wires on each power cable sit next to each other when correctly installed. See Table 2-2 for pin definitions of a 5V power supply. See Table 2-3 for pin definitions of a 3.3V power supply. See Table 2-4 for pin definitions of the extra 5V power supply.

Turbo Function

There are no jumpers for turbo switch and turbo LED. By default, SUPER P6DNH/P6DNH2 is in turbo mode.

**Table 2-3. 3.3V Power Supply Connector Pin Definitions
(Optional for OEM customers only)**

Connector Number	Pin Number	Function
J942	1	Ground (Black wire to be connected)
	2	Ground (Black wire to be connected)
	3	Ground (Black wire to be connected)
	4	+3.3 VCC
	5	+3.3 VCC
	6	+3.3 VCC

Note:

The +3.3V power supply is for 3.3V PCI add-on cards or CPU power support when 3.3V CPU is used.

Table 2-4. Extra 5V Power Supply Connector Pin Definitions

Connector Number	Pin Number	Function
J20B	1	Ground (Black wire to be connected)
	2	Ground (Black wire to be connected)
	3	Ground (Black wire to be connected)
	4	+5 VCC
	5	+5 VCC
	6	+5 VCC

USB Connectors

USB stands for Universal Serial Bus. It simplifies PC peripheral connectivity. Its robust serial interface supports low and medium speed transfers which can either be isochronous or asynchronous. The USB ports are located on J35 and J36. See Table 2-5 for pin definitions of a USB port.

Table 2-5. J35 & J36 Universal Serial Bus Pin Definitions

Pin Number	Function
1	+5V
2	P0-
3	P0+
4	GND

Reset Cable Connector

The reset cable connector JP21 has two pins. The connector attaches to the hardware Reset switch on the computer case. See Table 2-6 for pin definitions

Table 2-6. Reset Pin Definitions

Pin Number	Definition
1	Reset
2	Ground

Keylock/Power LED Cable Connector

The keylock/power LED cable connector JP20 has five pins. See Table 2-7 for pin definitions. Pins 1 and 3 are for the power LED. Pins 4 and 5 are for the keylock.

Table 2-7. Keylock/Power LED Pin Definitions

Pin Number	Function	Definition
1	+	Red wire, LED power
2	Key	No connection
3	GND	Black wire
4		Keyboard inhibit
5	GND	Black wire

Keyboard Connector

The keyboard connector J81 has five pins. See Table 2-8 for pin definitions.

Table 2-8. Keyboard Connector Pin Definitions

Pin Number	Function
1	Keyboard clock
2	Keyboard data
3	Spare
4	Ground
5	+5 VDC

Thermal Control Connector

Use the settings on Table 2-9 to set the system temperature condition for JP95. The recommended setting is 2-3. Once the temperature cools down, the back-up fan will automatically shut down.

Table 2-9. Thermal Control Connector

Setting	Turn on (°C)	Shut down (°C)
1-2	55	51
2-3	62	58
OFF	69	65

Hard Drive LED

The hard drive LED J23 has four pins. Attach the hard drive LED cable onto pins 1 and 2. See Table 2-10 for pin definitions.

Table 2-10. Hard Drive LED Pin Definitions

Pin Number	Function
1	Pull_Up_330
2	Key
3	HD Active
4	Pull_Up_330

Speaker Cable Connector

The speaker cable connector J22 has four pins. See Table 2-11 for pin definitions.

Table 2-11. Speaker Connector Pin Definitions

Pin Number	Function	Definition
1	+	Red wire, speaker data
2	Key	No connection
3	VCC	Speaker data
4	GND	Black wire

PS/2 Keyboard and Mouse Ports

The PS/2 keyboard is located on J83 and the PS/2 mouse is located on J82 and J84. The cable for J84 can be obtained from the manufacturer. See Tables 2-12 and 2-13 for pin definitions.

Table 2-12. PS/2 Keyboard and Mouse Pin Definitions (J82 and J83 Optional for OEM customers only)

Pin Number	Function
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Table 2-13. PS/2 Mouse (J84) Pin Definitions

Pin Number	Function	Pin Number	Function
1	NC	2	NC
3	NC	4	CLK
5	NC	6	VCC
7	Data	8	NC
9	GND	10	NC

Back-up Cooling Fan and Buzzer Connectors*

Connect the back-up cooling fan to JP91, JP92 or JP93 and the buzzer to JP89. Also refer to page 1-10 and 2-9. See Table 2-14 for pin definitions.

Table 2-14. Back-up Cooling Fan and Buzzer Connectors

Pin Number	Definition
1	+12 V
2	GND

* Caution: These connectors are DC direct.

Serial Ports

Serial port COM1 is located on J818 and serial port COM2 is located on J824. See Table 2-15 for pin definitions.

Table 2-15. Serial Ports Pin Definitions

Pin Number	Function	Pin Number	Function
1	DCD	6	CTS
2	DSR	7	DTR
3	Serial In	8	RI
4	RTS	9	GND
5	Serial Out	10	NC

2-6 Installing/Removing the SIMM Modules

SUPER P6DNH/P6DNH2 can accommodate a maximum of 1 GB of on-board memory, using standard 72-pin SIMM memory modules. You can use any 1 MB, 2 MB, 4 MB, 8MB, 16MB or 32MB Fast Page Mode or EDO SIMM modules. You can use 32-bit or 36-bit memories.

There are no jumpers to configure the on-board memory. Two banks of memory totaling 8 MB are required for a minimum system configuration. Memory banks must contain two 72-pin single-sided or double-sided SIMM modules. Memory timing requires 60ns fast page devices.

Refer to Figure 2-1 and the instructions below for installing or removing SIMM modules.

CAUTION

Exercise extreme care when installing or removing the SIMM modules to prevent any possible damages.

SIMM Module Installation

1. Insert SIMM modules in Bank 0 through Bank 3 as required for the desired system memory.
2. Insert each SIMM module into its socket at an angle away from the CPU sockets. The component side of the SIMM modules must face the CPU sockets.
3. Gently press the SIMM module in the direction of the CPU sockets until it snaps upright into place in the socket.

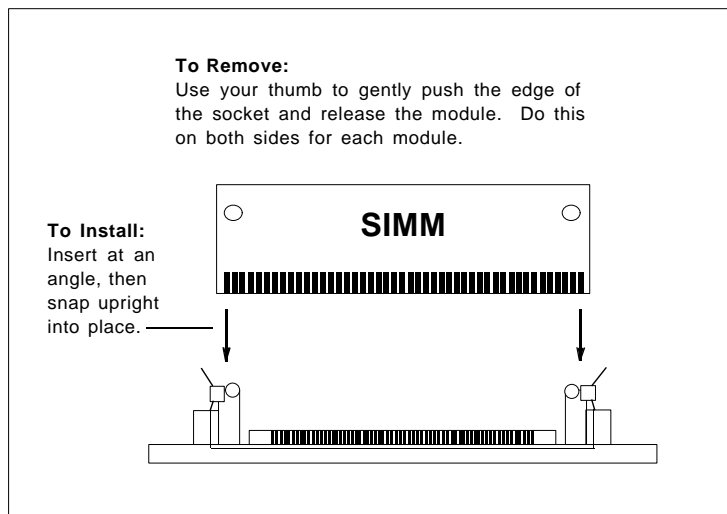


Figure 2-1. Installing/Removing a SIMM Memory Module

Removing SIMM Modules

1. Remove SIMM modules in correct descending order — from Bank 3 through Bank 0.
2. Gently push the edge of the sockets to the side to release the module. Remove one side of the SIMM module first, and then the other side, to prevent breaking the socket.

2-7 Connecting Parallel, Floppy and Hard Disk Drives

Use the following information to connect the floppy and hard disk drive cables.

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have the twisted wires always connects to drive B.
- An IDE hard disk drive requires a data ribbon cable with 40 wires, and a SCSI hard disk drive requires a SCSI ribbon cable with 50 wires.
- A single IDE hard disk drive cable has two connectors to provide for two drives. To select an IDE disk drive as C, you would normally set the drive select jumper on the drive to DS1. To select an IDE disk drive as D, you would normally set the drive select jumper on the drive to DS2. Consult the documentation that came with your disk drive for details on actual jumper locations and settings.
- A single SCSI ribbon cable typically has three connectors to provide for two hard disk drives and the SCSI adapter. (Note: most SCSI hard drives are single-ended SCSI devices.) The SCSI ID is determined by jumpers or a switch on the SCSI device. The last internal (and external) SCSI device cabled to the SCSI adapter must be terminated.
- Some drives require a special controller card. Read your disk drive manual for details.

Parallel Port Connector

The parallel port is located on J817. See Table 2-16 for pin definitions.

Table 2-16. Parallel Port Pin Definitions

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACJ-	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Floppy Connector

The floppy connector is located on J85. See Table 2-17 for pin definitions.

Table 2-17. Floppy Connector Pin Definitions

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDIN
3	GND	4	Reserved
5	Key	6	FDEDIN
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

IDE Interfaces

There are no jumpers to configure the on-board IDE interfaces J11 and J12. Refer to Table 2-18 for the pin definitions.

Table 2-18. IDE Connector Pin Definitions

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

Chapter 3 Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter.

No Video

Use the following steps for troubleshooting your system configuration.

1. If you have no video, follow the flowchart in Figure 3-1

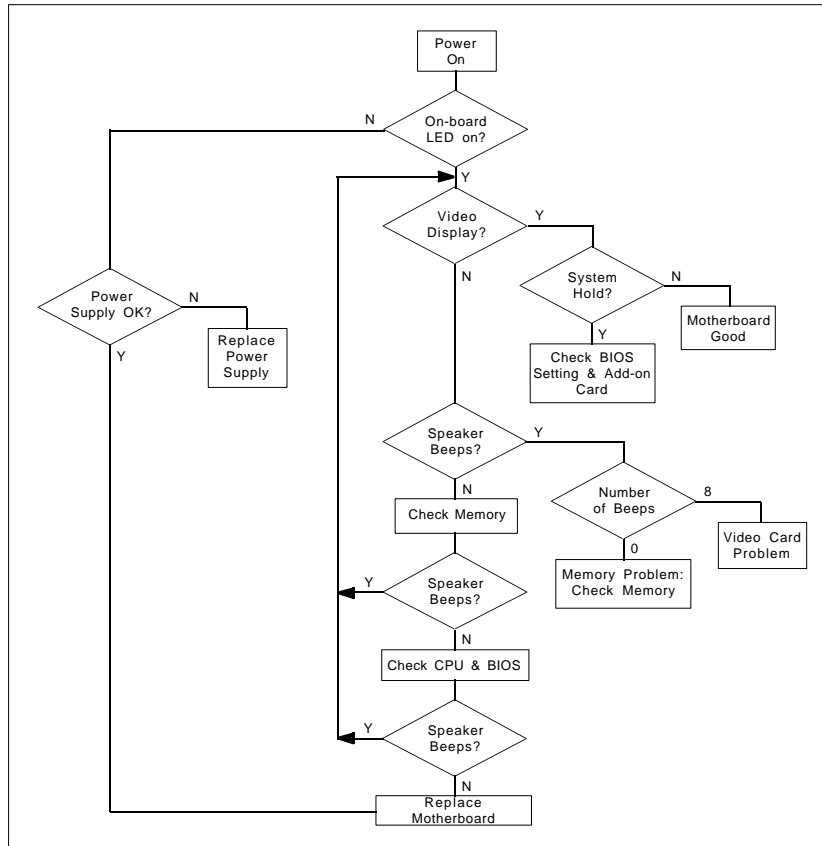


Figure 3-1. Troubleshooting Flowchart

2. Check for missing jumpers or improper installation of the ROM BIOS.
3. Make sure the video card and its jumper setting (as appropriate) match the monitor type.
4. Ensure that all peripheral cards are properly installed in their slots.
5. Use the speaker to determine if any beep codes exist. Refer to Appendix C of the AMI BIOS Reference Manual for details about beep codes.

NOTE

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended for port 80h codes. Refer to Appendix D.

Memory Error

If you encounter memory error, follow the procedures below.

1. Check to determine if SIMM modules are improperly installed.
2. Make sure that different types of SIMMs have not been installed in different banks (e.g., a mixture of 2MB x 36 and 1 MB x 36 SIMMs in Banks 0).
3. Determine if different speeds of SIMMs have been installed in the same or different banks, and the BIOS setup is configured for the fastest speed of RAM used. It is recommended to use the same RAM speed for SIMMs in different banks.
4. Check for bad SIMM modules or chips.

Losing the System's Setup Configuration

1. Ensure that you are using a high quality power supply. A poor quality power supply may cause the system to lose CMOS setup. Refer to Chapter 1 of this manual for details.
2. If the above step does not fix the Setup Configuration problem, contact your vendor for repair.

3-2 Technical Support Procedures

1. Go through the 'Troubleshooting Procedures' section in this chapter of the manual before calling Technical Support.
2. BIOS upgrades can be downloaded from the SUPER BBS# (408) 895-2022, 24 hours a day, using 1200-14400 baud, 8 data bits, 1 stop bit and no parity.

Note: Not all BIOS can be flashed depending on the modifications on the boot block code.

3. If you still cannot get the problem resolved, have the following information ready before you call for technical support:
 - BIOS release date/version
 - System board serial number
 - Product model name
 - Invoice number and date
 - System configuration

3-3 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, misuse, abuse, or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

