American Megatrends, Inc.

Super Voyager PCI-II

486 ISA Motherboard

User's Guide

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Revision History

4/21/95   Initial release.

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Preface

Technical Support

If an American Megatrends motherboard fails to operate as described or you are in doubt about a configuration option, please call technical support at 770-246-8645.

1   System Overview

The American Megatrends Super Voyager PCI-II 486 ISA motherboard has:

*   486™ or upgrade CPU operating at up to 100 Mhz internally and 25 or 33 Mhz externally,
*   Four ISA expansion slots, and
*   three PCI expansion slots.

The motherboard conforms to the PCI Version 2.0 specification and uses the PCI local bus. IDE modes 0, 1, 2, 3 and 4 are supported on the PCI local bus. Up to four IDE drives can be connected to the motherboard. The PCI slots operate synchronously with the CPU clock. The PCI bus frequency assignments are:

CPU Internal Clock Frequency	PCI Expansion Slots Frequency
100, 66, or 33 MHz	33 MHz
75, 50, or 25 MHz	25 MHz

The PCI bus frequency depends on the frequency of the CPU that is installed.

The PCI expansion slots are automatically configured by the onboard American Megatrends WINBIOS system BIOS.

Motherboard Dimensions

The Super Voyager PCI-II 486 ISA motherboard is approximately 8½ inches wide by 10.3 inches long (the mini Baby AT® motherboard size with similar mounting holes).

External CPU Speed

The Super Voyager PCI-II 486 ISA motherboard supports external CPU speeds of 25 MHz and 33 MHz. The PCI bus is synchronous and runs at the same speed as the CPU external clock.

Green PC Support

The Super Voyager PCI II motherboard includes support for monitor blanking on Green PC monitors and IDE hard disk drive spin down. The motherboard supplies a TTL output to control Green PC power supplies. The System Management Interrupt (SMI) and CPU Halt are supported. This motherboard compiles with the APM (Advanced Power Management) V1.1 specifications.

Processor Type and Speed

A variety of 486 and 486 overdrive CPUs are supported in both the 168 pin PGA package as well as the 237 pin Intel© P24T PGA package, including:

- Intel 486DX, SX-33 5V,
- Intel 486DX2, SX2-66 5V,
- Intel 486DX4-100 3.3V,
- Intel P24D, Write-back DX2-66 5V,
- AMD AM486+, AM486+ DX2 and AM486+ DX4, Write-back and Write-through 3.3V, and
- Cyrix M7 DX2-66, Write-back, 3.3V or 5V.

Heat Sink

A heat sink must be mounted on the CPU for proper cooling with all clock-multiplied 486-compatible CPUs.

Cont'd

Main System Memory

The motherboard requires Fast Page Mode SIMMs operating at 70 ns (RAS access time). The motherboard supports up to 64 MB of onboard system memory via four 32-bit 72-pin SIMMs (Single Inline Memory Modules). Supported SIMM types include: 256 KB x 36, 512 KB x 36, 1 MB x 36, 2 MB x 36, 4 MB x 36, 8 MB x 36, or 16 MB x 36 SIMMs.

Fast ATA

This motherboard supports the Fast ATA specification up to mode 4.

L2 Secondary Cache Memory

The motherboard supports 128 KB or 256 KB of direct mapped, write-back L2 external (secondary) cache memory.

The external (secondary) cache memory is mounted on the motherboard in two rows of four SRAMs each. The Data SRAM is 15 ns 32 KB x 8 5V SRAMs.

Caution

*You must use 5.V SRAMs when upgrading from 128 KB
to 256 KB of L2 secondary cache memory.*

Cache memory is enabled and disabled through WINBIOS Setup Advanced Setup.

All installed system memory can be read from or written to L1 internal cache memory and L2 external cache memory.

Cont'd

Hardware Reset Switch

The Super Voyager PCI-II 486 ISA motherboard has a standard two-pin reset connector.

Internal Cache Memory

Different 486 CPUs have either 8 KB or 16 KB cache. This cache memory mode is set by WINBIOS automatically.

Shadow RAM

The system BIOS ROM is always shadowed. Video BIOS and Adaptor ROM shadowing can be enabled via Advanced Setup in 32 KB increments.

System BIOS

The Super Voyager PCI-II 486 ISA motherboard has a 128 KB WINBIOS with built-in WINBIOS Setup and user-definable hard disk drive types. The system BIOS is stored in Flash EPROMs and can be reprogrammed via software without removing the ROM. The system BIOS:

- supports logical block addressing and IDE block mode,
- automatically detects IDE drives,
- provides boot sector virus protection,
- automatically detects and configures system memory,
- allows all EGA, VGA, and adaptor ROM BIOS memory segments to be shadowed to RAM,
- provides automatic PCI configuration, and
- complies with the V1.0A Plug and Play specification.

Cont'd

CMOS RAM

The Super Voyager PCI-II 486 ISA motherboard has 114 bytes of CMOS RAM. A battery is not provided. *An external 3.6V battery must be connected to J18.*

Real Time Clock

The motherboard has a real time clock and CMOS RAM that stores system configuration information used by WINBIOS Setup.

Onboard I/O

This motherboard includes the following I/O on the motherboard:

- two 40-pin IDE connectors for up to four IDE drives with PCI local bus IDE support,
- a 34-pin connector to a floppy controller that supports up to two 720 KB, 1.2 MB, 1.44 MB, or 2.88 MB floppy drives with vertical recording support for 2.88 MB floppy drives,
- two ten-pin connectors for serial ports,
- a 26-pin connector for one bidirectional parallel port with ECP and EPP support on the motherboard, and
- a 10-pin berg for a PS/2 mouse connector.

Serial Ports

The motherboard has two RS232C serial ports for COM1 and COM2.

Onboard Battery

The Super Voyager PCI-II ISA motherboard includes an onboard Ni-Cad battery. You can also use an external 4.5V alkaline battery instead of the onboard battery.

IDE Features

This motherboard provides:

- IDE on the PCI local bus,
- support for IDE modes 1, 2, 3, and 4,
- two IDE connectors (up to four IDE drives),
- 32-bit data transfer,
- IDE prefetch read buffer,
- Logical Block Address (LBA) support, and
- fast ATA support.

IDE Drive Assignments

If four IDE drives are connected, WINBIOS assigns the physical drive numbers. DOS assigns logical drive letters:

IDE Drive	Drive Number	Drive Letter if One Partition on Drive	Drive Letter if Two Partitions on Drive
Primary Master	80h	C:\	G:\
Primary Slave	81h	D:\	H:\
Secondary Master	82h	E:\	I:\
Secondary Slave	83h	F:\	J:\

IDE Autodetect

All parameters for all IDE drives assigned to the secondary IDE connector are automatically detected by WINBIOS.

Caution

If the parameters for an IDE drive cannot be automatically detected by WINBIOS correctly or if you are using a CHS (Cylinder-Head-Sector) translation mechanism that is different than the native mode of the IDE drive, the drive should not be attached to the secondary IDE controller.

Cont'd

Power Management

This motherboard provides the following power management services: a signal to control Green PC-aware power supplies, automatic power down of IDE drives and video monitor and monitor blanking (HSYNC, VSYNC, and SYNCEN). The SMI (System Management Interrupt), APM, and system stop clock are supported if the CPU installed supports these functions.

Seven DMA Channels

This motherboard supports the ISA-standard seven DMA channels.

Fifteen Interrupt Levels

This motherboard supports the ISA-standard 15 hardware interrupt levels. The NMI takes precedence over all hardware interrupts. IRQs 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15 can be allocated for use on either the ISA bus or the PCI bus.

ISA Bus

The ISA bus in the motherboard has a system clock that is generated by the bus clock (BCLK) and operates at approximately 8 MHz.

ISA and PCI Expansion Slots

The Super Voyager PCI-II 486 ISA motherboard has the following expansion slots for adapter cards:

• three PCI expansion slots, and
• Four 16-bit expansion slots for ISA adapter cards.

All PCI expansion slots are bus mastering. The PCI expansion slots are automatically configured by the onboard American Megatrends WINBIOS system BIOS.

PS/2 Mouse

The motherboard has a 10-pin berg header that can be attached via a customized serial cable to a PS/2-type mouse. Contact American Megatrends for cable and adapter information.

Speaker

This motherboard has a standard four-pin speaker connector.

I/O Address Space

I/O addresses 0100h through 03FFh are available on the ISA bus. If enabled, onboard peripheral devices use the standard AT I/O port address ranges.

Memory Address on ISA BUS

Up to 16 MB of memory can be addressed on the ISA bus.

Memory Addresses on PCI Bus

The motherboard uses 32-bit memory addresses to access four gigabytes of memory address space on the PCI expansion slots.

I/O Channel Check

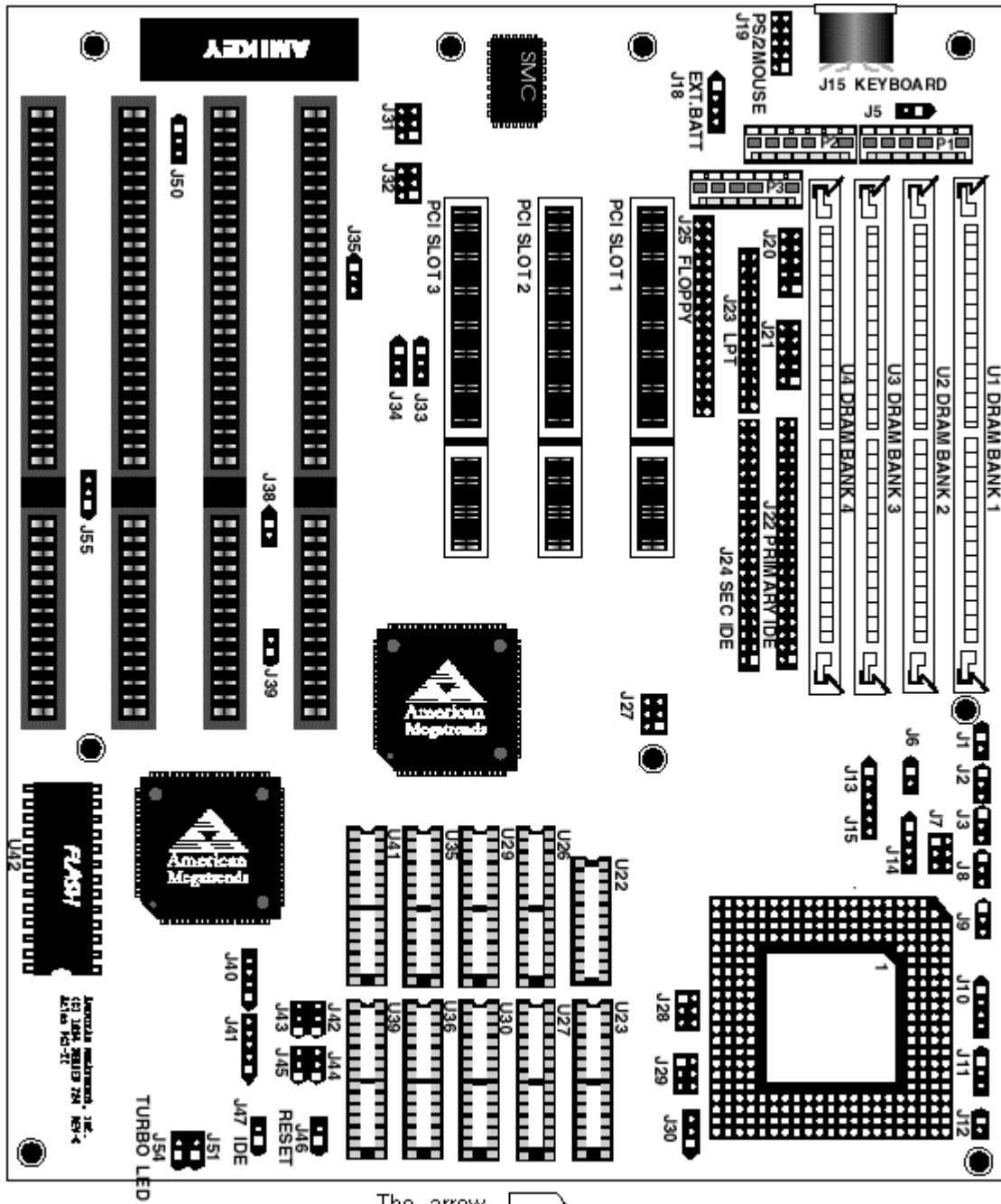The motherboard supports the use of the I/O channel check to generate NMIs.

Keyboard

The motherboard uses a five-pin circular DIN connector and has a five-pin keyboard lock connector to prevent unauthorized access.

2   Installation

Unpacking the Motherboard

Step	Action
1	Inspect the cardboard carton for obvious damage. If damaged, call American Megatrends Technical Support at 770-246-8645. Leave the motherboard in its original packing.
2	Perform all unpacking and installation procedures on a ground connected anti-static mat. Wear an anti-static wristband, grounded at the same point as the anti-static mat or use a sheet of conductive aluminum foil grounded through a 1 megohm resistor instead of the anti-static mat. A strip of conductive aluminum foil wrapped around the wrist and grounded through a 1 megohm resistor serves the same purpose as the wristband.
3	Inside the carton, the motherboard is packed in an anti-static bag, sandwiched between sheets of sponge. Remove the sponge and remove the anti-static bag.
4	Place the motherboard on a grounded anti-static surface component side up.
5	Save the original packing material in case of reshipment.
6	Inspect the motherboard for damage. Press down on all ICs mounted in sockets to verify proper seating. Do not apply power to the motherboard if it has been damaged.
7	If the motherboard is undamaged, it is ready to be installed.

Motherboard Layout

The arrow ▷ and the Square Pad □ Denote Pin 1 in Jumpers and Connectors.

Installation Steps

Step	Action	Turn to...
1	Set jumpers.	Page 13
2	Install memory.	Page 22
3	Install CPU.	Page 25
4	Install the motherboard.	Page 28
5	Connect the power supply.	Page 29
6	Connect the keyboard.	Page 31
7	Connect the cables.	Page 32
8	Connect the PS/2 mouse cable.	Page 34
9	Connect onboard I/O.	Page 34
10	Install floppy drives.	Page 36
11	Install hard disk drives.	Page 37
12	Install adapter cards.	Page 40
13	Test and configure.	Page 40

Warning

This motherboard contains sensitive electronic components which can be easily damaged by static electricity. Follow the instructions carefully to ensure correct installation and to avoid static damage.

Step 1 Set Jumpers

Set all user-configurable jumpers, install SIMMs, and install the CPU before installing the motherboard in the chassis. The jumpers are:

Jumpers	Description
J42, J44, J45	Cache Memory Configuration
J2, J3, J6, J8, J9, J10, J11, J12, J13, J14, J15	CPU Selection
J7	5V CPU Power
J28, J29	3.3V CPU Power
J34	Serial Port 1 IRQ Select
J35	Serial Port 2 IRQ Select
J33	Parallel Port IRQ Select
J50	PS/2 Mouse IRQ Enable
J31 and J32	Extended Parallel Port DMA Select
J38	Onboard IDE IRQ 15 Enable
J39	Onboard IDE IRQ 14 Enable
J43	Drain CMOS RAM Power
J5	Green PC Power Switch Connector
J27	CPU External Speed Select
J55	Flash EPROM Select
J30	Regulator Output Voltage Select

Cont'd

Installing a Jumper

The bergs (jumpers) on the motherboard are used to select features. You will need two-pin shorting bridges (shown below) to set a jumper. A two-pin shoring bridge, a two-pin berg, and a shorting bridge (also called a jumper) mounted on the two-pin berg are shown below.

Mount shorting brige on berg   Shorted jumper (berg)
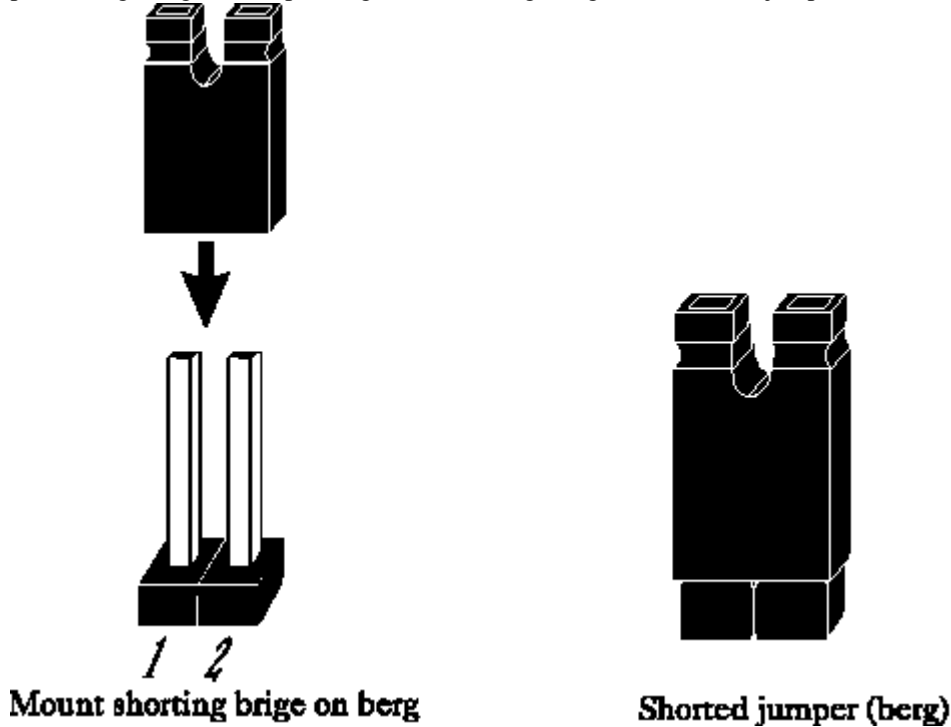
J42, J44, J45 Cache Memory Configuration

J42, J44 and J45 are three-pin bergs that controls the L2 secondary cache memory configuration on the motherboard.

Cache Memory	J42	J44	J45
128 KB	Short Pins 1-2	Short Pins 1-2	Short Pins 1-2
256 KB	Short Pins 2-3	Short Pins 2-3	Short Pins 2-3

Cont'd

Step 1 Set Jumpers, Continued

Cyrix CPU Support

This motherboard supports the Cyrix DX4 and M1SC CPUs. If installing a Cyrix DX4 or M1SC, the J2, J3, J6, J8, J9, J10, J11, J12, J13, J14, and J15 CPU jumper settings for the 100 MHz AM486 Plus using Write-back caching should be used.

Selecting a 3.3V CPU

Set the motherboard jumpers as follows for 3.3V CPUs:

Jumper	Intel 486 DX4	AMD AM486DX2+, AM486DX4+	Cyrix M7 (low voltage)	Cyrix M9	AM486DX standard 3.3V package
J1	OPEN	OPEN	OPEN	OPEN	OPEN
J2	Short Pins 2-3	Short Pins 2-3	Short Pins 2-3	Short Pins 2-3	Short Pins 2-3
J3	Short Pins 1-2	Short Pins 1-2	Short Pins 2-3	Short Pins 1-2	OPEN
J6	Short Pins 1-2	Short Pins 1-2	Short Pins 1-2	Short Pins 1-2	OPEN
J8	OPEN	Short Pins 2-3	Short Pins 1-2	Short Pins 2-3	OPEN
J9	OPEN	OPEN if 3X. Short Pins 1-2 if 2X.	OPEN	OPEN	OPEN
J10	Short Pins 1-2 and Pins 3-4	Short Pins 1-2 and 3-4.	Short Pins 1-2 and 3-4	Short Pins 1-2 and 3-4	Short Pins 1-2 and 3-4
J11	Short Pins 1-2	Short Pins 1-2	Short Pins 1-2	Short Pins 1-2	Short Pins 1-2
J12	OPEN	OPEN if WB. Short Pins 1-2 if WT	OPEN	OPEN	OPEN
J13	OPEN	Short Pins 2-3	Short Pins 1-2	OPEN	OPEN
J14	Short Pins 1-2 and Pins 3-4	Short Pins 1-2 and Pins 3-4.	Short Pins 2-3.	Short Pins 1-2 and Pins 3-4	OPEN
J15	OPEN	Short Pins 1-2	Short Pins 2-3	Short Pins 1-2	OPEN
J7	OPEN	OPEN	OPEN	OPEN	OPEN
J28	If 3.3V from power supply: Short Pins 1-2, 3-4, and 5-6.	If 3.3V from power supply: Short Pins 1-2, 3-4, and 5-6.	If 3.3V from power supply: Short Pins 1-2, 3-4, and 5-6.	If 3.3V from power supply: Short Pins 1-2, 3-4, and 5-6.	If 3.3V from power supply: Short 1-2, 3-4, and 5-6.
J29	If 3.3V from onboard regulator: Short Pins 1-2, 3-4, and 5-6.	If 3.3V from onboard regulator: Short Pins 1-2, 3-4, and 5-6.	If 3.3V from onboard regulator: Short Pins 1-2, 3-4, and 5-6.	If 3.3V from onboard regulator: Short Pins 1-2, 3-4, and 5-6.	If 3.3V from onboard regulator: Short 1-2, 3-4, and 5-6.
J30	Short Pins 1-2.	Short Pins 1-2.	Short Pins 2-3.	Short Pins 2-3.	Short Pins 1-2

Note: For 3.3V CPUs, J7 must be left OPEN.

The J30 Setting and CPU Types

J30 is a three-pin single inline berg that controls the voltage for 3.3V CPUs.

If...	then...
Using an Intel or AMD 3.3V CPU,	short Pins 1-2 of J30 to select 3.45V out. This is the factory setting.
Using a Cyrix CPU,	short pins 2-3 to select 3.6V out.

Selecting a 5V CPU

Set the motherboard jumpers as follows for 5V CPUs. The Cyrix M7 (DX2) comes in either a 3.3V or 5V version.

mper	486DX, AM486, 486DX2	Intel P24D	Intel P24T	Intel 486SX	Cyrix M7 5V
1	OPEN	OPEN	OPEN	OPEN	OPEN
2	Short Pins 2-3	Short Pins 2-3	Short Pins 2-3	Short Pins 2-3	Short Pins 2-3
3	OPEN	Short Pins 1-2	Short Pins 1-2	OPEN	Short Pins 2-3
6	OPEN	Short Pins 1-2	Short Pins 1-2	OPEN	Short Pins 1-2
8	OPEN	Short Pins 2-3	OPEN	OPEN	Short Pins 1-2
9	OPEN	OPEN	OPEN	OPEN	OPEN
10	Short Pins 1-2 and Pins 3-4	Short Pins 1-2 and 3-4.	Short Pins 1-2 and 3-4	Short 2-3	Short Pins 1-2 and 3-4
11	Short Pins 1-2	Short Pins 1-2	Short Pins 2-3	Short Pins 1-2	Short Pins 1-2
12	OPEN	OPEN	OPEN	OPEN	OPEN
13	OPEN	Short Pins 2-3	OPEN	OPEN	Short Pins 1-2
14	OPEN	Short Pins 1-2 and Pins 3-4.	Short Pins 3-4	OPEN	Short Pins 2-3
15	OPEN	Short Pins 1-2	OPEN	OPEN	Short Pins 2-3
7	Short Pins 1-2, 3-4, and 5-6.	Short Pins 1-2, 3-4, and 5-6.	Short Pins 1-2, 3-4, and 5-6.	Short Pins 1-2, 3-4, and 5-6.	Short Pins 1-2, 3-4, and 5-6.

Important
If using a 5V CPU, leave J28 and J29 OPEN.

Setting the Internal Cache Memory Mode on the CPU

The internal ccache memory mode is set automatically by WINBIOS to write-through or write-back.

Installed CPU	Internal Cache mode is set to
Intel P24D or P24T, Cyrix M7 or M9, or AMD using write-back caching,	WB (write-back mode).
Intel 486DX, 486SX, 486DX2, 486SX2, 486DX4, or AMD using write-through caching,	WT (write-through mode).

Setting Jumpers for AMD Plus CPU Caching Modes for L1 Cache Memory

The caching mode for the L1 cache memory for AMD CPUs is included in the CPU number. CPUs that support write-back caching have *B* as the last letter. CPUs that support write-through caching have *T* as the last letter. J9 and J12 should be set as follows for AMD CPUs:

AMD CPU	J12	J9
AM486+ DX2 WT (33/66 MHz)	Short Pins 1-2	Short Pins 1-2
AM486+ DX2 WB (33/66 MHz)	OPEN	Short Pins 1-2
AM486 DX4 WT (33/100 MHz)	Short Pins 1-2	Short Pins 2-3
AM486 DX4 WB (33/100 MHz)	OPEN	Short Pins 2-3

J34 Serial Port 1 IRQ Select

J34 is a three-pin single-inline berg. Short pins 2-3 to select IRQ3 for serial port 1. Short pins 1-2 (the factory setting) to select IRQ4 for serial port 1.

IRQ Port 1	J34
Select IRQ3	Short Pins 2-3
Select IRQ4 (factory setting)	Short Pins 1-2

J35 Serial Port 2 IRQ Select

J35 is a three-pin single-inline berg. Short pins 2-3 to select IRQ4 for serial port 2. Short pins 1-2 (the factory setting) to select IRQ3 for serial port 2.

IRQ Port 2	J35
Select IRQ4	Short Pins 2-3
Select IRQ3 (factory setting)	Short Pins 1-2

J33 Parallel Port IRQ Select

J33 is a three-pin single-inline berg. Short pins 2-3 to select IRQ5 for the parallel port. Short pins 1-2 (the factory setting) to select IRQ7 for the parallel port.

Step 1 Set Jumpers, Continued

J31 and J32 Extended Parallel Port DMA Select

J31 and J32 are six-pin single-inline bergs that select the EPP (Enhanced Parallel Port) DMA channels, shown below.

DMA Channel	J31	J32
DRQ0	Short Pins 1-2	Short Pins 1-2
DRQ1	Short Pins 2-3	Short Pins 2-3.
DRQ3	Short Pins 5-6	Short Pins 5-6
None (the factory setting)	OPEN	OPEN

J50 Onboard PS/2 Mouse IRQ Select

J50 is a three-pin single-inline berg that selects the mouse IRQ. Short pins 1-2 to select IRQ12 for the onboard PS/2 mouse. Short pins 2-3 to select IRQ12 for a bus adapter.

IRQ12 cannot be used by any ISA or PCI bus adapter card when the onboard mouse is enabled.

IRQ12	J50
Select Onboard PS/2 Mouse	Short Pins 1-2
IRQ12 to bus	Short Pins 2-3

Cont'd

J43 CMOS RAM Drain

J43 is a three-pin single-inline berg. Pins 1-2 are shorted in normal operation. Short pins 2-3 to drain the CMOS RAM.

CMOS RAM Drain	J43
Normal Operation (factory setting)	Short Pins 1-2
Drain CMOS RAM	Short Pins 2-3

Caution

Make sure that power is turned off before draining CMOS RAM power. After draining CMOS RAM, make sure that pins 1-2 are shorted before turning power on again.

If you forget the system password in most computers, you must remove the battery for at least 20 minutes to erase CMOS RAM.

J43 provides a quicker method. By shorting pins 2-3 of J43, you can quickly drain power from CMOS RAM. After clearing CMOS RAM, remember to short pins 1-2 of J43 before continuing.

Then you must run WINBIOS Setup to reconfigure the computer.

J5 Green PC Power

J5 is a two-pin berg that attaches to the Green PC power switch. This switch can be used to turn power off during Green PC mode. Pin 1 denotes the positive connector.

J27 CPU External Speed Select

J27 is a six-pin single-inline berg that controls selection of external speed. To select 33 MHz, short pins 3-4. To select 25 MHz, short pins 1-2 and 3-4.

External Speed Select	J27
33 MHz	Short Pins 3-4
25 MHz	Short Pins 1-2 and 3-4

J55 Flash EPROM Select

J55 is a three-pin single-inline berg. To select Flash EPROM present (the factory setting), short pins 2-3. To select no Flash EPROM present, short pins 1-2.

Flash EPROM Present	J55
Flash EPROM Present (factory setting)	Short Pins 2-3
Flash EPROM Absent	Short Pins 1-2

J38 Onboard Secondary IDE Enable IRQ15

J38 is a two-pin berg. Place a shorting bridge on J38 to allow IRQ15 to be used for the secondary IDE connector. If you leave J38 OPEN, IRQ15 is used by the bus.

J39 Onboard Primary IDE Enable IRQ14

J39 is a two-pin berg. Place a shorting bridge on J39 to allow IRQ14 to be used for the primary IDE connector. If you leave J39 OPEN, IRQ14 is used by the bus.

Step 2 Install Memory

The main memory subsystem on the motherboard includes four 32-bit memory banks that house SIMM (Single Inline Memory Module) DRAM packages. You can use 256 KB x 36, 512 KB x 36, 1 MB x 36, 2 MB x 36, 4 MB x 36, 8 MB x 36, or 16 MB x 36 SIMMs. The SIMMs can be single-sided or double-sided. Fast page mode SIMMs operating at 70 ns (RAS access time) are required.

Motherboard Memory Configurations if 5V CPU Used

Valid SIMMs when using a 5V CPU in the Super Voyager PCI II motherboard include the following. Four single-sided or two double-sided SIMMs can be used in the four memory banks. Or one double-sided and two single-sided SIMMs can be used. You can mix SIMM types. You can use any valid SIMM in any bank. The following table provides only some examples of SIMM types. It is not an exhaustive list of all valid SIMM combinations.

Bank1	Bank2	Bank3	Bank4	Total DRAM
256 KB x 36	None	None	None	1 MB
256 KB x 36	256 KB x 36	None	None	2 MB
256 KB x 36	256 KB x 36	256 KB x 36	None	3 MB
256 KB x 36	256 KB x 36	256 KB x 36	256 KB x 36	4 MB
1 MB x 36	None	None	None	4 MB
1 MB x 36	1 MB x 36	None	None	8 MB
1 MB x 36	1 MB x 36	1 MB x 36	None	12 MB
1 MB x 36	1 MB x 36	1 MB x 36	1 MB x 36	16 MB
4 MB x 36	None	None	None	16 MB
4 MB x 36	4 MB x 36	None	None	32 MB
4 MB x 36	4 MB x 36	4 MB x 36	None	48 MB
4 MB x 36	4 MB x 36	4 MB x 36	4 MB x 36	64 MB
1 MB x 36	None	256 KB x 36	1 MB x 36	9 MB
512 KB x 36	512 KB x 36	None	None	4 MB
2 MB x 36	1 MB x 36	1 MB x 36	None	16 MB
2 MB x 36	4 MB x 36	None	4 MB x 36	40 MB

Step 2 Install Memory, Continued

Motherboard Memory Configurations if 3.3V CPU Used

Valid SIMMs when using a 3.3V CPU in the Super Voyager PCI II motherboard include the following. When a 3.3V CPU is installed, you can have a maximum of two DRAM loads.

Two single-sided or one double-sided SIMM can be used. You can mix SIMM types. You can use any valid SIMM in any bank. The following table provides only some examples of SIMM types. It is not an exhaustive list of all valid SIMM combinations.

Bank1	Bank2	Total DRAM
256 KB x 36	None	1 MB
256 KB x 36	256 KB x 36	2 MB
1 MB x 36	None	4 MB
1 MB x 36	1 MB x 36	8 MB
4 MB x 36	None	16 MB
4 MB x 36	4 MB x 36	32 MB
1 MB x 36	None	9 MB
1 MB x 36	256 KB x 36	5 MB
256 KB x 36	4 MB x 36	17 MB
None	2 MB x 26	8 MB
None	8 MB x 36	32 MB

DRAM Parity

The Super Voyager PCI-II ISA motherboard supports parity DRAMs and non-parity DRAMs. If using x 32 non-parity DRAMs, you must set the **Memory Parity Error Check** option in WINBIOS Setup Advanced Setup to *Disabled.*

Installing SIMMs

Place the motherboard on an anti-static mat. With the component side of the SIMM facing you, firmly push the card into the socket at a 45 degree angle, then push it up to a vertical position. When properly inserted, the SIMM clicks into place as the latching pins engage. See the following figure.
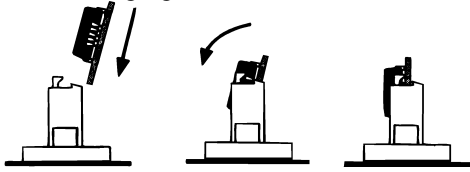
Reporting Memory

The system memory configuration is reported by WINBIOS as it boots and again when the WINBIOS System Configuration Screen is displayed just before DOS boots.

Step 3 Install CPU

In most cases, the CPU is already installed in the motherboard. Follow the procedures in this step to install a different CPU.

You can change to a different CPU by removing the installed CPU and installing a new CPU. Make sure all junpers are set correctly. You must be absolutely certain of the voltage of the new CPU. You must be absolutely certain that the jumpers for 3.3V and 5V CPUs are set correctly. See pages 15 through 17 for jumper setting information.

> ### *Warning*
>
> Improper CPU installation can damage the CPU and the motherboard. You must follow the procedures in this section exactly as documented.

Step 3 Install CPU, Continued

Installing the Upgrade Processor

The CPU socket is a 237-pin ZIF PGA socket in the back corner. See the motherboard figure on page 11. Pin 1 of the socket is on a chamfered corner that corresponds to pin 1 of the CPU, also on a chamfered corner. Check for bent pins on the CPU. Gently straighten any bent pins with a pair of pliers. Lift the socket handle. Place the CPU in the socket. Align the pins and press down firmly on the CPU, making sure that pin 1 is aligned with pin 1 on the socket:
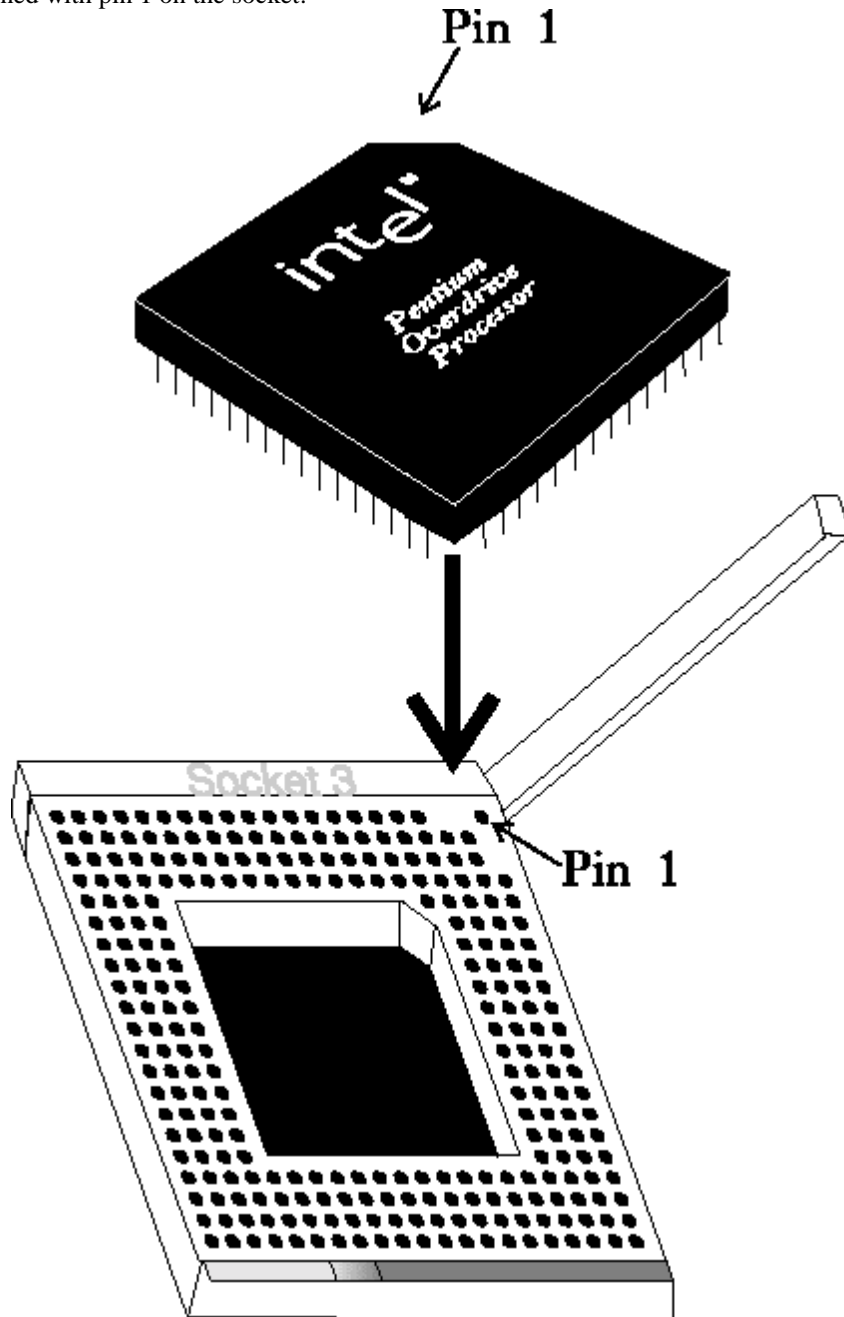
Push the handle   down to secure the CPU in the socket. The WINBIOS System Configuration screen that appears when the computer starts indicates the CPU type. If the new CPU type does not appear, reinstall as follows:

Step	Action
1	Turn the power off.
2	Check the coprocessor orientation.
3	Press the chip firmly to make sure that it is properly inserted.
4	Make sure all upgrade CPU pins are connected.
5	Power the system up again.

Step 4 Install the Motherboard

The mounting hole pattern on the Super Voyager PCI-II 486 ISA motherboard is the same as the mounting hole pattern on any mini Baby AT motherboard. Standoffs and mounting screws are not supplied with the motherboard. Install the motherboard as follows:

Step	Action
1	Place the chassis for the motherboard on an anti-static mat. Connect the chassis to ground to avoid static damage during installation. Connect an alligator clip with a wire lead to any unpainted part of the chassis. Ground the other end of the lead at the same point as the mat and the wristband.
2	Rotate the chassis so that the front is to the right, and the rear is to the left. The side facing you is where the motherboard is mounted. The power supply is mounted at the far end of the chassis.
3	Push four nylon standoffs from the solder side of the motherboard in the holes provided for them. The standoffs lock in place. Find the slots provided for the standoffs on the chassis. Hold the motherboard, component-side up, with the edge with the standoffs toward you and the edge with the power supply connector away from you. The edge connectors for the adapter cards should be to the left.
4	Carefully slide the motherboard into the chassis. Make certain that the standoffs fit the slots provided for them. If the standoffs are properly locked, the motherboard should not slide. It should also rest level with the chassis. The far edge should fit the slots in the plastic clips.
5	Place the two mounting screws in the holes provided for them and tighten them. If necessary, shift the motherboard slightly to align the mounting holes on the motherboard with the holes on the chassis. See the graphic on page 11.

Step 5 Connect the Power Supply

The power supply should match the physical configuration of the chassis. Make sure that the power switch is Off before assembly. Before attaching all components, make sure that the proper voltage has been selected. Power supplies often can run on a wide range of voltages and must be set (usually via a switch) to the proper range. Use at least a 230 watt power supply, which should have built-in filters to suppress radiated emissions.

Connect to P1 and P2

Attach the cables from the power supply to P1 and P2 on the motherboard as shown below. The six-pin connector from the power supply that has three red wires and two black wires is connected to P2 and the six-pin connector with orange, red, yellow, blue and black wires is connected to P1, as shown below. The third power supply connector supplies 3.3V power to PCI adapter cards and to the CPU if a 3.3V CPU is installed. If a 3.3V CPU is installed, make sure the motherboard jumpers are set correctly. See pages 15 through 16 for information about the jumper settings.
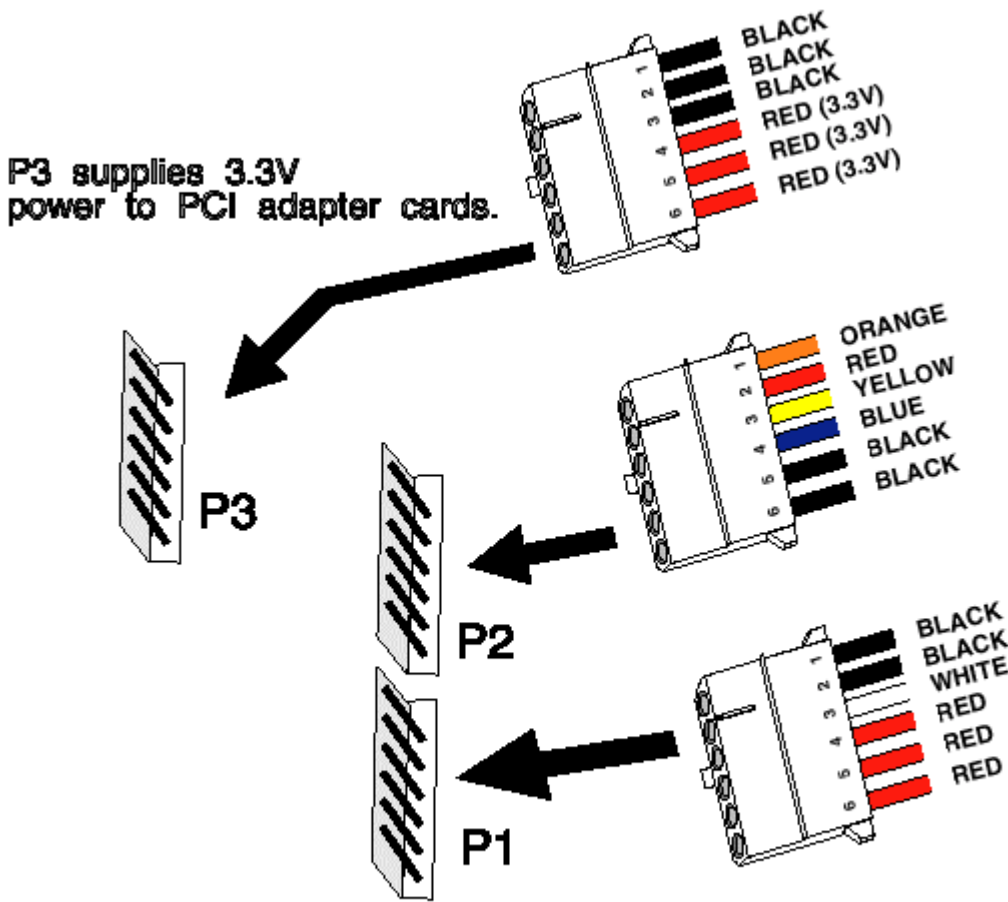
P3 supplies 3.3V power to PCI adapter cards.

Power Supply Connectors

Power Supply Connectors are Keyed

The power connectors are keyed. The connector keys must be cut to fit some power supplies, as shown below.

Pin 1

Remove
Key 6

P3

Pin 1

Remove
Key 6

P1

Pin 1

Remove
Key 3

P2
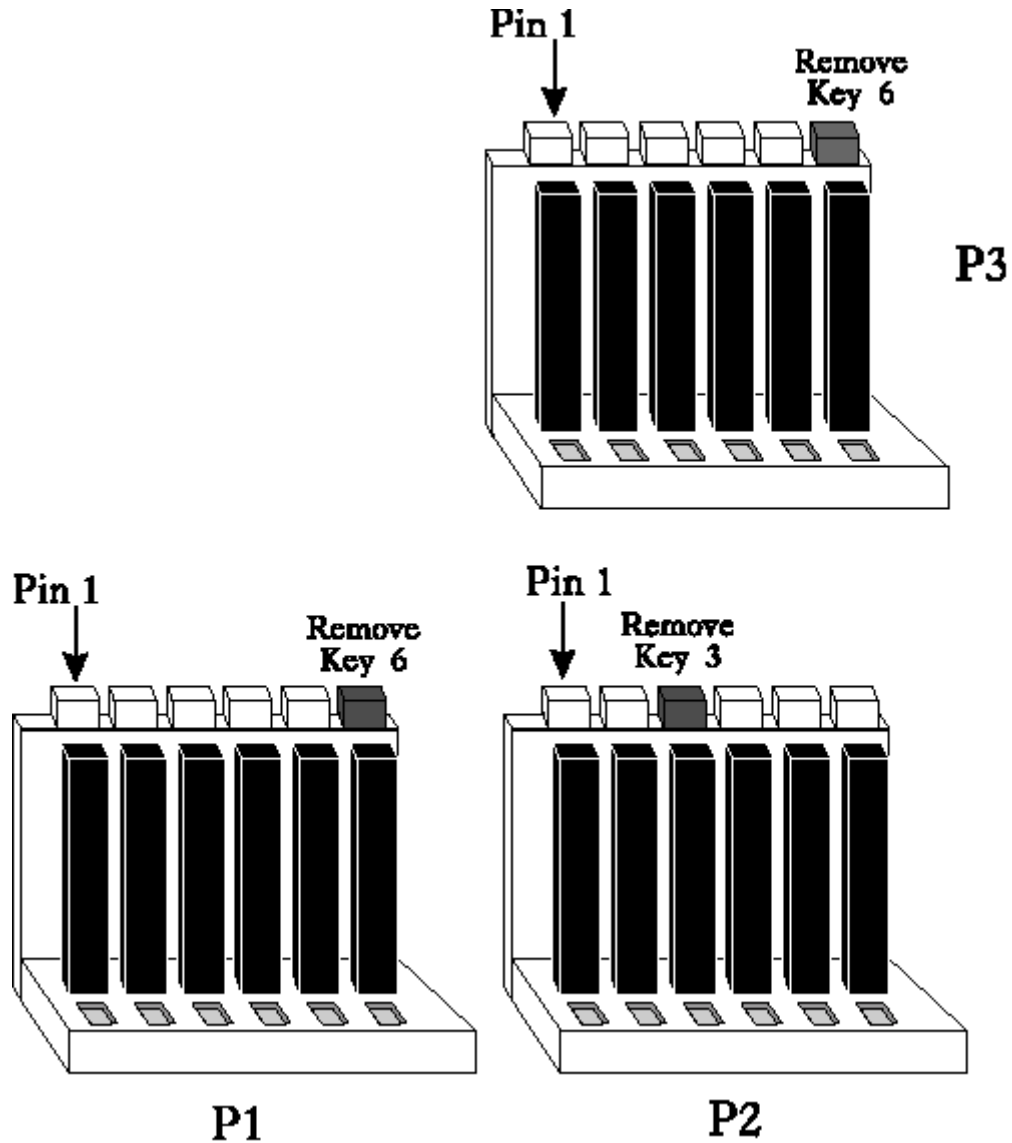
Important

*Make sure that the jumpers are configured
correctly when you use the 3.3V power
connectors.*

Chapter 3 AMIBIOS and WINBIOS

Step 6 Connect the Keyboard Cable

The keyboard connector is a five-pin DIN socket labeled KEYBD on the motherboard. Attach a standard AT-compatible keyboard cable. A five-pin DIN to six-pin miniDIN converter is needed to connect a PS/2-type keyboard.

Step 7 Connect Cables

When connecting chassis connectors to the motherboard, make sure to connect the correct connector end. Most connector wires are color-coded. Match the color of the wires leaving the switch or LED to the same pin on the connector end. There may be more than one connector with the same color-coded wires. If so, follow the wire to the switch or LED. Pin 1 of all connectors is indicated on the motherboard by a pointed box around the connector. Pin 1 is always at the pointed end of the box, as shown below:
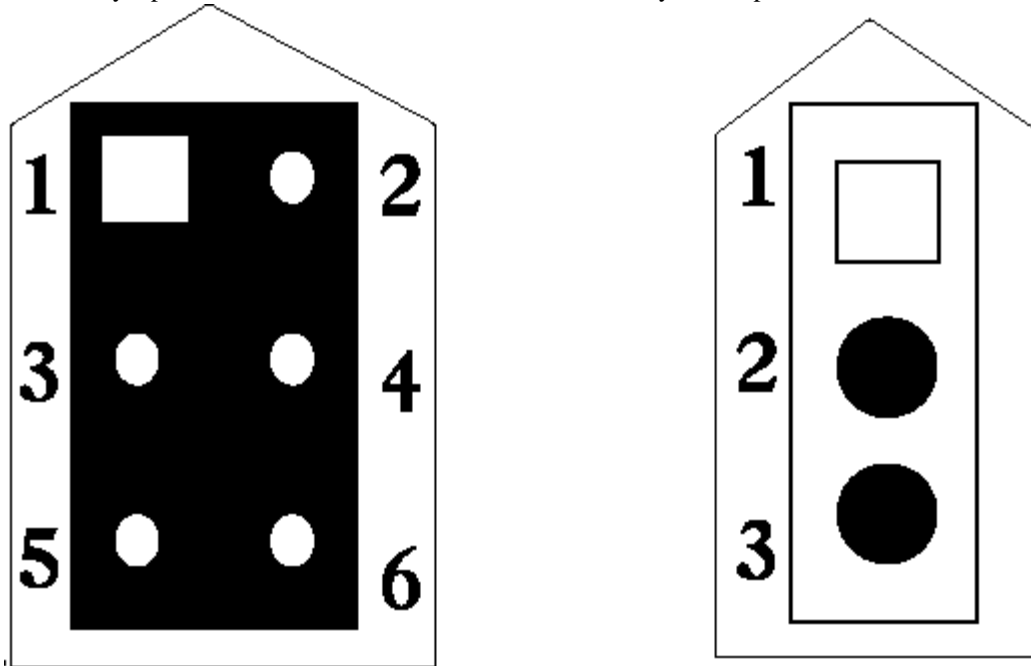
Connect the following cables to the following jumpers on the motherboard:

• Reset switch cable to J46,
• Speaker cable to J40,
• external battery connector to J18,
• Keyboard lock cable to J41,
• Turbo LED cable to J54, and
• IDE Activity Indicator LED cable to J47.

J46 Reset Switch Connector

J46 is a two-pin single-inline berg that is attached via a cable to an externally-mounted reset switch. When the reset switch is pressed, the system performs a hard reset. Pin 1 is ground and Pin 2 is Hard Reset.

Cont'd

Step 7 Connect Cables, Continued

J40 Speaker Connector

J40 is a four-pin single-inline berg that is attached via a cable to the system speaker.

J18 External Battery Connector

J18 is a four-pin berg that attaches to an external battery. A battery is not supplied on this motherboard. Pin 1 is the battery and Pin 4 is Ground.

J41 Keyboard Lock Connector

J41 is a five-pin single-inline berg that is attached via a cable to the keyboard lock connector. The keyboard lock allows the user to lock the keyboard.

J54 Turbo LED Connector

J54 is a two-pin berg that is attached via a cable to the turbo LED. This LED lights when the motherboard is in turbo mode (the factory setting).

J47 IDE Activity Indicator LED

J47 is a two-pin berg that is attached via a cable to the externally-mounted IDE Activity LED. This LED lights when the primary or secondary IDE drive is accessed.

J51 Turbo Switch

Do not attach a cable to J51. The CPU always operates in turbo mode.

Step 8 Connect the PS/2 Mouse Cable

J19, the PS/2 mouse connector) is a ten-pin dual-inline berg. Attach a customized serial mouse cable from J19 to a standard DB9 port connector mounted externally on the chassis. You can order this cable *(Cable Assembly DB9, Male, 10-Pin, part number CBLSUB1-10)* from the American Megatrends Sales Department (800-828-9264). J19 Pin 10 on J19 should be cut. Cut it off if is not.

Step 9 Connect Onboard I/O

The motherboard has two serial ports (J20 and J21), a parallel port (J23), a floppy drive, and two IDE connectors. The serial and parallel port connectors are described below. The floppy connector is described on page 36. The IDE connectors are described on page 38.

J21 Serial Port 2 (COM2) and J20 Serial Port 1 (COM1)

J21 and J20 connect via 10-pin double-row ribbons to male 9-pin D-sub connectors fastened to the chassis. Be sure to properly connect the cables to the connectors. Pin 1 of J21 and J20 are labeled. The wire leading to pin 1 on the cable is usually striped in color.

Attaching the Serial Port Cables

Two serial port cables are supplied with the motherboard to attach J21 and J20 to the DB9 connectors on the chassis. Install the cables as shown below.

Pin 10
Must be cut.

Color Stripe
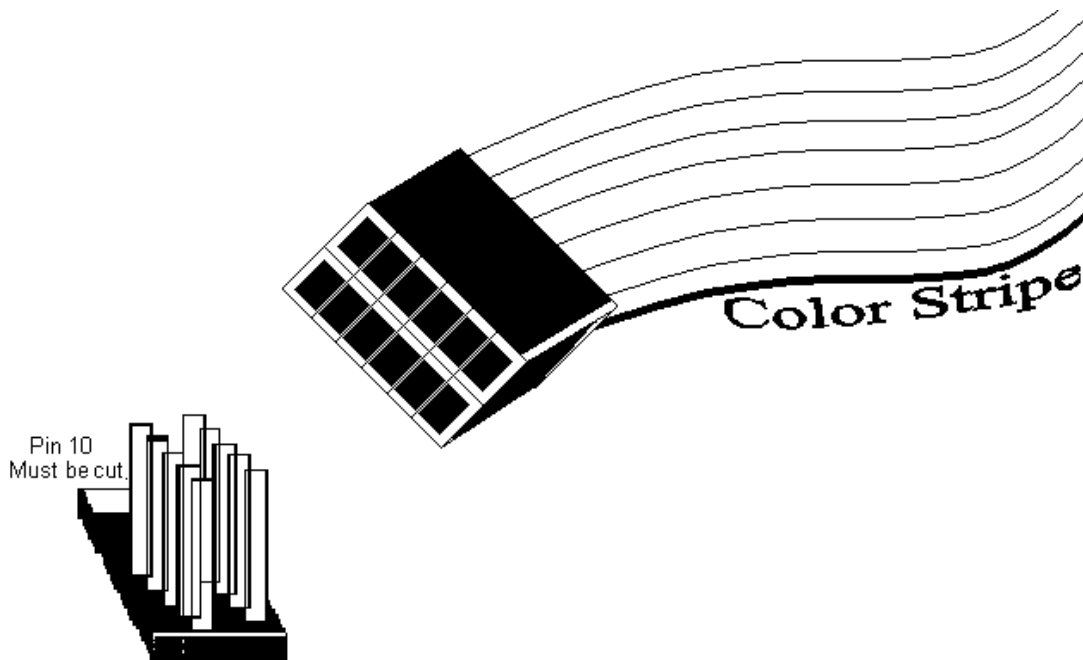
Attaching the Parallel Port Cable

A parallel port cable is supplied to connect J23 to the external parallel port connector, as shown below.

Color Stripe

1

Pin 26
Must be cut.
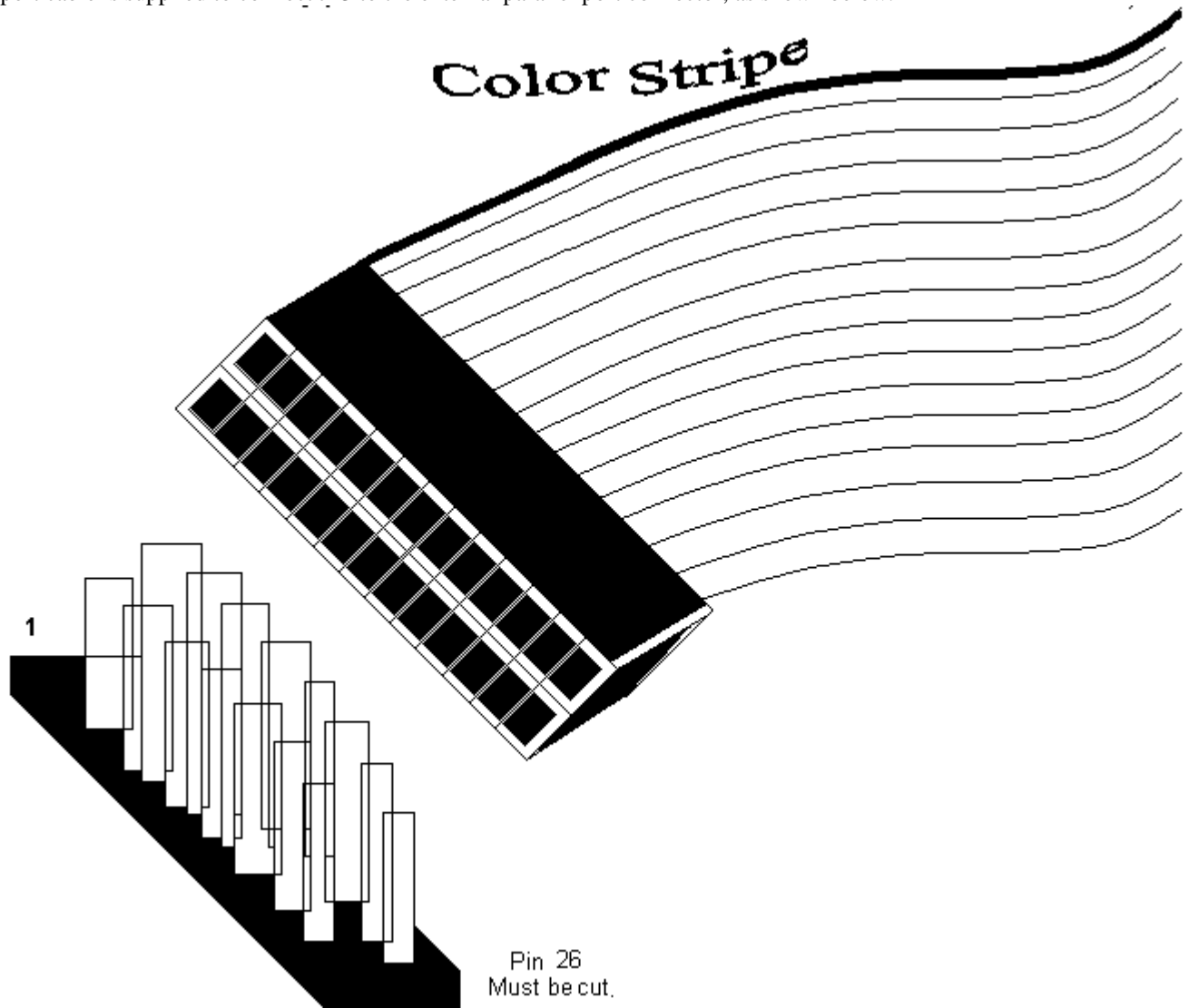
Step 10 Install Floppy Drive

J25 is a 34-pin dual-inline berg. Connect the cable from the floppy drive to J25. The onboard floppy controller cannot be used if a hard disk adapter card with floppy controller is installed. The cable and the connector are shown below:
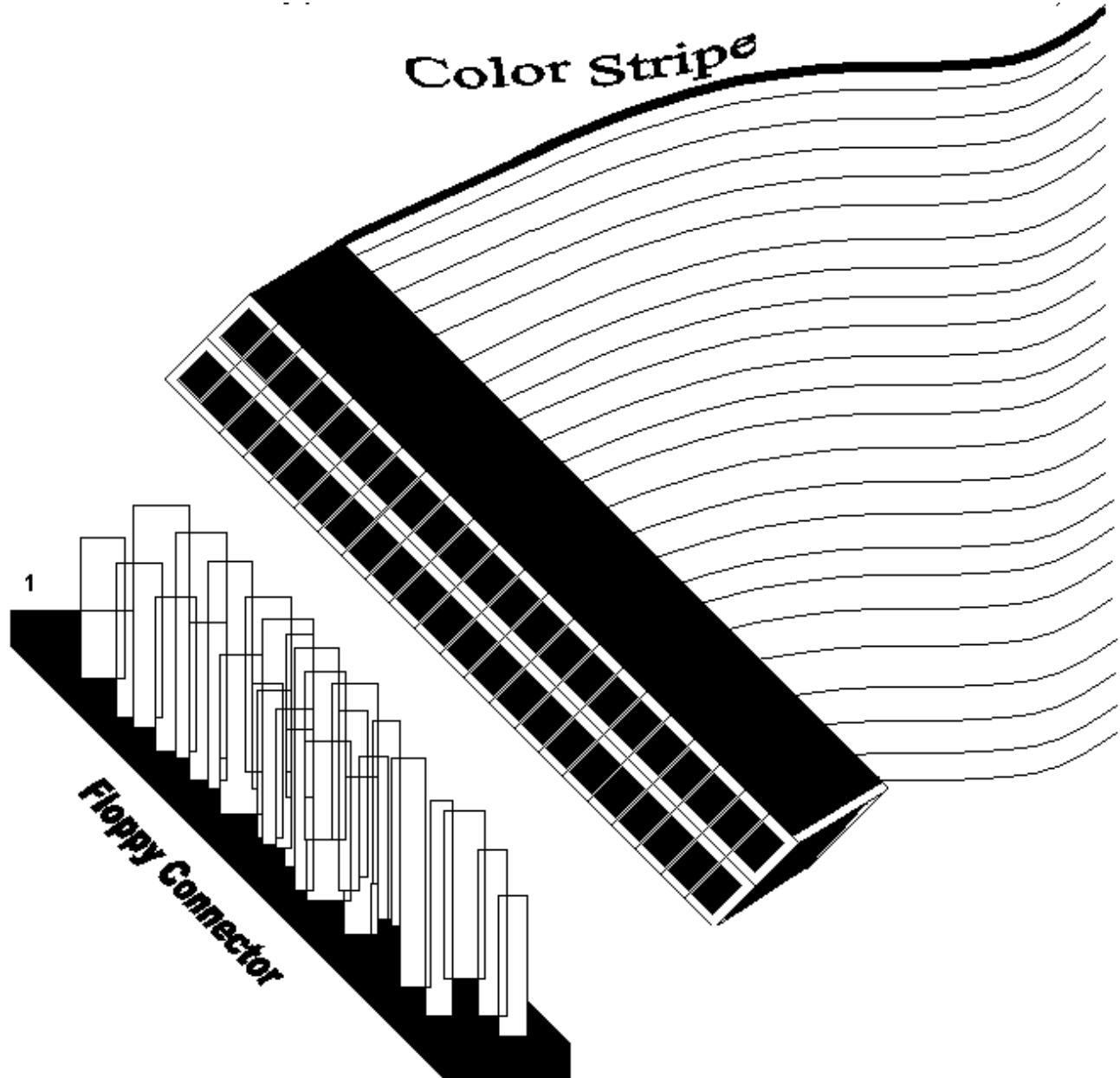

The motherboard supports 3½" and 5¼" floppy disk drives in low density (360 KB or 720 KB) and high density (1.2 MB, 1.44 MB, or 2.88 MB). You can attach either one or two floppy drives.

Step 11 Install Hard Disk

Attach IDE Cable to J22

J22 is the primary IDE (Integrated Drive Electronics) hard disk drive connector. Both the primary master and the primary slave IDE drives must be connected by cable to J22, as shown below.
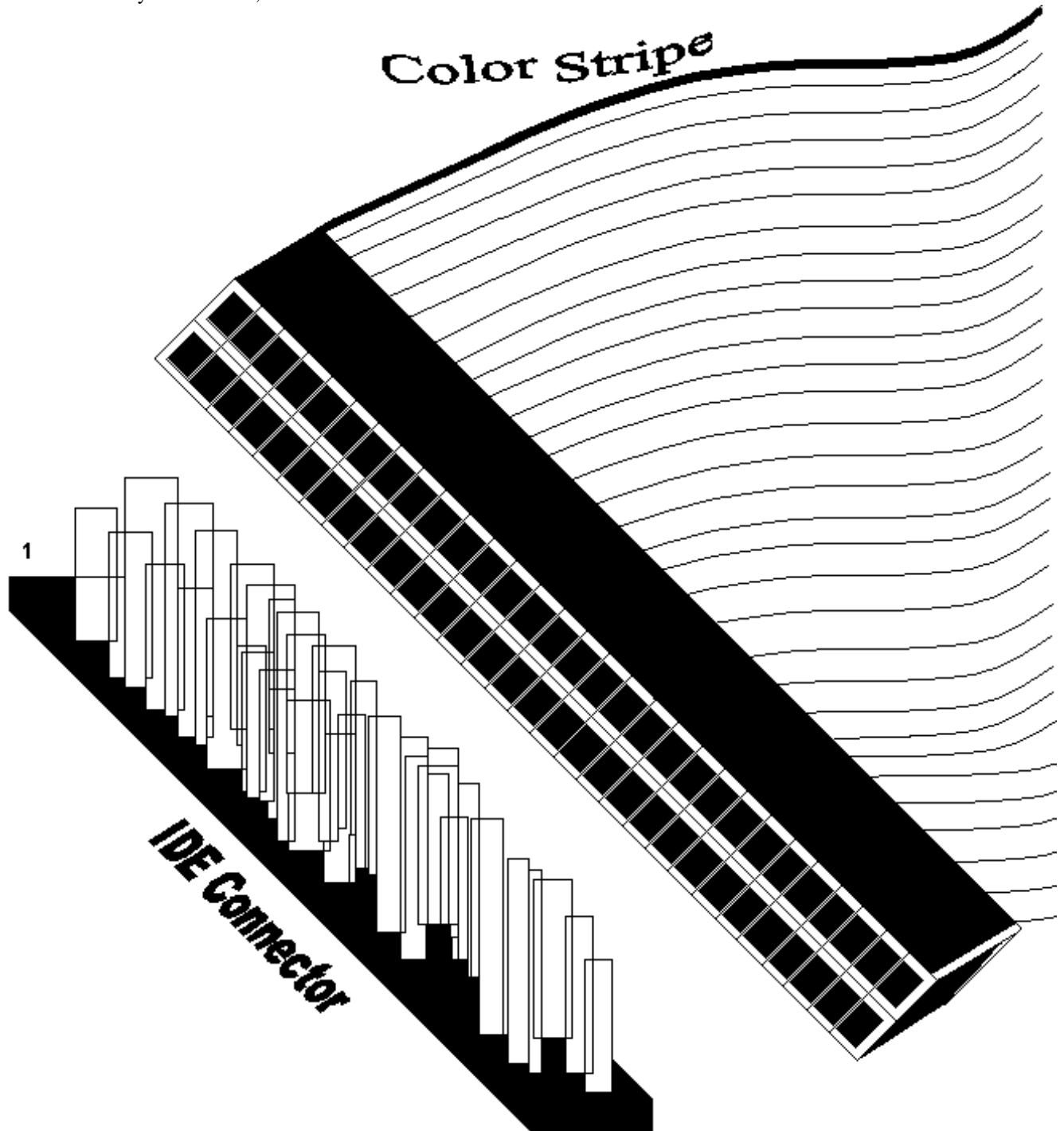
J22 IDE Hard Disk Connector

J22 is a 40-pin dual-inline berg that connects a hard disk drive that has an IDE interface to the primary onboard IDE Controller. This motherboard supports IDE Modes 0, 1, 2, 3, and 4, prefetch, LBA (Logical Block Address) mode, high capacity drives (over 528 MB), 32-bit data transfer, and fast IDE transfer. These IDE features are configured in Peripheral Setup in the WINBIOS Setup utility.

Disable the onboard IDE interface in Peripheral Setup in WINBIOS Setup to use an ISA ESDI, RLL, or MFM hard disk drive controller.

J24 Secondary IDE Controller

J24, the secondary IDE connector, is a 40-pin dual-inline berg that connects the secondary master and slave IDE drives to the secondary onboard IDE controller. Attach the secondary master and slave IDE drives to J24 via a standard 40-pin IDE cable as shown on page 37.

Offboard IDE Controller

If not using the onboard IDE controller, you can use either an ISA IDE controller card or a PCI IDE controller card. IRQs 14 and 15 are reserved for the IDE primary and secondary IDE controllers no matter which IDE controller is used. IRQs 14 and 15 are available on the PCI or ISA bus if IDE controllers are not used. To use an offboard IDE controller:

Step	Action
1	Insert the IDE controller card. If installing a PCI IDE controller card, note the PCI slot number the card is installed in.
2	Boot the computer. Press <Del> to run WINBIOS Setup. Choose Peripheral Setup. Set **Onboard IDE** to *Disabled.*
3	If installing a PCI IDE controller card, set **Offboard PCI IDE Card** to the PCI slot where the IDE controller card is installed (Slot1 - Slot3). If using only one IDE controller channel and the offboard IDE controller card is in PCI slot1 on the motherboard, set **Offboard PCI IDE Card Uses** to INTA. If using both IDE controller channels and the offboard IDE controller card is in PCI slot 1 on the motherboard, set **Offboard PCI IDE Card Uses** to INTA for the primary channel and INTD for the secondary channel. If using only one IDE controller channel and the offboard IDE controller card is in PCI slot3 on the motherboard, set **Offboard PCI IDE Card Uses** to INTA. If using both IDE controller channels and the offboard IDE controller card is in PCI slot3 on the motherboard, set **Offboard PCI IDE Card Uses** to INTA for the primary channel and INTB for the secondary channel.
	If installing an ISA IDE controller card, go to the next step.
4	Set the Primary Master, Primary Slave, Secondary Master, and Secondary Slave IDE options for Block Mode, PIO Mode, LBA Mode, and 32-Bit Transfer Mode as appropriate for the IDE drives that you have installed.

Step 12 Install Adapter Cards

You can insert up to four ISA (AT-compatible) adapter cards and up to three PCI adapter cards into the expansion slots on the motherboard. See the graphic on page 11 for the location of the expansion slots.

PCI adapter cards are automatically configured by WINBIOS.

CR SCSI BIOS

The NCR SCSI BIOS for NCR 810-based PCI SCSI Host Adapter cards is part of the Super Voyager PCI-II 486 ISA motherboard WINBIOS.

If a PCI SCSI Host Adapter card does not have an onboard SCSI BIOS, WINBIOS automatically provides the NCR SCSI BIOS on the PCI bus for the SCSI Host Adapter card to use.

tep 13 Test and Configure

Review the following before powering up:

• make sure that all adapter cards are seated properly,
• make sure all connectors are properly installed,
• if the upgrade processor is used, make sure it is seated properly,
• make sure there are no screws or other foreign material on the motherboard,
• plug the system into a surge-protected power strip, and
• make sure blank back panels are installed on the back of the chassis to minimize radio frequency emissions.

3   AMIBIOS and WINBIOS

WINBIOS Setup has a graphical user interface that permits mouse access, and is so compact that it can reside on the same ROM as the system BIOS. The system configuration parameters are set via WINBIOS Setup. Since WINBIOS Setup resides in the ROM BIOS, it is available each time the computer is turned on. The main menu screen look like this:

WINBIOS Setup consists of the following groups:

- Standard Setup
- Advanced Setup
- Chipset Setup
- Power Management Setup
- Peripheral Setup

The default setting for the Setup option is Optimal. The Optimal default settings are best-case values that should optimize system performance. If CMOS RAM is corrupted, the Optimal settings are loaded automatically.

Standard Setup

Select the Standard Setup option from the WINBIOS Setup main menu. Standard Setup allows you to specify basic system parameters, such as time and date, and disk drive parameters. The Standard Setup options are described below.

Date/Time Icon

Select the Date and Time icon to change the date, day, or time. The current values for date, day, and time are displayed. Enter new values through the keyboard.

Master Disk
Slave Disk

Select the Master Disk icon to configure the master hard disk drive. Select the Slave Disk icon to configure the slave hard disk drive. WINBIOS supports up to four IDE hard disk drives: the primary master, primary slave, secondary master, and secondary slave. If the hard disk drive is an IDE drive, select **Detect Primary** or **Detect Slave** from the Utility section of the WINBIOS Setup main menu to have WINBIOS automatically detect the IDE drive parameters and report them to this screen.

You can also enter the hard disk drive parameters. Hard disk type 47 is the user-definable drive type. The drive parameters are: Type, Cylinders, Heads, Write Precompensation, Landing Zone, Sectors, and Capacity.

Using Auto Detect Hard Disk (Only for IDE Drives)

If you select **Detect Primary** or **Detect Slave** from the WINBIOS Setup main menu, WINBIOS automatically finds all IDE hard disk drive parameters for all attached IDE drives. WINBIOS places the hard disk drive parameters that it finds in the **Primary Master** or **Primary Slave** options in Standard Setup.

Floppy A
Floppy B

> Select the Floppy A icon to choose the type of floppy drive installed as Drive A:. Select the Floppy B icon to choose the type of floppy drive installed as drive B:. The settings are *360 KB 5¼ inch*, *1.2 MB 5¼ inch*, *720 KB 3½ inch*, *1.44 MB 3½ inch*, or *2.88 MB 3½ inch.*

Advanced Setup

> The WINBIOS Setup options described in this section are displayed by choosing the Advanced Setup icon from the WINBIOS Setup main menu. The Advanced Setup options are described below.

System Keyboard

> Use this option to specify if error messages are displayed when a keyboard is not attached. This option permits you to configure workstations with no keyboards. The settings are *Present* or *Absent.* The Optimal default setting is *Absent.*

Primary Display

> Configure the type of monitor attached to the computer. The settings are *VGA/EGA, Mono* (monochrome), *CGA40* (40-column CGA), or *CGA80* (80-column CGA). The Optimal default setting is *VGA/EGA.*

Mouse Support

> When this option is set to *Enabled,* WINBIOS supports a PS/2-type mouse and IRQ12 is used for the mouse. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled.*

System Boot Up Num Lock

This option turns the Num Lock key off when the computer starts. The settings are *On* or *Off.* The Optimal default setting is *On.*

Floppy Drive Seek At Boot

When this option is set to *Enabled,* WINBIOS performs a Seek command on floppy drive A: before booting the system. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Disabled.*

System Boot Up Sequence

Use this option to specify the boot sequence. WINBIOS will boot DOS from either floppy drive A: or hard disk drive C: (the primary master) after BIOS POST (Power On Self Test) completes. The settings are *C:,A:* or *A:,C:.* The Optimal default setting is *C:,A:.*

External Cache

This option enables caching for L2 Secondary cache memory. L2 cache is always set to WB (Write-back) mode. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled.*

Cont'd

Internal Cache

> This option enables caching for L1 internal cache memory. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled*.

Video Shadow

> When this option is set to *Enabled,* the contents of the video ROM area (C0000h to C7FFFh) are copied (shadowed) to the analogous system memory RAM addresses for faster execution. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled.*

Shadow C800,32K
Shadow D000,32K
Shadow D800,16K

> Choose these options to copy the contents of the ROM area named in the option title to RAM. The settings for each of these option is *Shadow* or *Disabled.*

> For example, if you set the Shadow C800,32K option to *Shadow,* the contents of the ROM area at C8000h to CFFFFh are copied to the analogous area in RAM.

> The contents of ROM at C800h, D000h, and D800h usually store adaptor ROMs on ISA or EISA adapter cards. These ROM areas should not be shadowed unless specified by the adapter card manufacturer. Adaptor ROMs on all PCI adapter cards are automatically shadowed to RAM by WINBIOS.

Chipset Setup

The WINBIOS Setup options described in this section are displayed by choosing the Chipset Setup icon from the WINBIOS Setup main menu. The Chipset Setup options are:

ISA Memory Hole

This option enables the ISA memory hole. The ISA memory hole is a memory area below 16 MB that can only be used on the ISA bus. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Disabled.*

ISA Memory Hole Size

This option sets the size of the ISA memory hole. The settings are *Disabled, 64 KB, 128 KB, 256 KB, 512 KB, 1 MB, 2 MB,* or *4 MB.* The Optimal default setting is *2 MB.*

ISA Memory Hole Base Address

This option sets the starting address of the ISA memory hole. The settings are any multiple of the value of the **ISA Memory Hole Size** option between 2 MB and the multiple below 16 MB.

PCI Memory Hole

This option enables the PCI memory hole. The PCI memory hole is a memory area below 16 MB that can only be used on the PCI local bus. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Disabled.*

PCI Memory Hole Size

This option sets the size of the PCI memory hole. The settings are *Disabled, 64 KB, 128 KB, 256 KB, 512 KB, 1 MB, 2 MB,* or *4 MB.* The Optimal default setting is *2 MB.*

<div align="right">Cont'd</div>

Chipset Setup, Continued

PCI Memory Hole Base Address

This option sets the starting address of the PCI memory hole. The settings are any multiple of the value of the **PCI Memory Hole Size** option between 2 MB and the multiple below 16 MB.

PCI Latency Time Adjust

This option allows you to set the latency for the PCI expansion slots. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled.*

Slot 1 Latency Time

This option allows you to specify the latency for the PCI adapter card in PCI slot 1. The setting can be *1 — 255* µseconds. The Optimal default setting is *248* µseconds.

Slot 2 Latency Time

This option allows you to specify the latency for the PCI adapter card in PCI slot 2. The setting can be *1 — 255* µseconds. The Optimal default setting is *248* µseconds.

Slot 3 Latency Time

This option allows you to specify the latency for the PCI adapter card in PCI slot 3. The setting can be *1 — 255* µseconds. The Optimal default setting is *248* µseconds.

Assign IRQ 3 To

Use this option to specify the bus that IRQ3 can be used on. The settings are *PCI* or *ISA.* The Optimal default setting is *PCI.*

Assign IRQ 4 To

Use this option to specify the bus that IRQ4 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.

Assign IRQ 5 To

Use this option to specify the bus that IRQ5 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.

Assign IRQ 7 To

Use this option to specify the bus that IRQ7 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.

Assign IRQ 9 To

Use this option to specify the bus that IRQ9 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.

Assign IRQ 10 To

Use this option to specify the bus that IRQ10 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.

Assign IRQ 11 To

Use this option to specify the bus that IRQ11 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.
Cont'd

Assign IRQ 12 To

Use this option to specify the bus that IRQ12 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.

Assign IRQ 14 To

Use this option to specify the bus that IRQ14 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.

Assign IRQ 15 To

Use this option to specify the bus that IRQ15 can be used on. The settings are *PCI* or *ISA*. The Optimal default setting is *PCI*.

Power Management Setup

The WINBIOS Setup options described in this section are selected by choosing the Power Management Setup icon from the WINBIOS Setup main menu. All Power Management Setup options are described below.

BIOS Power Management

This option enables the motherboard power management features. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Disabled.*

Power Management Setup, Continued

Suspend Timer Value

This option specifies the length of time all monitored activities can be inactive before the computer enters suspend state. The **BIOS Power Management** option must be set to *Enabled* before this option can be set. The settings are *Disabled, 1 Min., 2 Min., 5 Min., 10 Min., 15 Min., 20 Min., 30 Min.,* or *45 Min.* The Optimal default setting is *Disabled.*

IDE Off from Suspend Timeout

When this option is set to *Enabled,* IDE drives that have the power down feature can power down when suspend state is entered. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Disabled.*

Video Off from Suspend Timeout

When this option is set to *Enabled,* VGA adapter cards that have the power down feature can power down when the computer enters suspend state. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Disabled.*

Aux. Power Supply Timeout

This option can be used to control a Green PC-Capable power supply. The settings are *Enabled* or *Disabled.* When this option is set to *Enabled,* the power supply can be placed in Green PC Power Savings mode when the timeout period value expires via the output from J5 on the motherboard.

Power supplies that support a timeout feature provide a cable with a two-pin berg header. The black wire should be ground and should be connected to pin 1 of J5. The other wire is the TTLOUT signal.

<div align="right">Cont'd</div>

Power Management Setup, Continued

Event Monitoring

WINBIOS Setup Power Management Setup for the Super Voyager PCI-II motherboard defines system events that can be monitored for activity and suspended. When the **BIOS Power Management** option is set to *Enabled,* the following options are enabled.

Keyboard Activity

When this option is set to *Monitor,* the system BIOS monitors all keyboard activity. The BIOS sends the computer to suspend state if no keyboard activity occurs during the length of time specified in the **Suspend Timer Value** Power Management option. The settings are *Monitor* or *Ignore.* The Optimal default setting is *Monitor.*

Video Activity

When this option is set to *Monitor,* the system BIOS monitors all video activity and sends the computer to suspend state if no video activity occurs for the length of time specified in the **Suspend Timer Value** Power Management option. The settings are *Monitor* or *Ignore.* The Optimal default setting is *Monitor.*

HDD/FDD Activity

When this option is set to *Monitor,* the system BIOS monitors all hard disk drive and floppy disk drive activity and sends the computer to suspend state if no drive activity occurs for the length of time specified in the **Suspend Timer Value** Power Management option. The settings are *Monitor* or *Ignore.* The Optimal default setting is *Monitor.*

Cont'd

Power Management Setup, Continued

Serial Port Activity

When this option is set to *Monitor,* the system BIOS monitors all serial port activity and sends the computer to suspend state if no serial port activity occurs for the length of time specified in the **Suspend Timer Value** Power Management option. The settings are *Monitor* or *Ignore.* The Optimal default setting is *Monitor.*

Peripheral Setup

Set the WINBIOS Setup options described below by choosing the Peripheral Setup icon from the WINBIOS Setup main menu.

Onboard FDC

Set this option to *Enabled* to use the floppy drive controller on the motherboard. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled.*

Onboard IDE

Set this option to *Enabled* if using the primary or secondary IDE controller on the motherboard. To use an offboard IDE controller, set this option to *Disabled*. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled.*

OffBoard PCI IDE Card

This option can only be selected if the **Onboard IDE** option is set to *Disabled.* You cannot set this option if using the IDE controller on the motherboard. This option allows you to specify the PCI expansion slot that an IDE controller adapter card occupies. The settings are *Absent, Slot1, Slot2,* or *Slot3*. The Optimal default setting is *Absent.*

Peripheral Setup, Continued

OffBoard PCI IDE Card Uses

This option can only be selected if the **Onboard IDE** option is set to *Disabled.* You cannot set this option if using the IDE controller on the motherboard. This option allows you to specify the PCI interrupt that the offboard IDE controller adapter card uses. The settings are *INT A, INT B, INT C,* or *INT D.* The Optimal default setting is *INT A.*

Primary Master IDE Block Mode
Primary Slave IDE Block Mode
Secondary Master IDE Block Mode
Secondary Slave IDE Block Mode

When set to *Enabled,* these options enable multiple sector reads and writes for the primary master, primary slave, secondary master, or secondary slave IDE drive. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled.*

Primary Master IDE PIO Mode
Primary Slave IDE PIO Mode
Secondary Master IDE PIO Mode
Secondary Slave IDE PIO Mode

These options specify the IDE Programmed I/O (PIO) mode used by the primary master, primary slave, secondary master, or secondary slave IDE drive. The settings are *Auto* (AMIBIOS automatically sets the correct IDE mode), *Mode 0, Mode 1, Mode 2, Mode 3,* or *Mode 4.* The Optimal default setting is *Auto. Selecting a mode not supported by the IDE drive causes data loss.*

Cont'd

Peripheral Setup, Continued

Primary Master IDE LBA Mode
Primary Slave LBA Mode
Secondary Master LBA Mode
Secondary Slave LBA Mode

Set these options to *Enabled* to enable IDE LBA (Logical Block Address) Mode for the primary master, primary slave, secondary master, or secondary slave IDE drive. LBA Mode is an advanced method for accessing data on IDE drives. Data is accessed by block addresses instead of the AT-standard Cylinder-Head-Sector scheme. Data transfer rates can be much higher in LBA mode. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Warning

The drive is re-mapped each time this option is enabled or disabled and existing data is destroyed.

Primary Master IDE 32Bit Transfer
Primary Slave IDE 32Bit Transfer
Secondary Master IDE 32Bit Transfer
Secondary Slave IDE 32Bit Transfer

These options specify that the primary master, primary slave, secondary master, or secondary slave IDE drives support 32-bit data transfers. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled.*

Cont'd

Peripheral Setup, Continued

IDE Prefetch Read Buffer

The IDE prefetch read buffer allows data from the hard disk drive to be read to a buffer before being used, which improves performance. Set this option to *Enabled* to enable the prefetch read buffer. The settings are *Enabled* or *Disabled.* The Optimal setting is *Enabled.* This option must be set to *Disabled* when some operating systems are running.

Serial Port 1

Use this option to specify the base I/O port address used for onboard serial port 1. The settings are *Disabled, 2E8h, 3F8h,* or *3E8h.* The serial port uses eight consecutive I/O port addresses (for example: 3F8h through 3FFh). The Optimal default setting is *3F8h.*

Serial Port 2

Use this option to specify the base I/O port address used for onboard serial port 2. The settings are *Disabled, 3E8h, 2F8h,* or *2E8h.* The Optimal default setting is *2F8h.*

Parallel Port

Use this option to specify the base I/O port address used for the onboard parallel port. The settings are *Disabled, 278h,* or *378h.* The Optimal default setting is *378h.*

4 Flash Programming

The American Megatrends Super Voyager PCI-II 486 ISA motherboard uses Flash EPROM to store the system BIOS. The advantage of using a Flash EPROM is that the EPROM chip does not have to be replaced to update the BIOS. The end user can actually reprogram the BIOS, using a ROM file supplied by American Megatrends.

Programming the Flash EPROM

Step	Action
1	Turn system power off.
2	Place the floppy disk that has the latest S724P.ROM BIOS file in floppy drive A:.
3	Make sure that the system has a speaker that is connected.
4	Turn system power on while pressing and holding down the <Ctrl> and <Home> keys.

The S724P.ROM is read from the root directory of the floppy disk in drive A:. The Flash EPROM is erased. The Flash EPROM is reprogrammed with the data read from the floppy disk in drive A:, and generates a CPU reset, rebooting the system.

The Flash portion of Flash EPROM is not programmed.

S724P.ROM resides on a floppy disk and contains the updated main BIOS code. American Megatrends will provide this file when the WINBIOS for the Super Voyager PCI-II 486 ISA motherboard must be updated.

S724P.ROM must be present in the root directory of the floppy disk before the onboard Flash EPROM can be reprogrammed. The file that has the main BIOS code must be named S724P.ROM.

Chapter 4 Flash Programming

A   Upgrading Cache Memory

L2 secondary (external) cache memory on the American Megatrends Super Voyager PCI-II 486 ISA motherboard can be upgraded from 128 KB to 256 KB by adding four 32 KB x 8 15 ns SRAMs. *You must use 5 V SRAM DIPs.*

Recommended Parts

Manufacturers of the 32 KB x 8 15 ns 5 V SRAMs are:

Manufacturer	Part Number
Paradigm	PDM41256SA15P
Samsung	KM68257BP-15
Motorola	MCM6206CP15

Upgrading Cache Memory

Step	Action
1	Turn the system off. If the motherboard is already installed in a computer case, remove the cover and expose the motherboard.
2	*Make sure you are properly grounded to prevent electrostatic discharge.*
3	Install the new 32 KB x 8 5V SRAM DIPs in sockets U27, U30, U35, and U38. Make sure that Pin 1 of the sockets matches Pin 1 of the SRAM DIPs.
4	Place a shorting brideg (Jumper) on Pins 2-3 on J42, J44, and J45 on the motherboard.
5	Reinstall the motherboard and turn system power on.
6	The system BIOS should report 256 KB of secondary cache memory now after the computer boots. If it does not, repeat the cache memory installation procedure above.

Appendix A Upgrading Cache Memory

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Super Voyager PCI-II 486 ISA Motherboard User's Guide

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