American Megatrends, Inc.

Series 64

Baby EISA

80486 EISA Motherboard

User's Guide

Limited Warranty

Buyer agrees if this product proves to be defective, that American Megatrends, Inc. is only obligated to replace or refund the purchase price of this product at American Megatrend's discretion according to the terms and conditions on the Baby EISA motherboard warranty card. American Megatrends shall not be liable in tort or contract for any loss or damage, direct, incidental or consequential. Please see the Warranty Registration Card shipped with this product for full warranty details.

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Revision History

12/2/92 Initial release.
3/15/93 Minor changes to manual.

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Preface

To the OEM

Thank you for purchasing the high performance Baby EISA 80486 motherboard. This product is a state of the art 80486-based motherboard that includes the famous AMIBIOS. It is assumed that you have also licensed the rights to use the American Megatrends documentation for the Baby EISA motherboard.

This manual was written for the OEM to assist you in the proper installation and operation of the Baby EISA motherboard. This manual also describes the specifications and features of the Baby EISA motherboard. It explains how to assemble a system based on the Baby EISA motherboard and how to use the AMIBIOS that is specifically designed for this motherboard. This manual is not meant to be read by the computer owner who purchases a computer with the Baby EISA motherboard. It is assumed that you, the computer manufacturer, will use this manual as a sourcebook of information, and that parts of this manual will be included in the computer owner's manual.

Technical Support

If an Baby EISA motherboard fails to operate as described or you are in doubt about a configuration option, please call technical support at 404-246-8600.

Acknowledgments

This manual was written by Robert Cheng and Paul Narushoff. The writers gratefully acknowledge the assistance of Rex Wade and Sukha Ghosh.

American Megatrends BBS

The BBS permits OEMs, VARs, system integrators, and end users to access technical information about motherboard and BIOS products. Product Engineering Change Notices, Tech Tips, Technical Notes, and complete technical manuals are available on the BBS.

Data Transmission Rates

The BBS automatically handles modems with data transmission rates from 1,200 to 14,400 bps. If using an HST modem, call 404-246-8780. If using a non-HST modem, call 404-246-8782.

BBS Phone Numbers

The following table lists the characteristics of the BBS phone numbers. The BBS requires no parity, 8 data bits, and 1 stop bit.

Phone Number	Characteristics
404-246-8780	Supports HST and v.42.
404-246-8781	Supports HST and v.42.
404-246-8782	Dual standard. Can handle 2400 or 9600 bps. Supports v.32 and v.42. Can handle up to 14,400 baud.
404-246-8783	Supports v.32 and v.42.

Packing Slip

You should have received:

- a Series 64 Baby EISA Motherboard,
- a floppy disk with the AMIECU and EISA CFG file,
- the *American Megatrends Series 64 Baby EISA Motherboard User's Guide*, and
- the *American Megatrends ECU Version 2.00 User's Guide.*

Chapter 1

System Overview

Dimensions

The American Megatrends Series 64 Baby EISA is an EISA (Extended Industry Standard Architecture) motherboard. It is approximately 8.6 inches wide by 13 inches long (approximately the size of a standard Baby AT motherboard with similar mounting hole locations). The following graphic illustrates the dimensions of the Baby EISA motherboard and identifies the height restrictions.
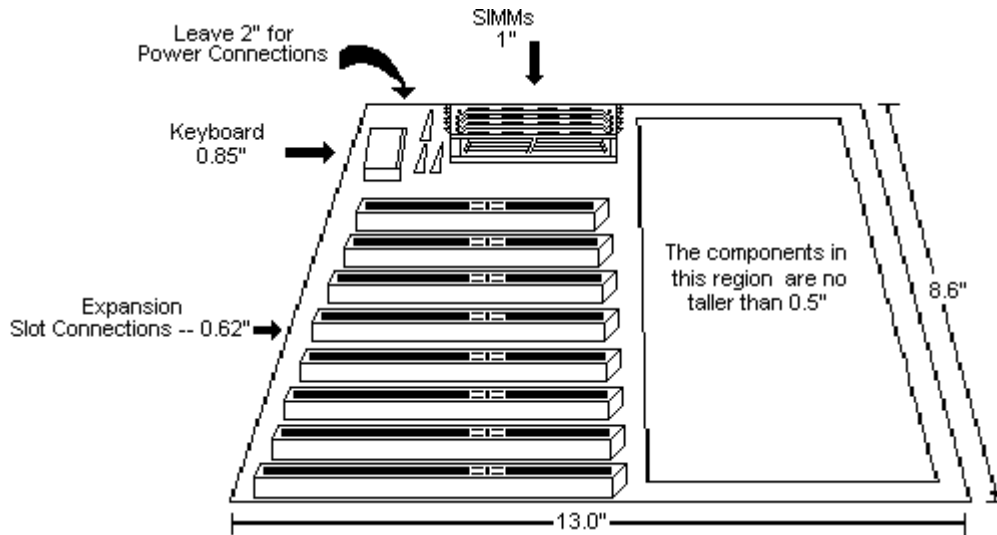
Description

Processor Type and Speed

The Baby EISA motherboard can be configured with any of the following Intel® microprocessors:

Processor	Speeds
80486SX	20, or 25 MHz
80486DX	25, 33, 50 MHz
80486DX2	50, 66 MHz
80487SX or Overdrive	50 MHz

The Baby EISA motherboard also supports future Intel processors and upgradeable processors. Intel Overdrive replacement processors can also be used.

Heat Sink

All Baby EISA motherboards with a 50 or 66 MHz 80486DX, 80486DX2, or Overdrive processor are equipped with a heat sink to help dissipate the additional heat.

Processor Speed

All Baby EISA motherboards have two clock speeds: high or low. The high clock speed is factory-set to the rated speed of the installed microprocessor (20, 25, 33, 50, or 66 MHz).

Low clock speed is achieved by adding the appropriate number of software delays, depending on the speed of the processor used on the motherboard. Low speed emulates an IBM AT running at 8 MHz.

Speed selection is through the keyboard via the following keychords:

<Ctrl><Alt><+>   switches to High speed;
<Ctrl><Alt><->   switches to Low speed.

Cache Memory

The Baby EISA motherboard supports 64 KB or 256 KB direct mapped, write-back external (secondary) cache memory. The Intel 80486 processors have 8 KB of internal cache memory.

Eight 8 KB x 8 or 32 KB x 8 15 ns SRAM chips are used for cache memory. Tag memory is 15 ns 16 KB x 4 SRAM chips.

System BIOS and video BIOS can be cached via the *Cacheable RAM Area* option in ADVANCED CMOS SETUP.

All system memory can be cached. Up to three non-cacheable areas from 64 KB – 512 KB can be defined via AMIBIOS ADVANCED CHIPSET SETUP.

The cache read and write has 0 wait states (1 wait state is used for write operations if a 50 or 66 MHz microprocessor is installed). Burst mode is supported. Cache memory is enabled and disabled via the keyboard or a hardware turbo switch. The hardware turbo switch can be enabled or disabled via ADVANCED CMOS SETUP. The keychords that control cache memory are:

<Ctrl><Alt><Shift><+>   enables internal and external (secondary) cache memory
<Ctrl><Alt><Shift><->   disables internal and external (secondary) cache memory.

System Memory

The Baby EISA motherboard supports up to 128 MB of DRAM onboard system memory using eight 16 MB x 9 SIMMs. The Baby EISA motherboard has two banks (with four sockets each) of SIMM sockets. Up to 4 GB of system memory is supported on the EISA bus.

Description, Continued

SIMMs

The motherboard uses 1 MB x 9, 4 MB x 9, or 16 MB x 9 fast page mode SIMMs with 70 ns RAS access time.

Shadow RAM

Shadowing can be performed on three areas in the Baby EISA motherboard and is controlled by ADVANCED CMOS SETUP options in AMIBIOS Setup (see page 56). The areas are:

- system BIOS (128 KB at E0000h – FFFFFh),
- video BIOS (32 KB at C0000h – C7FFFh), and
- adaptor ROM BIOS (C8000h - DFFFFh) can be shadowed in 16 KB increments.

ROM

The Baby EISA motherboard has 128 KB of ROM that contains the system EISA AMIBIOS at memory location E0000h – FFFFFh.

BIOS

The Baby EISA motherboard has a 128 KB EISA AMIBIOS at E0000h – FFFFFh with built-in AMIBIOS Setup, hard disk drive diagnostics, and user-definable hard disk drive types. AMIBIOS allows you to bypass error messages for missing video, keyboard, or floppy drives for file servers.

EISA Extended CMOS RAM

The Baby EISA motherboard has 4 KB of nonvolatile EISA Extended CMOS RAM with built-in battery backup for EISA configuration.

Description, Continued

ISA CMOS RAM

The Baby EISA motherboard has a Dallas RAMified Real Time Clock+RAM chip (DS1387) or equivalent that includes the Real Time Clock and 64 bytes of built-in battery-backed standard ISA CMOS RAM.

EISA Configuration Utility

The American Megatrends EISA Configuration Utility (ECU) is shipped with the motherboard.

Real Time Clock

The Baby EISA motherboard has a real time clock and CMOS RAM with built-in battery backup. The battery is on the CMOS/Real Time Clock chip.

Performance Upgrade Socket

The Baby EISA motherboard has an Intel Performance Upgrade Socket for an optional 80487SX numeric coprocessor or Intel Overdrive processor.

EISA Integrated Peripheral Controller

The Baby EISA motherboard has an OPTi 82C686 EISA Integrated Peripheral Controller.

OPTi EISA Chipset

The Baby EISA motherboard uses the OPTI 82C681 EISA chipset:

82C681 EISA Bus Controller
82C682 Memory and Cache Controller
82C686 Integrated System Peripheral
82C867 Data Bus Controller

Seven DMA Channels

The Baby EISA motherboard has seven DMA channels. Any DMA channel may be programmed for 8, 16, or 32-bit DMA device size and ISA compatible, type A, type B, or burst modes.

Fifteen Interrupt Levels

The motherboard has 15 hardware interrupt levels. The NMI takes precedence over hardware interrupts.

Priority	Label	Typical Interrupt Source
1	IRQ 0	Interval Timer 1, Counter 0 OUT
2	IRQ 1	Keyboard
3 – 10	IRQ 2	Used internally for IRQ 8 through IRQ 15
3	IRQ 8	Real-TIme-Clock
4	IRQ 9	EISA bus
5	IRQ 10	EISA bus
6	IRQ 11	EISA bus
7	IRQ 12	Mouse on EISA bus
8	IRQ 13	Coprocessor Error
9	IRQ 14	EISA bus (Hard disk drive controller)
10	IRQ 15	EISA bus
11	IRQ 3	EISA bus (Serial Port 2)
12	IRQ 4	EISA bus (Serial Port 1)
13	IRQ 5	EISA bus (Parallel Port 2)
14	IRQ 6	EISA bus and floppy disk controller
15	IRQ 7	EISA bus (Parallel Port 1)

Timer Features

The Baby EISA motherboard has five programmable 16-bit counter/timers.

System Arbiter

The Baby EISA motherboard has standard EISA arbitration features.

Refresh Generation

The Baby EISA motherboard has a hidden refresh generation feature that saves CPU cycles.

I/O Capability

The motherboard accesses 32-, 16-, 8-bit memory and I/O devices on the EISA bus.

EISA Bus

The EISA Bus in the Baby EISA motherboard has a system clock that is generated by the EISA bus clock (BCLK) and operates at approximately 8.33 MHz.

Expansion Slots

The motherboard has eight 188-pin, 32-bit EISA expansion slots, fully compatible with ISA adapter cards. The first six EISA slots are bus mastering slots.

Maximum Supported Memory Addresses

The Baby EISA motherboard uses 32-bit memory addresses to access 4 gigabytes of memory address space on the EISA expansion slots.

I/O Channel Check

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

EISA Supports Multiple Processors

The Baby EISA motherboard has an open bus structure (allowing multiple microprocessors to share the system resources, including memory).

Description, Continued

I/O Address Space

The Baby EISA motherboard uses I/O addresses *x*100h through *x*3FFh for ISA compatible I/O (*x* does not affect mapping location — I/O port addresses 0100h, 1100h, 2100h, and 3100h map to the same location). It also uses the following EISA I/O port addresses:

*s*000h – *s*0FFh   EISA expansion slot
*s*400h – *s*4FFh   EISA expansion slot
*s*800h – *s*8FFh   EISA expansion slot
*s*C00h – *s*CFFh   EISA expansion slot
s = EISA bus slot number (0 for motherboard)

Memory Refresh from Bus

The Baby EISA motherboard supports refresh of system memory from channel microprocessors.

Keyboard

A standard five-pin AT-compatible DIN connector is supplied for the keyboard. A five-pin berg connector for a keyboard lock connector is also provided. Any AT- or XT-compatible keyboard can be used.

Mouse

A 10-pin header is used for the mouse. A PS/2®-type mouse can be attached via a serial port cable.

Hardware Reset Switch

The Baby EISA motherboard has a two-pin berg connector for a standard hardware reset switch.

Speaker

The Baby EISA motherboard has a standard four-pin speaker attachment.

Chapter 2

Installation

Unpacking the Motherboard

Step	Action
1.	Inspect the cardboard carton for obvious damage. If damaged, call Technical Support at 404-246-8600. Leave the motherboard in its original packing.
2.	Perform all unpacking and installation procedures on a ground connected anti-static mat. The operator should 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. Similarly, 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 and sandwiched between sheets of sponge. Remove the sponge and remove the anti-static bag. Place the motherboard on a grounded anti-static surface component side up. Save the original packing material in case of reshipment.
4.	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 damaged.
5.	If the motherboard is undamaged, it is ready to be installed.

Chapter 2 Installation

Chapter 2 Installation
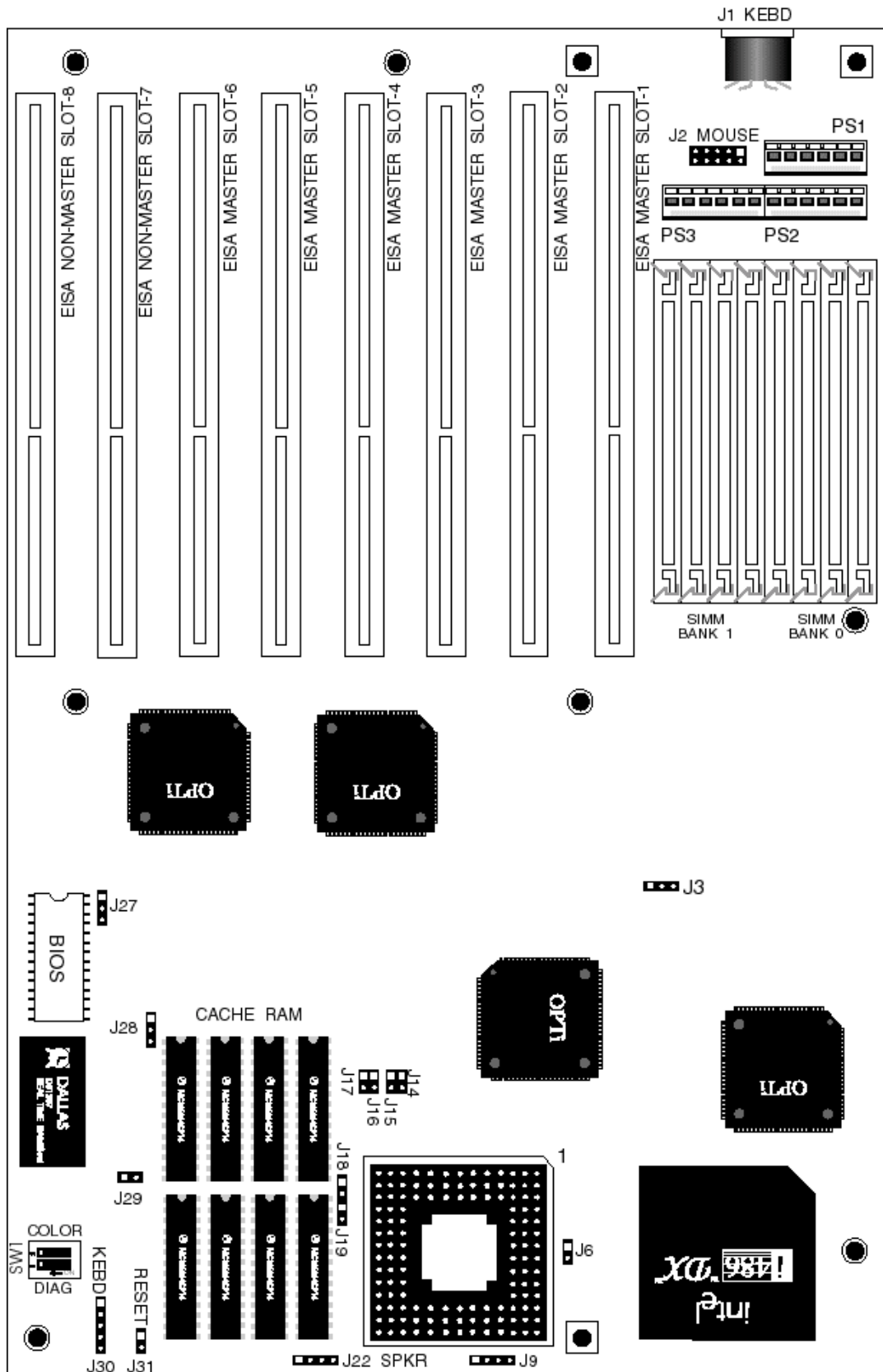
Installation Steps

Step	Action	Turn to
1	Set switch and jumper options	Page 13
2	Install memory	Page 16
3	Install upgrade processor	Page 18
4	Install motherboard	Page 19
5	Connect the power supply	Page 20
6	Connect the keyboard	Page 24
7	Connect the mouse	Page 25
8	Connect cables	Page 26
9	Install adapter cards	Page 28
10	Test and configure	Page 33

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                         Warning
     The Baby EISA 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 Switch and Jumper Options

Set all user-configurable jumpers and switches before installing the
motherboard in the chassis.

SW

SW is a dual two-position DIP switch. SW-1 (DIAG) is OFF when shipped
and it should remain OFF. The COL/MONO (SW-2) switch sets the type of
video adapter card in the system. This switch is factory-set to OFF, for
a monochrome display adapter (MDA™). Set ON for a color graphics
adapter (CGA). This switch has no effect if an EGA or VGA adapter is
installed. SW is in the same end of the motherboard as the CPU but in
the opposite corner.

Step 1 Set Switch and Jumper Options, Continued

All jumpers are located on the half of the motherboard that includes the CPU. Refer to the figure on the next page for the exact placement of the jumpers.

Selecting the Frequency

Jumper	Type	20 MHz	25 MHz	33 MHz	50 MHz
J3	three-pin	Short 1-2	Short 1-2	Short 1-2	Short 2-3
J6	two-pin	Short 1-2	OPEN	OPEN	OPEN
J16	two-pin	OPEN	OPEN	OPEN	Short 1-2
J17	two-pin	OPEN	OPEN	Short 1-2	Short 1-2
J27	three-pin	Short 2-3	Short 1-2	Short 1-2	Short 1-2

J3 2x or 1x CLK Select
J6 Flush or Burst Write
J16 Speed Input to EBC
J17 Speed Input to EBC
J27 Synchronous BCLK Select

J9 Set CPU Type

J9 is a four-pin berg that selects the CPU type. When Pins 3-4 of J9 are shorted, it is IGNNE# Pin Select. When Pins 1-2 of J9 are shorted, it is NMI Pin Select. See the graphic on the next page for the location of J9.

CPU	Pins Shorted
80486SX	Short 2-3.
80486DX or 80486DX2	Short pins 1-2 and 3-4.

Cache Size Select

Jumper	Type	64 KB cache	256 KB cache
J14 HA16 to TAG	two-pin	OPEN	Short 1-2
J15 HA17 to TAG	two-pin	OPEN	Short 1-2
J18 CAA17 to Cache	two-pin	OPEN	Short 1-2
J19 CAA16 to Cache	two-pin	OPEN	Short 1-2
J28 CAA170 = CAA17I or HA2	three-pin	Short 2-3	Short 1-2

J29 Short EXRDY for CHRDY

J29 is a two-pin berg that may be needed for compatibility. When pins 1 and 2 are shorted together, EXRDY drives CHRDY. See the figure below for the location of J29.

Jumper Reference

All jumpers are located on the half of the Baby EISA motherboard — where the CPU and empty Upgrade Processor socket are located.
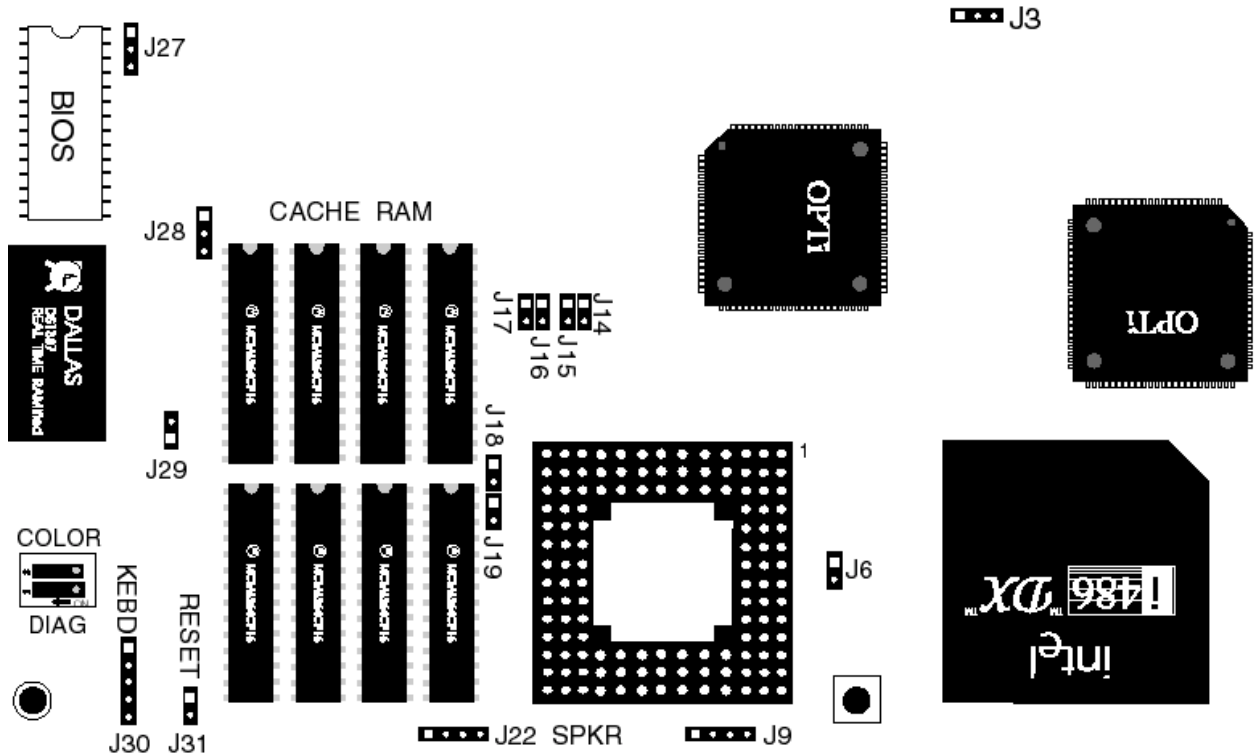
Step 2 Install Memory

The main memory subsystem on the Baby EISA motherboard consists of two
32-bit memory banks of four SIMM sockets each. Both banks house SIMMs
(Single In-line Memory Module) DRAM packages. Use 1 MB x 9, 4 MB x 9, or
16 MB x 9 SIMMs. The following illustration shows the corner of the
motherboard where the SIMM slots are located.
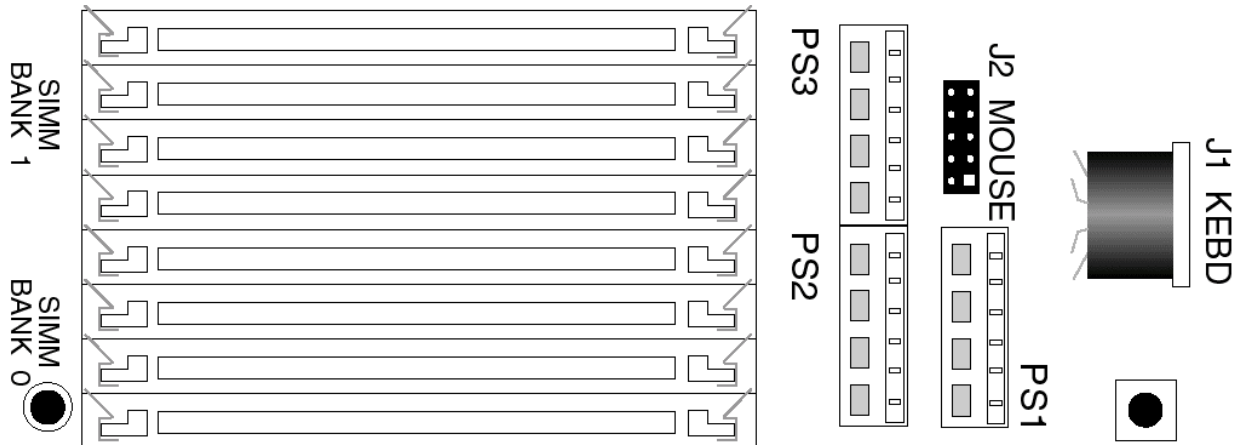
SIMM Part Numbers

Memory Type	Manufacturer	Part Number
1 MB x 9	Fujitsu®	MB85235-70
	Toshiba®	THM91070AS-70 THM91000AS-70
	Motorola®	MCM91000S-70 MCM91430S-70
	Oki®	MSC2312A-704S9
	NEC®	MC-42100A9-70
	Samsung®	KMM591000AN-7
	Siemens®	HYM910005-70
4 MB x 9	Motorola	MCM94000A-70
	Samsung	KMM594000A-70
	Oki	MSC2340-70459
16 MB x 9	Mitsubishi®	MH16M09J-7
	Mitsubishi	MH16M09TJ-7
	Samsung	KMM5916000-7

Installing SIMMs

Both Bank 0 and Bank 1 have four SIMM sockets. These sockets can be filled with 1 MB x 9, 4 MB x 9, or 16 MB x 9 SIMMs. Use only one type of module to fill each bank. 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.
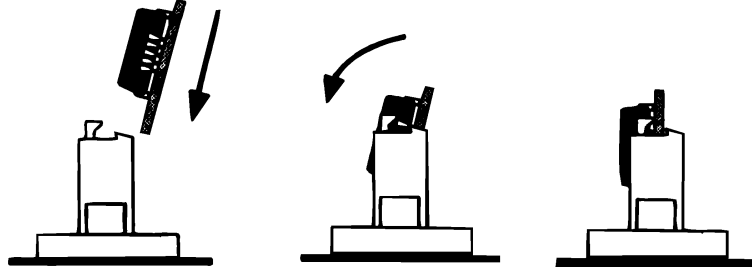
Memory Configuration

The Baby EISA motherboard checks the memory banks and automatically configures the amount of memory installed in the SIMM sockets. There are no user definable jumper or switch settings for configuring memory. The following table shows the possible system memory configurations.

Bank 0	Bank 1	Total Memory
1 MB x 9	None	3712K
1 MB x 9	1 MB x 9	7808K
4 MB x 9	None	16000K
1 MB x 9	4 MB x 9	20096K
4 MB x 9	4 MB x 9	32384K
16 MB x 9	None	65152K
16 MB x 9	16 MB x 9	130688K

Step 3 Install Upgrade Processor

Next to the CPU on the Baby EISA motherboard is an empty Intel Math
Coprocessor and Upgrade Processor Socket. An 80487SX math coprocessor
can only be installed if the CPU is an Intel 80486SX.

Check for bent pins on the math coprocessor or Overdrive Upgrade
Processor. Gently straighten any bent pins with pliers.

Align the pins and press the Math Coprocessor or Upgrade Processor
firmly into the socket, making sure that pin 1 of the chip is aligned
with pin 1 of the socket. When the Math Coprocessor or Upgrade Processor
is correctly installed, a row of socket holes will show on the outside
on all sides, as shown in the drawing on the right below.

Pin 1

Pin 1

Pin 1

**Math Coprocessor or Upgrade
Processor after being Installed**

**Installing a Math Coprocessor or Upgrade
Processor**
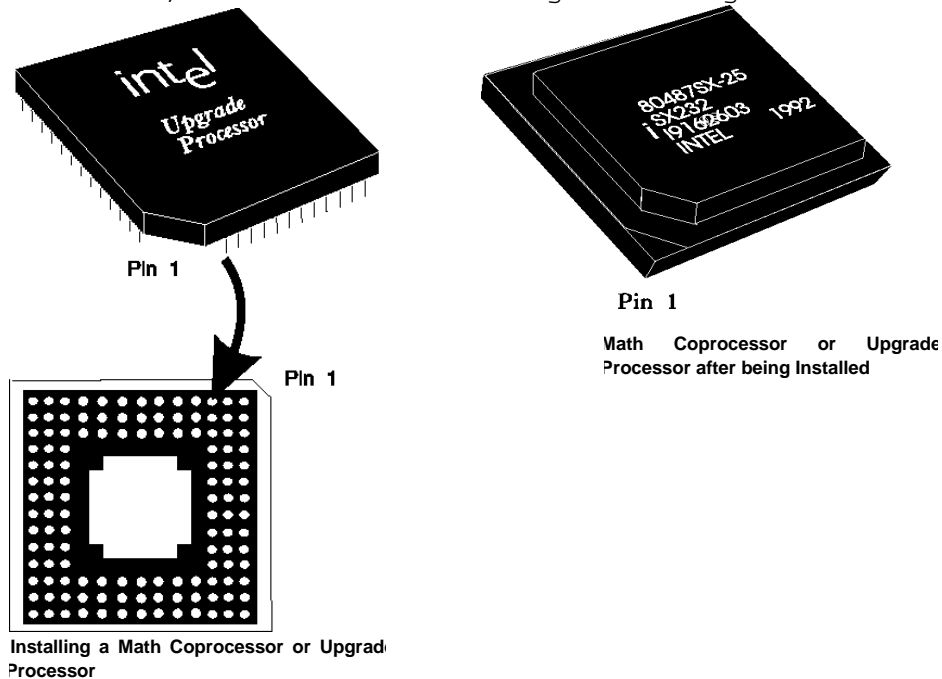
Step 4 Install the Motherboard

A Baby AT size mounting hole pattern is used on the Baby EISA motherboard. Standoffs and mounting screws are not supplied with the motherboard. The following graphic shows the motherboard mounting holes and the table describes the installation.
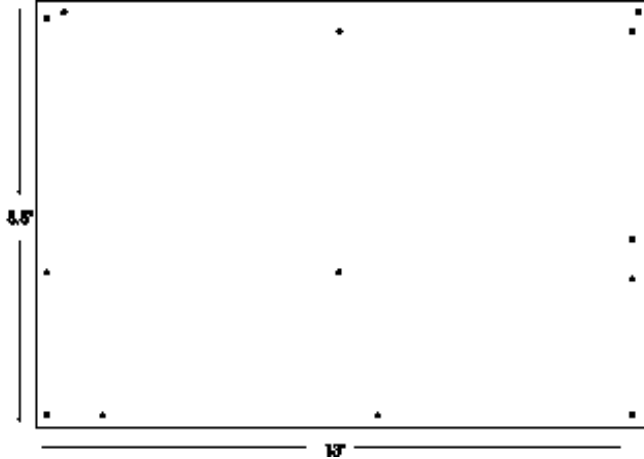
Baby EISA Motherboard Mounting Hole Locations

Step	Action
1	Place the chassis for the 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 adapter card slots are 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.

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.

Make sure that the proper voltage is selected. Power supplies often run on a wide range of voltages, but must be set (usually with a switch) to the proper range. Use at least a 230 watt power supply that has built-in filters to suppress radiated emissions. If all EISA expansion slots are filled, a 300-450 watt power supply is needed.

Power Connector Location

The power connectors are near the keyboard connector. The following graphic illustrates the locations of the power connectors (PS1, PS2, and PS3) on the motherboard.

Connect PS3 and PS2

Power supplies for ISA systems have two six-pin connectors inserted into PS3 and PS2. The six-pin   connector with three red wires and two black wires is connected to PS3 and the connector with an Orange wire on Pin 1 is connected to PS2. PS1 connects to the extra power line in larger power supplie.

Power Supply Connectors

Power Supply Connectors are Keyed

The connectors should be keyed to prevent connecting the plugs to the wrong connectors.

The keys on the connector must be cut to fit on some power supplies. The following figure illustrates the keys that must be cut.
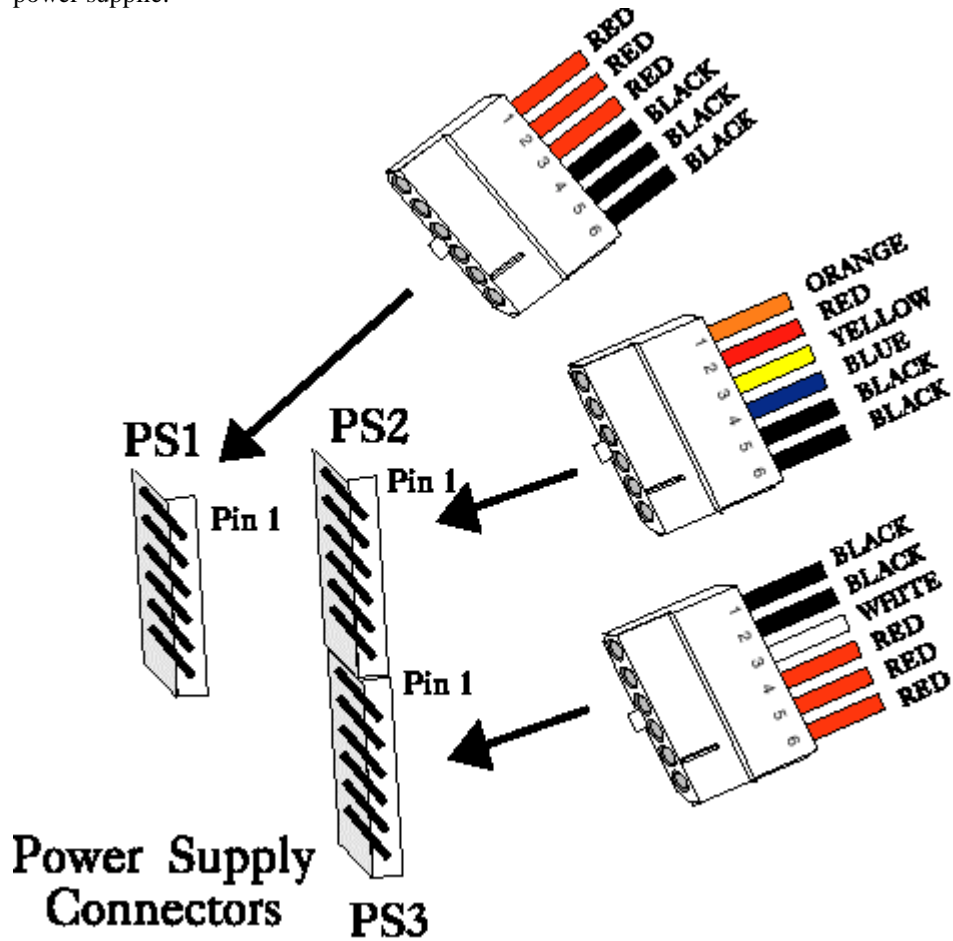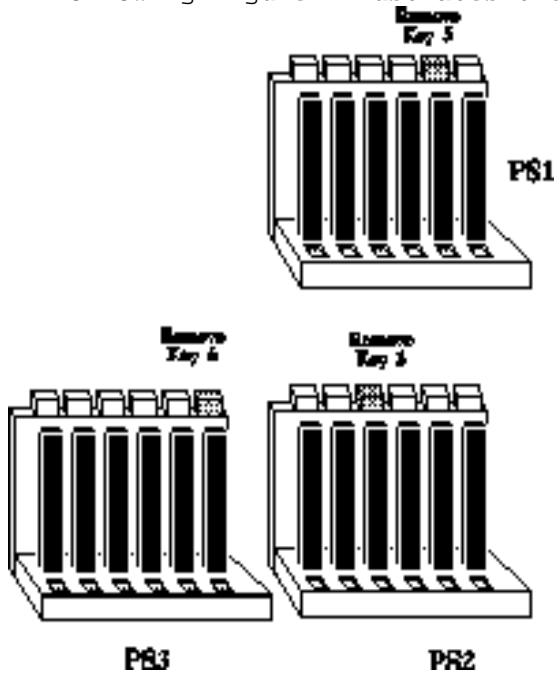
Step 5 Connect the Power Supply, Continued

PS3 Pinout

Pin	Description
1	Power Good (Orange wire)
2	VCC (Red wire)
3	+12 Volts (Yellow wire)
4	-12 Volts (Blue wire)
5	Ground (Black wire)
6	Ground (Black wire)

PS2 Pinout

Pin	Description
1	Ground (Black wire)
2	Ground (Black wire)
3	-5 Volts (White wire)
4	VCC (Red wire)
5	VCC (Red wire)
6	VCC (Red wire)

PS1 Pinout

Pin	Description
1	VCC (Red wire)
2	VCC (Red wire)
3	VCC (Red wire)
4	Ground (Black wire)
5	Ground (Black wire)
6	Ground (Black wire)

Step 6 Connect the Keyboard Cable

The keyboard connector is a five-pin DIN socket labeled KEYBRD and J1 on the motherboard. It attaches to the keyboard cable of a standard AT-compatible keyboard. The location of the keyboard connector and the J1 pinout follow.

Pin	Assignments
1	Keyboard clock
2	Keyboard data
3	Not used
4	Ground
5	VCC

.
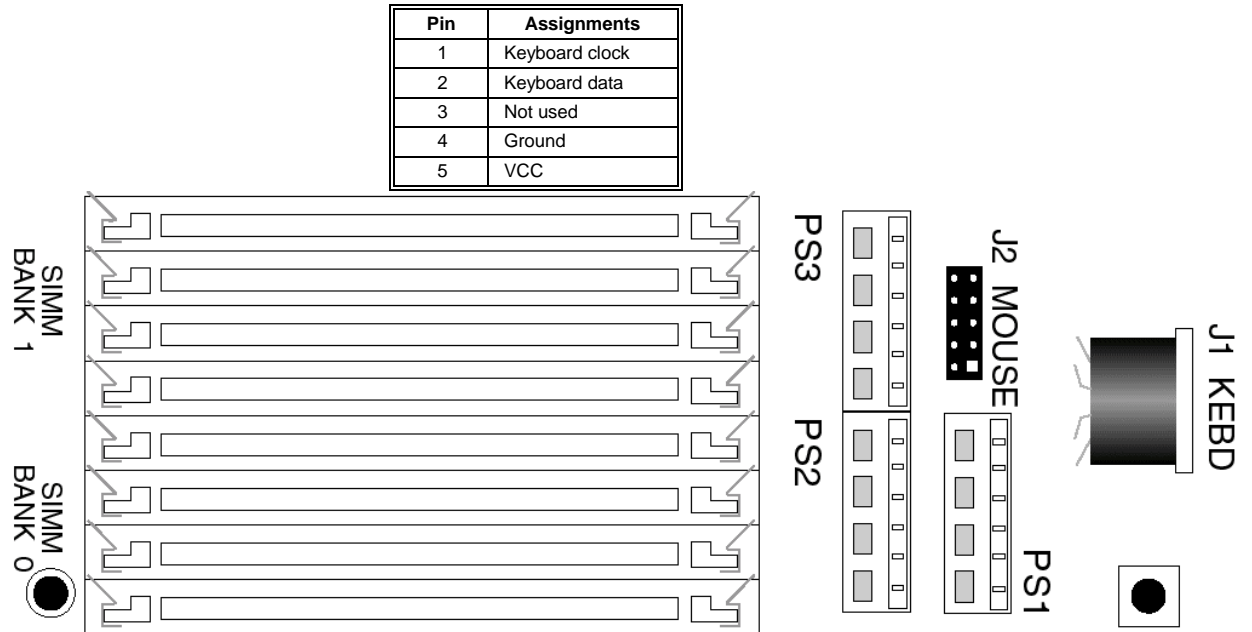
You can optionally connect a PS/2-type mouse to the 10-pin header J2 on the motherboard using a customized serial cable. You can order the mouse cable by calling the American Megatrends Sales Department at 404-263-8181. The part name is **Cable Assembly DB9, Male, 10-pin.** The part number is **CBLSUB1-10.** The cable is shown below. J2 is shown below. The mouse and keyboard connector locations are shown on the previous page. The J2 pinout is below.

Pin	Description	Pin	Description
1	Mouse Clock	2	N/C
3	N/C	4	N/C
5	N/C	6	FVcc
7	N/C	8	Mouse Data
9	Ground	10	Key

DB9 Connector Pinout

The pinout for the DB9 connector on the cable is shown below.

Pin	Description	Pin	Description
1	CLK	2	N/C
3	N/C	4	N/C
5	Ground	6	N/C
7	N/C	8	FVcc
9	Data		

Step 8 Connect Cables

When attaching connectors to the motherboard, make sure to attach the
correct 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
wire. If so, follow the wire to the proper pin on the switch or LED. Pin
1 is labeled on the motherboard.

**Locatin
g Pin 1**

In some cases, the "1" may be obscured. Pin 1 can also identified easily
by turning the motherboard over and looking at the connector pads. Pin 1
is always on a square pad. The cables to be connected are:

·   Reset Switch cable to J31
·   Speaker cable to J22.
·   Keyboard Lock cable to J30.

The following figure shows the location of the connectors on the motherboard.
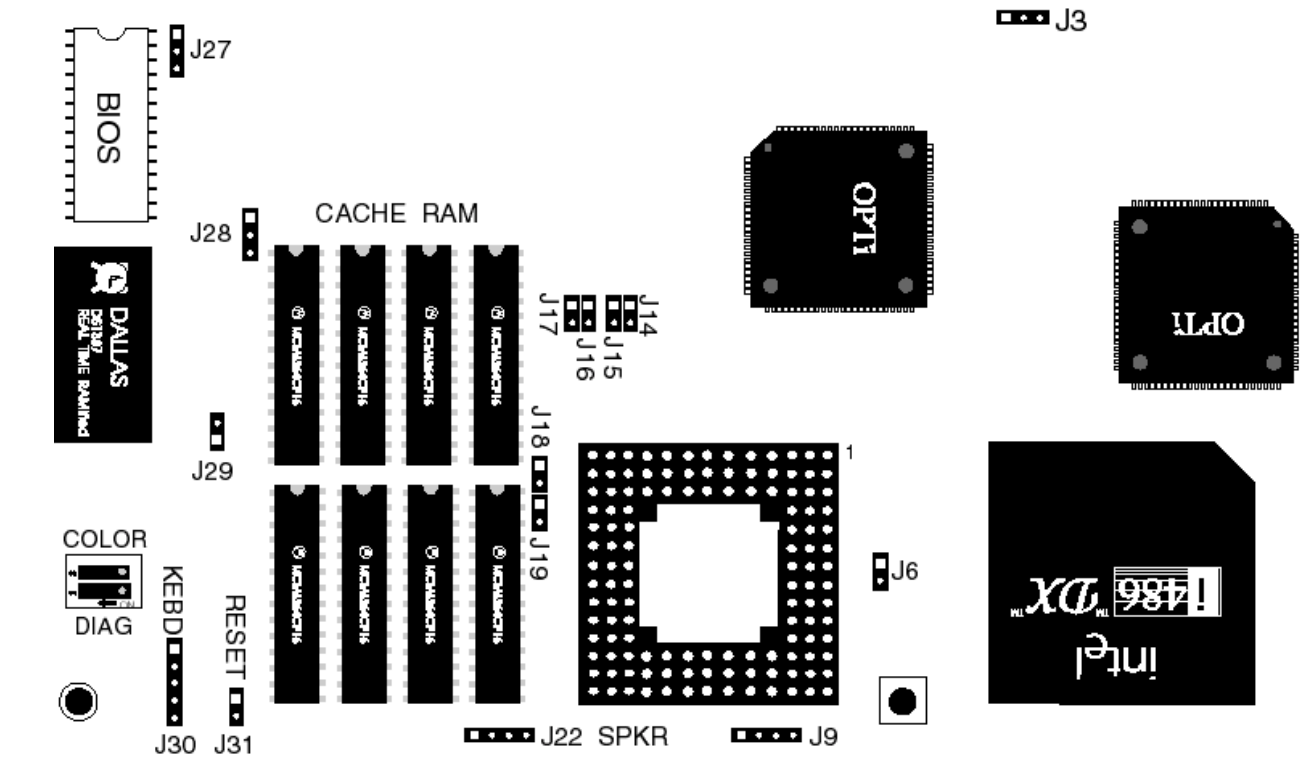
J31 Reset Switch Connector

J31 is a two-pin single-inline berg that attaches via a cable to the Reset Switch mounted on the chassis. When the Reset Switch is pressed, the system performs a hard reset. Pin 1 is ground and Pin 2 is Hard Reset. See the figure on the previous page for the J31 location.

J22 Speaker Connector

J22 is a four-pin single-inline berg that attaches via a cable to the audio speaker. AMIBIOS signals hardware problems through the speaker. See the figure on the previous page for the J22 location.

Pin	Description
1	Data Out
2	Key
3	Ground
4	VCC

J30 Keyboard Lock Connector

J30 is a five-pin single-inline berg that attaches via a cable to the keyboard lock. The keyboard lock allows the user to lock the keyboard, protecting the system from unauthorized use. J13 Pin 1 on the motherboard is labeled. See the figure on the previous page for the J30 location.

Pin	Description
1	LED power
2	Key
3	Ground
4	Keyboard lock
5	Ground

Step 9 Install Adapter Cards

The 80486 Baby EISA motherboard has eight EISA expansion slots. See the figure on page 10 for the location of the expansion slots. The slots are numbered SLOT1 through SLOT8 and can accept 8- or 16-bit ISA (XT- or AT-compatible) or 16- or 32-bit adapter cards.

Slot	Description
1 - 6	EISA bus master slot. These slots accept any EISA or ISA adapter card.
7 – 8	EISA non-bus master slot. These expansion slots accept only ISA or EISA adapter cards that do not have EISA bus mastering capability.

EISA Expansion Cards

EISA adapter cards have longer and denser fingers on the edge connecters than ISA adapter cards. The EISA expansion slots on the motherboard have two rows of contacts, one below the other. An ISA (AT-Compatible) Adapter Card can be inserted into the EISA connector only far enough to make contact with the upper row of contacts. EISA adapters have longer fingers to allow contact with the second row of contacts. See the following graphic.

ISA Adapter Card
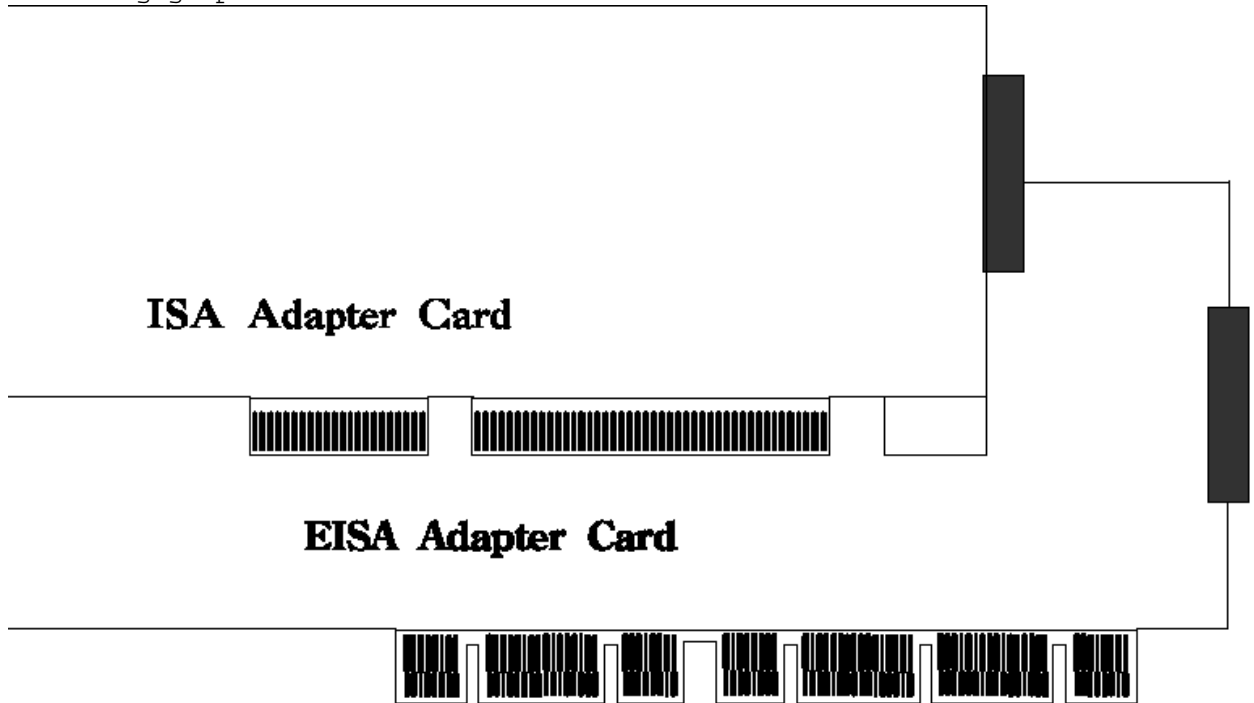
EISA Adapter Card

 When installing EISA adapter cards, make sure that they snap in twice and are fully seated into the EISA slot. If the card makes contact only with the upper row of contacts, it cannot function properly.

8-Bit ISA Expansion Slot Pinout

Pin	Use	Pin	Use
A1	IOCHCK-	B1	GND
A2	SD07	B2	RSTDRV
A3	SD06	B3	+5
A4	SD05	B4	IRQ9
A5	SD04	B5	-5
A6	SD03	B6	DREQ2
A7	SD02	B7	-12
A8	SD01	B8	OWS-
A9	SD00	B9	+12
A10	IOCHRDY	B10	GND
A11	AEN	B11	SMEMW-
A12	SA19	B12	SMEMR-
A13	SA18	B13	IOW-
A14	SA17	B14	IOR-
A15	SA16	B15	DACK3-
A16	SA15	B16	DREQ3
A17	SA14	B17	DACK1-
A18	SA13	B18	DREQ1
A19	SA12	B19	REF-
A20	SA11	B20	SYSCLK
A21	SA10	B21	IRQ7
A22	SA09	B22	IRQ6
A23	SA08	B23	IRQ5
A24	SA07	B24	IRQ4
A25	SA06	B25	IRQ3
A26	SA05	B26	DACK2-
A27	SA04	B27	T/C
A28	SA03	B28	BALE
A29	SA02	B29	+5
A30	SA01	B30	OSC
A31	SA00	B31	GND

16-Bit ISA Expansion Slot

The following 16-bit pins are an extension of the 8-bit board layout and are used in conjunction with the 8-bit board standard pins.

Pin	Use	Pin	Use
C1	SBHE-	D1	MEMCS16-
C2	LA23	D2	IOCS16-
C3	LA22	D3	IRQ10
C4	LA21	D4	IRQ11
C5	LA20	D5	IRQ12
C6	LA19	D6	IRQ13
C7	LA18	D7	IRQ14
C8	LA17	D8	DACK0-
C9	MEMR-	D9	DREQ0
C10	MEMW-	D10	DACK5-
C11	SD08	D11	DREQ5
C12	SD09	D12	DACK6-
C13	SD10	D13	DREQ6
C14	SD11	D14	DACK7-
C15	SD12	D15	DREQ7
C16	SD13	D16	+5
C17	SD14	D17	MASTER-
C18	SD15	D18	GND

EISA Slot Pinout

The following table identifies the pin values for the pins on each of the eight rows of pins on an EISA adapter card. 8- and 16-bit ISA signals are shown. Pins labeled *xxxxxx* are generally used to isolate signals on the bus from adjacent power pins. Rows A, B, C, and D are upper (ISA) contacts. Rows E, F, G, and H are lower (EISA) contacts. The following table lists the pinouts for Rows F, B, E, and A.

EISA Slot Pinout, cont'd

Row F	Row B	Row E	Row A
1 GND	1 GND	1 CMD#	1 IOCHK#
2 + 5 volts	2 RESDRV	2 START#	2 D7
3 + 5 volts	3 + 5 volts	3 EXRDY	3 D6
4 *xxxxxx*	4 IRQ 9	4 EX32#	4 D5
5 *xxxxxx*	5 - 5 volts	5 GND	5 D4
6 Access Key	6 DRQ 2	6 Access Key	6 D3
7 *xxxxxx*	7 - 12 volts	7 EX16#	7 D2
8 *xxxxxx*	8 NOWS#	8 SLBURST#	8 D1
9 + 12 volts	9 + 12 volts	9 MSBURST#	9 D0
10 M-IO	10 GND	10 W-R	10 CHRDY
11 LOCK#	11 SMWTC#	11 GND	11 AEN
12 Reserved	12 SMRDC#	12 Reserved	12 SA19
13 GND	13 IOWC#	13 Reserved	13 SA18
14 Reserved	14 IORC#	14 Reserved	14 SA17
15 BE# 3	15 DAK# 3	15 GND	15 SA16
16 Access Key	16 DRQ3	16 Access Key	16 SA15
17 BE# 2	17 DAK# 1	17 BE# 1	17 SA14
18 BE# 0	18 DRQ1	18 LA# 31	18 SA13
19 GND	19 REFRESH#	19 GND	19 SA12
20 + 5 volts	20 BCLK	20 LA# 30	20 SA11
21 LA# 29	21 IRQ 7	21 LA# 28	21 SA10
22 GND	22 IRQ 6	22 LA# 27	22 SA9
23 LA# 26	23 IRQ 5	23 LA# 25	23 SA8
24 LA# 24	24 IRQ 4	24 GND	24 SA7
25 Access Key	25 IRQ 3	25 Access Key	25 SA6
26 LA16	26 DAK# 2	26 LA15	26 SA5
27 LA14	27 T-C	27 LA13	27 SA4
28 + 5 volts	28 BALE	28 LA12	28 SA3
29 + 5 volts	29 + 5 volts	29 LA11	29 SA2
30 GND	30 OSC	30 GND	30 SA1
31 LA10	31 GND	31 LA9	31 SA0

Step 9 Install Adapter Cards, Continued

EISA Slot Pinout, cont'd

The following table lists the pinouts for Rows H, D, G, and C.

Row H	Row D	Row G	Row C
1 LA8	1 M16#	1 LA7	1 SBHE#
2 LA6	2 IO16#	2 GND	2 LA23
3 LA5	3 IRQ 10	3 LA4	3 LA22
4 + 5 volts	4 IRQ 11	4 LA3	4 LA21
5 LA2	5 IRQ 12	5 GND	5 LA20
6 Access Key	6 IRQ 15	6 Access Key	6 LA19
7 D16	7 IRQ 14	7 D17	7 LA18
8 D18	8 DAK# 0	8 D19	8 LA17
9 GND	9 DRQ 0	9 D20	9 MRDC#
10 D21	10 DAK# 5	10 D22	10 MWTC#
11 D23	11 DRQ 5	11 GND	11 D8
12 D24	12 DAK# 6	12 D25	12 D9
13 GND	13 DRQ# 6	13 D26	13 D10
14 D27	14 DAK# 7	14 D28	14 D11
15 Access Key	15 DRQ# 7	15 Access Key	15 D12
16 D29	16 + 5 volts	16 GND	16 D13
17 + 5 volts	17 MASTER16#	17 D30	17 D14
18 + 5 volts	18 GND	18 D31	18 D15
19 MAXx#		19 MREQx#	

Step 10 Test and Configure

_ make sure that all adapter cards are seated properly,
_ make sure all connectors are properly installed,
_ if an upgrade coprocessor or math coprocessor is installed, make sure it is seated properly,
_ make sure there are no screws or other foreign material on the motherboard,
_ use a surge-protected power strip, and
_ insert blank back panels on the back of the chassis to minimize RF emissions.

Start the Test

Plug everything in and turn on the switch. If there are any signs of a
problem, turn off the unit immediately. Reinstall the connectors. Call
Technical Support if there are problems.

If the system operates normally, a display should appear on the monitor.
The BIOS Power On Self Test (POST) should execute. If POST does not run
successfully, it beeps or displays error messages. Beep Codes (see page
36) indicate a problem. Make sure the affected part is properly seated
and connected. An error message is displayed if the error is less
serious (see page 37). Recheck the system configuration or the
connections.

Configure the System

Run AMIBIOS Setup. You must enter the requested information and save the
configuration data in CMOS RAM. The system then resets, runs POST, and
boots the operating system.

Run the ECU

Run the American Megatrends EISA Configuration Utility (ECU) to properly
configure the system. The ECU and the appropriate motherboard .CFG and
.OVR files are shipped on a floppy disk with all Baby EISA motherboards.
See the *American Megatrends EISA Configuration Utility (ECU) User's
Guide* for complete ECU operating instructions.

Chapter 3

BIOS Power-On Self Test

AMIBIOS provides all IBM-standard POST routines as well as enhanced
AMIBIOS POST routines and CPU internal diagnostics. AMIBIOS POST codes
can be accessed via the Manufacturing Test Port (I/O Port 0080h).

POST Phases

When the system is powered on, the AMIBIOS executes POST, which has two
phases:

- *System Test and Initialization* (test and initialize motherboards
  for normal operations), and

- *System Configuration Verification* (compare defined configuration
  with there hardware actually installed).

BIOS Error Reporting

AMIBIOS performs diagnostic when the system is powered up. Errors are
reported in one of two ways:

If...	then...
the error occurs before the display device is initialized,	a series of beeps sound. Beep codes indicate that a fatal error occurred. AMIBIOS Beep Codes are described on the next page.
the error occurs after the display device is initialized,	the error message is displayed. Displayed error messages are explained below. A prompt to press <F1> can also appear.

Beep Codes

Errors may occur during POST. Fatal errors are signaled by beeps (listed below) and do not allow the system to continue. All errors except Beep Code 8 are fatal. If POST initializes the system video monitor, errors can be displayed on the screen. Displayed errors (see page 37) allow the system to continue.

Beeps	Error message	Description
1	Refresh Failure	The memory refresh circuitry on the motherboard is faulty.
2	Parity Error	Parity error in base memory.
3	Base 64 KB Memory Failure	Memory failure in first 64 KB.
4	Timer Not Operational	Memory failure in first 64 KB or Timer #1 on the motherboard is not functioning.
5	Processor error	The CPU generated an error.
6	8042 - Gate A20 Failure	Cannot switch to protected mode.
7	Processor Exception Interrupt Error	The CPU generated an exception interrupt.
8	Display Memory Read/Write Error	The system video adapter is either missing or memory is faulty.
9	ROM Checksum Error	The ROM checksum value does not match the value in the BIOS.
10	CMOS Shutdown Register Read/Write Error	The shutdown register for CMOS RAM failed.

Troubleshooting System Problems

What to Do If the Computer Beeps

If the system beeps...	then...
1, 2, or 3 times...	reseat the memory SIMMs or DIPs. If the system still beeps, replace the memory.
6 times...	reseat the keyboard controller. If it still beeps, replace the keyboard controller. If it still beeps, try a different keyboard, or replace the keyboard fuse.
8 times...	memory error on the video adapter. Replace the video adapter, or the RAM on the video adapter.
9 times...	the BIOS chip is bad. The system probably needs a new BIOS ROM chip.
11 times...	reseat the cache memory on the motherboard. If it still beeps, replace the cache memory.
4, 5, 7, or 10 times...	the motherboard must be replaced.

AMIBIOS Displayed Error Messages

Error message are displayed as follows:

```
ERROR Message Line 1
ERROR Message Line 2
Press <F1> to RESUME
```

Press <F1> to continue the boot process. The system does not halt if *Wait for <F1> If Any Error* in ADVANCED CMOS SETUP is *Disabled.* If a second message appears, it is usually:

```
RUN SETUP UTILITY.
```

If this message occurs, press <F1> to run Setup.

Error Message	Explanation
8042 Gate-A20 Error	Gate A20 on the keyboard controller (8042) is not working. Replace the 8042.
Address Line Short!	Error in the address decoding circuitry on the motherboard.
C: Drive Error	No response from drive C:. Run the Hard Disk Utility. Also, check the C: hard disk type in STANDARD CMOS SETUP.
C: Drive Failure	No response from hard disk drive C:. It may be necessary to replace the hard disk.
Cache Memory Bad, Do Not Enable Cache!	Cache memory on the motherboard is defective. Consult the cache memory manufacturer.
CH-2 Timer Error	Most AT motherboards include two timers. An error occurred in timer #2.
CMOS Battery State Low	CMOS RAM is powered by a battery. The battery power is low. Replace the battery.
CMOS Checksum Failure	After CMOS RAM values are saved, a checksum value is generated for error checking. The previous value is different from the current value. Run AMIBIOS Setup.
CMOS System Options Not Set	The values stored in CMOS RAM are either corrupt or nonexistent. Run AMIBIOS Setup.
CMOS Display Type Mismatch	The video type in CMOS RAM does not match the type detected by the BIOS. Run AMIBIOS Setup.
CMOS Memory Size Mismatch	The amount of memory on the motherboard is different than the amount in CMOS RAM. Run AMIBIOS Setup.
CMOS Time & Date Not Set	Run STANDARD CMOS SETUP to set the date and time in CMOS RAM.
D: Drive Error	No response from drive D:. Run the Hard Disk Utility and check the D: hard disk type in STANDARD CMOS SETUP.
D: drive failure	No response from hard disk drive D:. It may be necessary to replace the hard disk.
Diskette Boot Failure	The boot diskette in floppy drive A: is corrupt. It cannot be used to boot the system. Use another boot diskette and follow the screen instructions.
Display Switch Not Proper	Some systems require a video switch on the motherboard be set to either color or monochrome. Turn the system off, set the switch properly, then power on.
DMA Error	Error in the DMA controller on the motherboard.
DMA #1 Error	Error in the first DMA channel on the motherboard.
DMA #2 Error	Error in the second DMA channel on the motherboard.
FDD Controller Failure	The BIOS cannot communicate with the floppy disk drive controller. Check all appropriate connections after the system is powered down.
HDD Controller Failure	The BIOS cannot communicate with the hard disk drive

Error Message	Explanation
	controller. Check all appropriate connections after the system is powered down.
INTR #1 Error	Interrupt channel #1 failed POST.
INTR #2 Error	Interrupt channel #2 failed POST.
Invalid Boot Diskette	The BIOS can read the diskette in floppy drive A:, but it cannot boot the system with it. Use another boot diskette and follow the screen instructions.
Keyboard Is Locked...Unlock It	The keyboard lock on the system is engaged. The system must be unlocked to continue the boot process.
Keyboard Error	Timing problem in the keyboard. Set the *Keyboard* option in STANDARD CMOS SETUP to *Not Installed* to skip the keyboard POST routines.
KB/Interface Error	Error in the keyboard connector on the motherboard.
No ROM BASIC	Cannot find a proper bootable sector on either diskette drive A: or hard disk drive C:. Use a bootable disk.
Off Board Parity Error	Parity error in offboard memory. The format is: OFF BOARD PARITY ERROR ADDR (HEX) = (XXXX) *XXXX* is the hex address where the error occurred. Run AMIDiag to find and correct memory problems.
Onboard Parity Error	Parity error in motherboard memory. The format is: Onboard PARITY ERROR ADDR (HEX) = (XXXX) *XXXX* is the hex address where the error occurred. Run AMIDiag to find and correct memory problems.
Parity Error ????	Parity error in system memory at an unknown address. Run AMIDiag to find and correct memory problems.

EISA Error Messages

Error Message	Explanation
EISA CMOS Checksum Failure	The Checksum for EISA Extended CMOS is bad or was never written. The battery may be bad. Run the ECU.
EISA CMOS inoperational	Read/Write error in extended CMOS RAM. The battery may be bad.
Expansion board not ready at Slot *X, Y, Z*	Cannot find the adapter card in Slot *X, Y,* or *Z.* Make sure the card is in the correct slot and is properly seated.
Fail-Safe Timer NMI Inoperational	Devices that depend on the fail-safe NMI timer cannot operate correctly.
ID information mismatch for Slot *X, Y, Z.*	The ID of the EISA Adapter Card in Slot *X, Y,* or *Z* does not match the ID in EISA CMOS RAM.
Invalid Configuration Information for Slot X, Y, Z.	The configuration information for EISA Adapter Cards *X, Y,* or *Z* is not correct. The card cannot be configured. Run the ECU.
Software Port NMI Inoperational	The software port NMI is not working.

ISA BIOS NMI Messages

ISA NMI Message	Explanation
Memory Parity Error at *xxxxx*	Memory failed. If the memory location can be determined, it is displayed as *xxxxx.* If not, the message is *Memory Parity Error ????.*
I/O Card Parity Error at *xxxxx*	An adapter card failed. If the address can be determined, it is displayed as *xxxxx.* If not, the message is *I/O Card Parity Error ????.*
DMA Bus Time-out	A device other than the CPU drove the bus signal for more than 7.8 microseconds.

EISA BIOS NMI Error Messages

EISA NMI Message	Explanation
BUS Timeout NMI at Slot *n*	There was a Bus Timeout NMI at Slot *n.*
(E)nable (D)isable Expansion board?	Type E to enable the adapter card that had an NMI or D to disable it.
Expansion board Disabled at Slot *n*	The adapter card in Slot *n* is disabled.
Expansion board NMI at Slot *n*	An adapter card NMI was generated from Slot *n.*
Fail-Safe Timer NMI	Fail-safe timer NMI generated.
Software Port NMI	Software port NMI generated.

BIOS Configuration Summary Screen

The EISA AMIBIOS displays the following screen when the POST routines
are successfully completed. This screen may not appear exactly like
this, since the display depends on the memory, cache, and shadowing
options enabled in AMIBIOS Setup.

```
AMIBIOS System Configuration (C) Copyright 1985-1992 American Megatrends

Main Processor       : 80486        Base Memory Size      : 640 KB
Numeric Coprocessor  : Present      Ext. Memory Size      : 16000 KB
Floppy Drive A:      : 1.2 MB ½     Hard Disk C: Type     : 44
Floppy Drive B:      : 1.44 MB ¼    Hard Disk D: Type     : None
Display Type:        :VGA or EGA    Serial Port(s)        : 3F8
ROM-BIOS Date:       : 06/06/92     Parallel Port(s)      : 378
```

POST Memory Test

Normally, the only visible POST routine is the memory test. The screen
that appears when the system is powered on is shown below.

```
AMIBIOS (C) 1992 American Megatrends Inc.
BIOS Release 64102092

Hit <DEL>, If you want to run SETUP


(C) American Megatrends Inc.,
41-0000-009999-00111111-060692-AMIS64-F
```

The first BIOS Identification String appears in the left bottom corner
of the screen. Press <Ins> to display two more Identification Strings.
Enable *Wait for <F1> If any Error* in ADVANCED CMOS SETUP before using
this method to freeze the screen.

Step	Action
1	When a problem occurs, freeze the screen by powering on the system and holding a key down on the keyboard.
2	Copy the BIOS ID Strings on a sheet of paper before calling American Megatrends technical support at 404-246-8600.
3	Press <F1> to continue the boot process.
4	Hit <DEL> if you want to run SETUP is displayed. You can press <Del> to access AMIBIOS Setup.

Chapter 4

AMIBIOS Setup

BIOS Features

AMIBIOS has several features that can be accessed at any time.

Keyboard Speed Switching

The end use can increase processor speeds at any time by pressing <Ctrl><Alt><+>. Processor speed can be decreased by pressing <Ctrl><Alt><->. Of course, the OEM can modify these keystroke combinations via AMIBCP. The above values are merely the default settings.

Enable Cache Memory

External cache memory can be enabled by pressing <Ctrl><Alt><Shift><+> or disabled by pressing <Ctrl><Alt><Shift><->. The OEM can modify these keystroke combinations via AMIBCP. The above values are merely the default settings.

AMIBIOS Setup

AMIBIOS Setup for the Baby EISA motherboard has three parts:

- STANDARD CMOS SETUP,
- ADVANCED CMOS SETUP, and
- ADVANCED CHIPSET SETUP.

STANDARD CMOS SETUP

STANDARD CMOS SETUP permits the end user to configure system components
such as floppy drives, hard disk drives, time and date, monitor type,
and keyboard. STANDARD CMOS SETUP is discussed on page 47.

ADVANCED CMOS SETUP

ADVANCED CMOS SETUP allows the end user to configure more advanced parts
of memory configuration, peripheral support, and password support.
ADVANCED CMOS SETUP is discussed in Section 4 on page 51.

ADVANCED CHIPSET SETUP

ADVANCED CHIPSET SETUP allows the end user to configure system elements
that fine-tune system performance. It is discussed on page 59.

Section 1

Running AMIBIOS Setup

AMIBIOS Setup resides in ROM and is available when the computer is turned on. AMIBIOS Setup permits the end user to configure these system parameters (type of disk drives and monitor, day, date, and time, and so on). The parameters are stored in CMOS RAM. When the computer is turned off, a back-up battery provides power to CMOS RAM, which retains these parameters. The system is configured with these values when powered on.

Default Values

If the configuration values in CMOS RAM become corrupted, the system is configured with the default settings stored in this ROM file. There are two sets of BIOS settings stored in the ROM file: the BIOS Setup defaults and the Power-On defaults. See page 45 for more information on default settings.

Starting AMIBIOS Setup

When POST completes, the following appears:

    Hit <DEL> if you want to run SETUP

Press <Del> to run AMIBIOS Setup.

AMIBIOS Setup Key Use

Keystroke	Action
<Esc>	Returns to previous screen.
→,←, ↑, ↓	Move the cursor from one option to the next.
<PgUp> and <PgDn>; <Ctrl><PgUp> and <Ctrl><PgDn>	Modify the default value of the options for the highlighted parameter. If there are fewer than 10 options, <Ctrl> <PgUp> and <Ctrl> <PgDn> operate like <PgUp> and <PgDn>.
<F1>	Displays Help.
<F2>	Change background colors.
<F3>	Change foreground colors.
<F5>	Restores the values resident when the current Setup session began. These values are taken from CMOS RAM if CMOS RAM was uncorrupted at the start of the session. Otherwise, the values are the BIOS Setup default values.
<F6>	Loads all options in ADVANCED CMOS SETUP and ADVANCED CHIPSET SETUP with the BIOS Setup defaults.
<F7>	Loads all options in ADVANCED CMOS SETUP and ADVANCED CHIPSET SETUP with the Power-On defaults.
<F10>	Saves all changes made to CMOS RAM by AMIBIOS Setup and returns to DOS.

Note: The default value for <F5>, <F6>, and <F7> is always N. To execute these options, change the *N* to *Y* and press <Enter>.

AMIBIOS Setup Main Menu

The AMIBIOS Setup Main Menu options are:

```
        AMIBOIS SETUP PROGRAM -- BIOS SETUP UTILITIES
    (C) Copyright 2001 American Megatrends, Inc. All Rights Reserved

                    STANDARD CMOS SETUP
                    ADVANCED CMOS SETUP
                    ADVANCED CHIP SET SETUP
                POWER MANAGEMENT BOIS SETUP
                    PERIPHERAL SETUP
            AUTO CONFIGURATION WITH BOIS DEFAULTS
          AUTO CONFIGURATION WITH POWER--ON DEFAULTS

                    CHANGE PASSWORD
                    AUTO DETECT HARD DISK
                    HARD DISK UTILITY
                    WRITE TO CMOS AND EXIT
                 DO NOT WRITE TO CMOS AND EXIT


    Standard CMOS Setup for changing Time,Date,Hard Disk Type, etc.
```

Each option is explained in detail in this section.

Warning Message

A warning is displayed every time you choose STANDARD CMOS SETUP,
ADVANCED CMOS SETUP, or ADVANCED CHIPSET SETUP. Press any key to
continue.

Auto Configuration With BIOS Defaults

Auto Configuration With BIOS Defaults uses the default system values.
The BIOS default value are best-case values that should optimize system
performance. If CMOS RAM is corrupted, the BIOS defaults are
automatically loaded. To use the BIOS defaults, highlight this option,
type *Y* and press <Enter>. The following appears:

Default values loaded. Press any key to continue.

Auto Configuration With Power-On Defaults

This option configures the default Power-On values. Power-On default values do not optimize system performance but are the most stable values. Use this option as a diagnostic aid if the system is behaving erratically. Highlight this option, type *Y* and press <Enter> to use the Power-On defaults. The following appears:

Default values loaded. Press any key to continue.

Write to CMOS and Exit

The settings selected and configured in STANDARD CMOS SETUP, ADVANCED CMOS SETUP, ADVANCED CHIPSET SETUP, and the new Password are stored in CMOS RAM when this option is selected. A CMOS RAM checksum is calculated and written to CMOS RAM. Control is then passed to the ROM BIOS.

```
Write to CMOS and Exit (Y/N)?
```

appears when this option is highlighted and you press <Enter>. Type *N* and press <Enter> to return to the Main Menu. Type *Y* and press <Enter> to save the system parameters and continue the boot process.

Do Not Write to CMOS RAM and Exit

This option passes control to the ROM BIOS without writing any changes to CMOS RAM.

Type *N* and press <Enter> to return to the Main Menu. Type *Y* and press <Enter> to continue the boot process without saving any system parameters.

Section 2

STANDARD CMOS SETUP

Press <Enter> when STANDARD CMOS SETUP is highlighted to display the following screen.

```
            AMIBOIS SETUP PROGRAM -- CMOS SETUP PROGRAME
            (C) 2001 American Megatrends Inc .. All Rights Reserved

Date (mn/date/year) : Fri , Aug 07 2001          Base memory :640 KB
Time (hour/min/sec) : 09 : 38 : 09               EXt.  memory :2816 KB
                                        Cyln Head WPcom LZone Sect Size
Hard disk C : type : 40                 820   6    820   820  17  41 MB
Hard disk D : type : Not Installed
Floppy Drive A :    : 1. Z MB, 5¼
Floppy Drive B:     : 1.44 MB, 3½
Primary Display     : VGA/PGA/EGA       ┌───┬───┬───┬───┬───┬───┬───┐
Keyboard            : Installed         │Sun│Mon│Tue│Wed│Thu│Fri│Sat│
                                        ├───┼───┼───┼───┼───┼───┼───┤
                                        │30 │31 │ 1 │ 2 │ 3 │ 4 │ 5 │
 ┌─────────────────────────────────┐    │ 6 │ 7 │ 8 │ 9 │10 │11 │12 │
 │ Month : Jan , Feb,......Dec      │    │13 │14 │15 │16 │17 │18 │19 │
 │ Date  : 01, 02, 03,....31        │    │20 │21 │22 │23 │24 │25 │26 │
 │ Year :1901, 1902,.....2099       │    │27 │28 │29 │30 │31 │ 1 │ 2 │
 └─────────────────────────────────┘    │ 3 │ 4 │ 5 │ 6 │ 7 │ 8 │ 9 │
       ┤ESC : EXIT ↑→↓←: Select   FZ:Color  PU/PD : Modify│
```

STANDARD CMOS SETUP Options

Date And Day Configuration

Ranges for each value are shown in the lower left corner. Move the cursor to the Date field with ↑ and ↓ and set the Date and Day by pressing <PgUp> and <PgDn> to change the values.

Time Configuration

This option uses a 24 hour clock format (for PM numbers, add 12 to the hour, for example, enter 4:30 PM as 16:30:00). Move the cursor to the Time field via ↑ and ↓ and set the time by pressing <PgUp> and <PgDn>.

STANDARD CMOS SETUP Options, Continued

Hard Disk C:
Hard Disk D:

Move the cursor to these fields via ↑ and ↓ and select a hard disk drive
type by pressing <PgUp> and <PgDn>. The settings are *1 – 47* (the hard
disk drive type) or *Not Installed.* Choose the hard disk drive type from
the table on the previous page that matches the parameters of the drive
in the system. Select Type 47 for IDE drives and enter the actual hard
disk drive parameters (usually supplied with the drive by the
manufacturer). The parameters are described below. *Not Installed* is used
for diskless workstations and SCSI hard disks.

Type 47 can be used for both hard disks C: and D:. The parameters for
type 47 under Hard Disk C: and Hard Disk D: can be different, which
effectively allows two different user-definable hard disk types.

The hard disk drive parameters are:

Parameter	Description
Type	The number designation 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 still hold 512 bytes. Write precompensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for 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 normally park when the system is shut down.
Sectors	The number of sectors per track. Hard drives that use MFM have 17 sectors per track. RLL drives have 26 sectors per track. ARLL and ESDI drives have 34 sectors per track. SCSI and IDE drives can have even more sectors per track.
Capacity	The formatted capacity of the drive based on the following formula: Number of heads) X (Number of cylinders) X (Number of sectors per track) X (512 bytes per sector)

STANDARD CMOS SETUP Options, Continued

Hard Disk Drive Types

Type	Cylinders	Heads	Write Precompensation	Landing Zone	Sectors	Capacity
1	306	4	128	305	17	10 MB
2	615	4	300	615	17	20 MB
3	615	6	300	615	17	31 MB
4	940	8	512	940	17	62 MB
5	940	6	512	940	17	47 MB
6	615	4	65535	615	17	20 MB
7	462	8	256	511	17	31 MB
8	733	5	65535	733	17	30 MB
9	900	15	65535	901	17	112 MB
10	820	3	65535	820	17	20 MB
11	855	5	65535	855	17	35 MB
12	855	7	65535	855	17	50 MB
13	306	8	128	319	17	20 MB
14	733	7	65535	733	17	43 MB
16	612	4	0	663	17	20 MB
17	977	5	300	977	17	41 MB
18	977	7	65535	977	17	57 MB
19	1024	7	512	1023	17	60 MB
20	733	5	300	732	17	30 MB
21	733	7	300	732	17	43 MB
22	733	5	300	733	17	30 MB
23	306	4	0	336	17	10 MB
24	925	7	0	925	17	54 MB
25	925	9	65535	925	17	69 MB
26	754	7	754	754	17	44 MB
27	754	11	65535	754	17	69 MB
28	699	7	256	699	17	41 MB
29	823	10	65535	823	17	68 MB
30	918	7	918	918	17	53 MB
31	1024	11	65535	1024	17	94 MB
32	1024	15	65535	1024	17	128 MB
33	1024	5	1024	1024	17	43 MB
34	612	2	128	612	17	10 MB
35	1024	9	65535	1024	17	77 MB
36	1024	8	512	1024	17	68 MB
37	615	8	128	615	17	41 MB
38	987	3	987	987	17	25 MB
39	987	7	987	987	17	57 MB
40	820	6	820	820	17	41 MB
41	977	5	977	977	17	41 MB
42	981	5	981	981	17	41 MB
43	830	7	512	830	17	48 MB
44	830	10	65535	830	17	69 MB
45	917	15	65535	918	17	114 MB
46	1224	15	65535	1223	17	152 MB
47	User must enter Hard Disk Drive Parameters					

Floppy Drive A:
Floppy Drive B:

Move the cursor to these fields via ↑ and ↓ and select the floppy drive
type by pressing <PgUp> and <PgDn>. The options are *360 KB 5¼ inch*, *1.2
MB 5¼ inch*, *720 KB 3½ inch*, *1.44 MB 3½ inch*, *2.88 MB 3½ inch,* or *Not
Installed*. *Not Installed* can be used for diskless workstations.

Monitor

Move the cursor to these fields via ↑ and ↓ and choose the monitor type
by pressing <PgUp> and <PgDn>. The Primary Display Options are
Monochrome, *Color 40x25*, *VGA/PGA/EGA*, *Color 80x25*, or *Not Installed*. *Not
Installed* is used for network file servers.

Keyboard

Move the cursor to these fields via ↑ and ↓ and choose *Installed* or *Not
Installed* by pressing <PgUp> and <PgDn>. *Not Installed* is used to
configure network file servers; all it does is suppress keyboard error
checking.

Section 3

ADVANCED CMOS SETUP

The ADVANCED CMOS SETUP options are shown on the following screen.Press the ↑ and ↓ keys to scroll through the options.

```
.................................................................
•        AMIBIOS SETUP PROGRAM - ADVANCED CMOS SETUP            •
•        (C) 1992 American Megatrends, Inc. All rights reserved •
.................................................................
• Typematic Rate Programming : Disabled• Turbo Switch Function      : Enabled •
• Typematic Rate Delay (msec): 500     • Password Checking Option   : Setup   •
• Typematic Rate (Chars/Sec) : 15      • Video   ROM Shadow C000,16K : Enabled •
• Mouse Support Option        : Disabled• Video   ROM Shadow C400,16K : Enabled •
• Above 1 MB Memory Test      : Disabled• Adaptor ROM Shadow C800,16K : Disabled•
• Memory Test Tick Sound      : Disabled• Adaptor ROM Shadow CC00,16K : Disabled•
• Memory Parity Error Check   : Disabled• Adaptor ROM Shadow D000,16K : Disabled•
• Hit <DEL> Message Display   : Enabled • Adaptor ROM Shadow D400,16K : Disabled•
• Hard Disk Type 47 RAM Area  : 0:300   • Adaptor ROM Shadow D800,16K : Disabled•
• Wait For <F1> If Any Error  : Enabled • Adaptor ROM Shadow DC00,16K : Disabled•
• System Boot Up Num Lock     : On      • Adaptor ROM Shadow E000,64K : Enabled •
• Floppy Drive Seek At Boot   : Enabled • System  ROM Shadow F000,64K : Enabled •
• System Boot Up Sequence     : C:,A:   • BootSector Virus Protection : Disabled•
• System Boot Up CPU Speed    : High    • Cacheable ROM Area          : Disabled•
• External Cache Memory       : Enabled •                                       •
• Internal Cache Memory       : Enabled •                                       •
• Fast Gate A20 Option        : Enabled •                                       •
.................................................................
•••••••••••ESC:Exit ↑→↓←:Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color  •••••••
•••••••••••F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults •••••••
```

Help Screens

All AMIBIOS Setup options have help screens accessed by pressing <F1> when the option is highlighted.

Warning Message

A warning message is displayed when ADVANCED CMOS SETUP is selected. Press any key to continue.

ADVANCED CMOS SETUP Options

Typematic Rate Programming, Typematic Rate, and Typematic Rate Delay

Typematic Rate Programming enables or disables the following two
options. The BIOS Setup option is *Enabled.* The Power-On default is
Disabled.

Typematic Rate Delay *(250, 500, 750, or 1,000 milliseconds)* and
Typematic Rate *(6, 8, 10, 12, 14, 15, 20, 24, or 30 characters per
second)* control the speed at which a keystroke is repeated. When a key
is pressed and held down, the associated character is displayed. After a
delay specified by the Typematic Rate Delay, the character repeats at
the Typematic Rate.

The Typematic Rate Delay BIOS Setup and Power-On default is 500. The
Typematic Rate BIOS Setup default is 30 characters per second. The
Typematic Rate Power-On default is 15 characters per second.

Mouse Support Option

This option enables the PS/2 mouse support. The settings are *Enabled* or
Disabled. The BIOS Setup and Power-On default is *Enabled.*

Above 1 MB Memory Test

This option, when enabled, executes POST memory routines on the RAM
above 1 MB (if present on the system). If disabled, the BIOS only checks
the first 1 MB of RAM. The settings are *Enabled* or *Disabled.* The BIOS
Setup and Power-On default is *Disabled.*

Memory Test Tick Sound

This option enables the ticking sound during the memory test. The
settings are *Enabled* or *Disabled.* The BIOS Setup and Power-On default is
Enabled.

Memory Parity Error Check

The settings are *Enabled* or *Disabled.* If enabled, the parity is tested on all memory above 1 MB. If disabled, only the first 1 MB of memory is tested. The BIOS Setup default is *Enabled.* The Power-On default is *Disabled.*

Hit <DEL> Message Display

If enabled, the system does not halt after

        Hit <DEL> if you want to run Setup

appears when the system boots. The settings are *Enabled* or *Disabled.* The BIOS Setup and Power-On default is *Enabled.*

Hard Disk Type 47 RAM Area

You can specify a user-definable hard disk type for drives C: and D:. The type 47 drive parameters must be entered in STANDARD CMOS SETUP (see page 49). This option specifies the type 47 data storage area – *0:300h* in lower system RAM or in the *top 1 KB* of applications memory, starting at address 639K or 511K, depending on how much base memory the system has. *Type 47 data is stored in shadow RAM if shadowing is enabled.* The Setup and Power-On default is *0:300h.*

Hard Disk Type 47 Data Storage
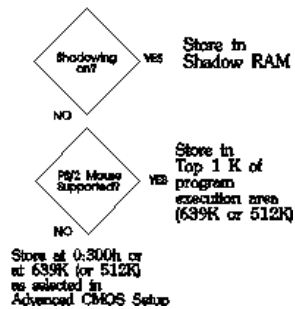
Wait for <F1> If Any Error

The settings are *Enabled* or *Disabled.* If enabled, the BIOS waits until the end user presses <F1> before continuing after an error message. If disabled, the BIOS continues after the error message. The BIOS Setup and Power-On default is *Enabled.*

System Boot Up Num Lock

The settings are *On* or *Off.* The BIOS Setup and Power-On default is *On.* When enabled, this option turns off the *Num Lock* key when the system is powered on so you can use the arrow keys on both the numeric keypad and the keyboard.

Floppy Drive Seek At Boot

When enabled, a Seek command is sent to floppy drive A: at system boot. The settings are *Enabled* or *Disabled.* The BIOS Setup default is *Disabled.* The Power-On default is *Enabled.*

System Boot Up Sequence

AMIBIOS can boot from floppy drive A: first or hard disk drive C: first. This sequence can be reversed. The settings are *C:,A:* (the BIOS Setup default) or *A:,C:* (the Power-On default).

System Boot Up CPU Speed

The settings are *Low* or *High* (the BIOS and Power-On defaults). The CPU generally has two speeds. Low speed is an AT-compatible speed, such as 6 MHz, 8 MHz, or 10 MHz. High speed is the rated frequency of the CPU.

ADVANCED CMOS SETUP Options, Continued

External Cache Memory

This option enables secondary (or external) cache memory. The settings are *Enabled* or *Disabled.* The BIOS Setup default is *Enabled.* The Power-On default is *Disabled.*

Internal Cache Memory

This option enables the 8 KB cache memory in the Intel 80486 microprocessor. The settings are *Enabled* or *Disabled. The BIOS Setup default is Enabled.* The Power-On default is *Disabled.*

Fast Gate A20 Option

Gate A20 controls the ability to access memory addresses above 1 MB by enabling or disabling access to the processor address line A20. To remain XT-compatible and be able to access conventional memory (from 0 - 1024K), address line A20 must always be low, so Gate A20 must be disabled. However, some software programs both enter protected mode and use the CMOS RAM Shutdown byte to return to real mode via the BIOS. For this software, Gate A20 must be constantly enabled and disabled via the keyboard controller, which is slow. The settings are *Enabled* or *Disabled.* Fast Gate A20 is an alternate method of enabling Gate A20 that permits faster switching between addresses modes. The BIOS Setup default is *Enabled.* The Power-On default is *Disabled.*

Turbo Switch Function

The settings are *Enabled* or *Disabled.* This option enables the hardware turbo switch, which permits the user to change system speeds. The BIOS Setup and Power-On default is *Enabled.*

ADVANCED CMOS SETUP Options, Continued

Password Check Option

This option enables the password check option every time the system boots or the end user runs AMIBIOS Setup. *Always* displays a user password prompt appears when the system is turned on. *Setup* displays the password prompt only if AMIBIOS Setup is run. See page 63 for more on passwords. The BIOS Setup and Power-On default is *Setup.*

Video ROM Shadow C000,16K
Video ROM Shadow C400,16K

ROM shadow is a technique in which BIOS code is copied from slower ROM to faster RAM. The BIOS is then executed from the RAM. These two options enable Video ROM shadowing in the video ROM memory segment at C000 – C7FFh. The settings are *Enabled* or *Disabled.* The BIOS Setup default is *Enabled.* The Power-On default is *Disabled.*

Adaptor ROM Shadow C800,16K
Adaptor ROM Shadow CC00,16K
Adaptor ROM Shadow D000,16K
Adaptor ROM Shadow D400,16K
Adaptor ROM Shadow D800,16K
Adaptor ROM Shadow DC00,16K
Adaptor ROM Shadow E000,64K

Shadowing for adaptor ROMs between C800h and DFFFh can also be enabled in 16 KB increments. E000-EFFFh can be shadowed in one 64 KB increment. EISA BIOS, SCSI BIOS, ESDI, LAN, or other BIOS files may be located in these segments. Shadowing speeds execution. The settings for each of the above options is *Enabled* or *Disabled.* The BIOS Setup and Power-On defaults are *Disabled.*

ADVANCED CMOS SETUP Options, Continued

System ROM Shadow F000,64K

The System BIOS (E000h – FFFFh) can be shadowed. The settings are *Enabled* or *Disabled.* The BIOS Setup default is *Enabled.* The Power-On default is *Disabled.*

Boot Sector Virus Protection

When enabled, the BIOS issues a warning when any program or virus issues a Disk Format command or attempts to write to the boot sector of the hard drive. The settings are *Enabled* or *Disabled.* The BIOS Setup and Power-On defaults are *Disabled.* If enabled, the following is displayed if there is an attempt to write to the boot sector. You may have to type N several times to prevent the boot sector write.

```
        Boot Sector Write!!!
Possible VIRUS: Continue (Y/N)? _
```

```
The following is displayed if any program attempts to format any
cylinder, head, or sector of any hard disk drive via the BIOS INT 13
Hard Disk Drive Service:
```

```
        Format!!!
Possible VIRUS: Continue (Y/N)? _
```

Cacheable ROM Area

```
This option permits the system BIOS and video BIOS to be not only
shadowed but also makes the memory segments cacheable as well for even
faster access. The settings are Disabled, Video (only the video BIOS
memory segment is cacheable), Main (only the system BIOS RAM memory
segment is cacheable), or Both (both memory segments can be cached).
Shadowing must be enabled before this option can take effect. The BIOS
Setup and Power-On defaults are Disabled. You must be reasonably certain
that the no application will write to the cached system BIOS or video
BIOS memory areas before you choose Video, Main, or Both.
```

Section 4

ADVANCED CHIPSET SETUP

The ADVANCED CMOS SETUP options are shown on the following screen.Press the ↑ and ↓ keys to scroll through the options.

```
·····················································
·       AMIBIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP          ·
·        (C) 1992 American Megatrends, Inc. All rights reserved  ·
·····················································
· Hidden Refresh           : AT-Style·                          ·
· Non-Cache Size - Block 0  : Disabled·                          ·
· Non-Cache Start - Block 0 : 000000  ·                          ·
· Non-Cache Size - Block 1  : Disabled·                          ·
· Non-Cache Start - Block 1 : 000000  ·                          ·
· Non-Cache Size Block 2    : Disabled·                          ·
· Non-Cache Start - Block 2 : 000000  ·                          ·
· Cache Early Write Enable  : Disabled·                          ·
· Cacheable Region          : 64 MB   ·                          ·
· BCLK Stretch              : Disabled·                          ·
· Back-to-Back I/O          : 2       ·                          ·
· CPU Time-Slice Priority   : 0       ·                          ·
· Fast Keyboard Reset       : Slow    ·                          ·
·                                     ·                          ·
·                                     ·                          ·
·                                     ·                          ·
·                                     ·                          ·
·                                     ·                          ·
·····················································
·············ESC:Exit ↑→↓←:Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color ········
·············F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults ········
```

ADVANCED CHIPSET SETUP Options

Hidden Refresh

If *AT-Style* is selected, the CPU must wait during DRAM refresh. The *Hidden* setting improves system performance. If *Hidden* is selected, the CPU is not put on hold during memory refresh, so it continues running internal cycles or running from secondary cache memory during refresh and will have wait states added if DRAM is accessed during refresh. The settings are *AT-Style* or *Hidden.* The BIOS Setup and Power-on defaults are *AT-Style.*

Non-Cache Size - Block 0
Non-Cache Size - Block 1
Non-Cache Size - Block 2

This option defines the size of a memory area that contains data and/or code that is not cached. The settings are *64 KB, 128 KB, 256 KB, 512 KB,* or *Disabled.* The BIOS Setup and Power-On defaults are *Disabled*.

Non-Cache Start - Block 0
Non-Cache Start - Block 1
Non-Cache Start - Block 2

This option provides the starting address of the memory area that contains non-cacheable information. The BIOS Setup and Power-On defaults are *000000.*

Cache Early Write Enable

This option enables a hardware circuit that writes data/code to cache memory faster. The settings are *Enabled* or *Disabled.* The BIOS Setup and Power-On defaults are *Disabled.*

Cacheable Region

This option defines an area in memory whose contents are cacheable. The settings are *4 MB through 64 MB* in 4 MB increments, *128 MB,* or *256 MB.* The BIOS Setup and Power-on defaults are *64 MB.*

BCLK Stretch

Enabling this option improves system performance. BCLK (ISA and EISA Bus Clock) stretching allows the EISA Bus Controller (EBC) to drive the START# signal active without waiting for the next rising edge for BCLK. BCLK is then stretched to allow START# to meet the required pulse width. The settings are *Enabled* or *Disabled.* The BIOS Setup and Power-On defaults are *Disabled.*

Back-to-Back I/O

Back-to-Back I/O is the number of wait states (BCLK cycles) added by the hardware when two or more consecutive I/O operations occur. The BIOS Setup and Power-On default (two wait states) usually assures proper operation of most adapter cards. If a slower adapter card is installed, the number of wait states can be increased. If only high speed adapter cards are used, the number of wait states can be decreased (but always set at least 2 wait states). The valid settings are *1 through F.*

CPU Time-Slice Priority

CPU Time-Slice Priority is the number of BCLKs the Integrated System Peripheral waits between a HOLD request input (from DMA, a bus master, or other device) and a HOLD request to the CPU.

A higher number allows the CPU to continue running a little longer before it is placed in HOLD. The settings are *0 through 1F.* The BIOS Setup and Power-On defaults are *0.*

Fast Keyboard Reset

The settings are *Slow* (the BIOS waits for a HALT instruction after a
keyboard reset command) or *Fast* (it does not wait). The BIOS Setup and
Power-On defaults are *Slow.*

Section 5

AMIBIOS Password Support

AMIBIOS Setup has an optional password feature. The system can be
configured so the end user must enter a password every time the system
boots or when Setup is run.

Changing a Password

The password check option is enabled or in ADVANCED CMOS SETUP (Page
56).

The password (1-6 characters) is stored in CMOS RAM. To change a
password, select the Change Password option from the AMIBIOS Setup Main
Menu and press <Enter>. The following prompt appears.

```
                    Enter CURRENT Password:
```

The first time this option is selected, the end user must enter a
password and press <Enter>. The screen does not display the characters
entered. After the current password is correctly entered, the end user
is asked to retype the new password and press <Enter>.

If the password confirmation is incorrect, an error message appears. If
the new password is entered without error, the end user can press <Esc>
to return to the AMIBIOS Setup Main Menu.

If You Do Not Want to Use a Password

Just press <Enter> when the password prompt appears.

Password Storage

The password is stored in CMOS RAM after AMIBIOS Setup completes. The next time the system boots, the end user is prompted for the password if the password function is present and is enabled.

Using a Password

The end user must enter the new password when the password prompt appears and then press <Enter>. The end user should use the default password if CMOS RAM is corrupted.

The end user should keep a record of the new password when the password is changed. If he forgets the password and password protection is enabled he must return the system to the manufacturer for repair.

Section 6

Hard Disk Utility

AMIBIOS includes three hard disk utilities:

Utility	Purpose	Turn to
Hard Disk Format	Performs a low level format of the hard drive(s). Read the system or hard disk drive documentation to find out if the hard disk is preformatted.	Page 67
Auto Interleave	Determines the optimum interleave factor and then performs a low level format of the hard disk drive.	Page 69
Media Analysis	Analyzes each hard disk drive track to determine whether it is usable. The track is labeled bad if unusable.	Page 55

The hard disk utility error messages are described on page 71.

These routines work on drives that use the MFM, RLL, ARLL, or ESDI data recording techniques. *They do not work on IDE or SCSI Disk Drives.*

> ***Warning***
> *AMIBIOS Hard Disk Utilities destroy all hard disk data. Back up the data on the hard disk before running this utility.*

When to Use AMIBIOS Hard Disk Utilities

When	Conditions	Run...
Installing a new hard disk.	The hard disk drive manufacturer provided a list of bad tracks, the system documentation includes the optimum interleave factor, and the drive is preformatted.	None
Installing a new hard disk.	You do not have a list of bad tracks.	Media Analysis
Installing a new hard disk.	You do not know the optimum interleave factor.	Auto Interleave
Installing a new hard disk.	The drive is not formatted.	Hard Disk Format
Installing a used hard disk drive.	N/A	All Hard Disk Utilities

When Hard Disk Diagnostics is selected, the following screen appears.

```
             AMIBOIS SETUP PROGRAM -- BIOS SETUP UTILITIES
       (C) Copyright 2001 American Megatrends, Inc. All Rights Reserved


                        STANDARD CMOS SETUP
                        ADVANCED CMOS SETUP
                       ADVANCED CHIP SET SETUP
                     POWER MANAGEMENT BOIS SETUP
                          PERIPHERAL SETUP
                 AUTO CONFIGURATION WITH BOIS DEFAULTS
                AUTO CONFIGURATION WITH POWER--ON DEFAULTS
                          CHANGE PASSWORD
                        AUTO DETECT HARD DISK
                          HARD DISK UTILITY
                        WRITE TO CMOS AND EXIT
                      DO NOT WRITE TO CMOS AND EXIT


       Standard CMOS Setup for changing Time,Date,Hard Disk Type, etc.
```

Select an option and press <Enter>.

Hard Disk Format Utility

> **Warning**
> *The Hard Disk Format utility destroys all hard disk data. Back up the data on the hard disk before running this utility.*

This routine does not work on IDE or SCSI drives. Use Hard Disk Format to integrate a new hard disk to the system or to reformat a used hard disk that has bad tracks as a result of aging or poor handling. Select Media Analysis to find bad tracks. The following screen appears when Hard Disk Format is selected.

```
            AMIBOIS SETUP PROGRAM -- CMOS SETUP PROGRAME
            (C) 2001 American Megatrends Inc .. All Rights Reserved

                          Cyln   Head   Wpcom   LZone   Sect   Size (in MB)
Hard Disk C: Type : 40     820     6      820     820     17        41
Hard Disk D: Type : Not Installed

    ┌──────────────────────────┐
    │      Media Analysis      │
    ├──────────────────────────┤
    │ Disk Drive (C / D)    ? C │
    │ Disk Drive Type       ? 40│
    │ Interleave (1 - 16)   ? 3 │
    │ Proceed (Y / N)       ? N │
    └──────────────────────────┘


                    ESC:Exit    ↑→↓← :Sel
```

Answer the questions on the screen. The first two questions are already completed if only one hard disk drive was selected in STANDARD CMOS SETUP and the cursor is on *Interleave*. The Disk Drive Type is read from CMOS RAM. The interleave factor can be selected manually or determined by the Auto Interleave routine.

The hard disk drive manufacturer usually provides a list of bad tracks. Enter these tracks. They are then labeled as bad to prevent data from being stored on them. The following screen is displayed after entering *Y* in Mark Bad Tracks, pressing <Enter>, and selecting add, delete, revise, or clear from the Bad Track Edit Menu.

```
+------------------------------------------------------------------+
|         AMIBIOS SETUP PROGRAM -- CMOS SETUP PROGRAME             |
|        (C) 2001 American Megatrends Inc .. All Rights Reserved   |
+------------------------------------------------------------------+
|                      Cyln   Head  Wpcom  LZone   Sect  Size (in MB)|
| Hard Disk C: Type : 40        820    6     820    820    17     41 |
| Hard Disk D: Type : Not Installed                                 |
| +----------------------+  +----------------------+ +-------------+ |
| |    Hard Disk Format  |  |   Bad Track Edit Menu| | Bad Track # 0| |
| | Disk Drive (C / D)  ? C|  | Add an Entry        | |             | |
| | Disk Drive Type     ? 40| | Revise an Entry     | | No.  Cyln.  Head| |
| | Interleave (1 - 16) ? 3 |  | Delete an Entry     | |             | |
| | Mark Bad Tracks (Y / N) ? Y| | Clear Bad Trk List | |             | |
| | Proceed (Y / N)     ?   |  +----------------------+ |             | |
| +----------------------+                              |             | |
|              +-------------------------------+        |             | |
|              |   Enter Cylinder  # : 0       |        |             | |
|              |   Enter Head   # :            |        |             | |
|              +-------------------------------+        +-------------+ |
+------------------------------------------------------------------+
|              ESC:Exit    ↑→↓← :Sel                              |
+------------------------------------------------------------------+
```

Type *Y* and press <Enter>. A warning screen appears. Press any key to continue.

```
+-----------------------------------------------+
|                   Warning                     |
|  Data on the hard disk drive will be irrevocably lost. |
+-----------------------------------------------+
```

Auto Interleave Utility

> **Warning**
> *The Auto Interleave utility destroys hard disk data. Back up the data on the hard disk before running this utility.*

Auto Interleave calculates the optimum interleave factor through trial and error by measuring the transfer rate for four different interleave values. To determine the best interleave factor, the system formats a portion of the hard disk for each transfer rate calculated. The cylinders, heads and sectors formatted for each value is displayed in the activity box. Auto Interleave does not work on IDE or SCSI drives.

Select Auto Interleave on the main Hard Disk Utility Screen and press <Enter>. The following appears.

```
AMIBOIS SETUP PROGRAM -- CMOS SETUP PROGRAME
(C) 2001 American Megatrends Inc .. All Rights Reserved

                              Cyln   Head   Wpcom  LZone   Sect   Size (in MB)
Hard Disk C: Type : 40         820     6     820    820     17       41
Hard Disk D: Type : Not Installed

   Auto Interleave                Bad Track Edit Menu          Bad Track # 0
                                Add an Entry
Disk Drive (C / D)      ? C     Revise an Entry             No.  Cyln.  Head
Disk Drive Type         ? 40    Delete an Entry
Mark Bad Tracks (Y / N) ? Y     Clear Bad Trk List
Proceed  (Y / N)        ?

                          Enter Cylinder  # :  0
                          Enter Head   # :


ESC:Exit    ↑→↓← :Sel
```

The cursor is on *Mark Bad Tracks*. The default is *N*. To mark additional bad tracks, type *Y* and press <Enter>. After selecting options from the Bad Tracks Edit Menu, press <Esc>. Type *Y* and press <Enter> to proceed with the Auto Interleave process. A warning screen appears. Press <Enter> to return to the main Hard Disk Utility screen. To proceed, type *Y* and press <Enter>.

Media Analysis Utility

Media Analysis performs a series of tests to locate bad or damaged
tracks on the hard disk as a result of aging or poor handling. This
utility locates all bad tracks and lists them in the Bad Track List Box.
Since this test writes to all cylinders and heads on the hard disk to
verify any bad tracks, the test requires several minutes to complete.
For best results, run this test in its entirety. Media Analysis does not
work on IDE or SCSI drives.

Select *Media Analysis* from the main Hard Disk Utility Menu and press
<Enter>. The following screen appears.

```
┌────────────────────────────────────────────────────────────────────┐
│           AMIBOIS SETUP PROGRAM -- CMOS SETUP PROGRAME               │
│           (C) 2001 American Megatrends Inc .. All Rights Reserved    │
├────────────────────────────────────────────────────────────────────┤
│                       Cyln   Head   Wpcom   LZone   Sect   Size (in MB)│
│  Hard Disk C: Type : 40      820     6     820      820     17      41 │
│  Hard Disk D: Type : Not Installed                                   │
│                                                                       │
│      ┌──────────────────────────────┐                                 │
│      │       Media Analysis         │                                 │
│      ├──────────────────────────────┤                                 │
│      │  Disk Drive (C / D)      ? C  │                                 │
│      │  Disk Drive Type         ? 40 │                                 │
│      │  Interleave  (1 - 16)    ? 3  │                                 │
│      │  Proceed  (Y / N)        ? N  │                                 │
│      └──────────────────────────────┘                                 │
│                                                                       │
│                                                                       │
├────────────────────────┤ ESC:Exit    ↑→↓← :Sel ├────────────────────┤
└────────────────────────────────────────────────────────────────────┘
```

The cursor is on *Proceed.* The warning screen appears. Press <Enter> to
stop. The main Hard Disk Utility screen appears. Type Y and press
<Enter> to perform the hard disk drive analysis.

Hard Disk Utility Error Messages

Initialization Errors

Message	Explanation
No Hard Disk Installed	There is no hard disk drive in the system but Hard Disk Utility was selected.
FATAL ERROR Bad Hard Disk	No response from the hard disk, or the hard disk is not repairable. Check all cable and power connections to the hard disk.
Hard Disk Controller Failure	Error response from the reset command sent to the hard disk controller. The controller may not be seated properly.
C: (D:) Hard Disk Failure	The hard disk drive (C: or D:) is not responding to commands. Check power and cable connections to the hard disk.

Hard Disk Utility Error Messages, Continued

Operation Errors

Message	Explanation
Address Mark Not Found	The address mark (initial address) on the hard disk could not be found.
Attachment Failed to Respond	No response from the hard disk drive.
Bad ECC on Disk Read	When the hard disk drive utility writes to the disk, it also calculates an ECC (Error Correction Code) value for the data being written. This ECC value is written to the drive and then read back. The value read back is different from the one calculated.
Bad Sector Flag Detected	An operation was performed on a sector flagged as bad.
Controller Has Failed	A diagnostic command issued to the controller failed.
Drive Not Ready	An operation on the hard disk drive timed out. The hard disk drive utility waited beyond a preset specified time limit.
Drive Parameter Activity Failed	A reset command was sent to the controller followed by drive parameters. Using these parameters, the controller did not get a response from the hard disk. Make sure the drive type is correct.
ECC Corrected Data Error	The ECC value (explained above) read from the disk is not the same value written to the disk. The data is not correct. An attempt was made to correct the data, but the ECC value is not corrected.
Requested Sector Not Found	The requested sector could not be found.
Reset Failed	The reset command did not properly reset the hard disk.
Seek Operation Failed	A seek command failed. A seek operation is the act of finding a particular sector on the hard disk.
Undefined Error - Command Aborted	An unidentifiable error condition occurred.
Write Fault on Selected Drive	A write fault occurred during the write operation on the hard disk drive.

Appendix A

Temperature and Power

Temperature Ranges

The following values are ambient temperatures inside the computer case. The motherboard temperatures reflect the 80486 CPU Heat dissipation requirements because it is the hottest component. Temperature specifications vary with the CPU frequency.

Operating Temperature Ranges For 80486

Frequency	Heat Sink	Airflow over CPU	Airflow over other components	Temperature Range
20 or 25 MHz	NO	400 feet per minute	Not critical	0 ° through 47 ° C.
33 MHz	NO	400 feet per minute	Not critical	0 ° through 36 ° C.
50 MHz	YES	200 feet per minute	Not critical	0 ° through 50 ° C.

Humidity

The recommended humidity range for operation of the American Megatrends Baby EISA motherboard is 20% to 80% non-condensing.

Power Specifications

Power Supply Requirements

The American Megatrends Baby EISA motherboard requires +5V, -5V, +12V, -12V, and about 40 Amps maximum.

Power Consumption

The two SIMM memory banks consume 2 Amps each, for a total of 4 Amps.

Each EISA expansion slot is gated at 4.5 Amps maximum. There are eight EISA expansion slots, so the total maximum power consumption for EISA expansion slots is 36 Amps if all slots are filled.

The total maximum power consumption is 40 Amps at +5V with a 220 Watt power supply.

Power Source

Three power connectors (PS1, PS2, and PS3) are provided on the Baby EISA motherboard. These connectors provide seven +5V connects. Each is rated at approximately 5 Amps. The total maximum power consumption for all three connectors is approximately 35 Amps.

Conclusion

The minimum rating of the power supply should be 230 Watts for a Baby EISA motherboard in normal use, including a 12V power source. But if all EISA expansion slots are used, a 350-400 watt power supply may be necessary.

Appendix B

EISA Configuration Worksheets

This appendix consists of a two-page worksheet for up to eight EISA adapter cards. Complete a worksheet for each EISA adapter card in the system to simplify the EISA configuration process. These worksheets are helpful used in conjunction with the American Megatrends EISA Configuration Utility (ECU) when configuring an EISA system with many EISA adapter cards.

Motherboard Configuration

Serial Number _____

Revision Number _____

ECN Number _____

Memory Type for Bank0: (check the type used)	___ 1 MB x 9 SIMMs ___ 4 MB x 9 SIMMs ___ 16 MB x 9 SIMMs
Memory Type for Bank1	___ 1 MB x 9 SIMMs ___ 4 MB x 9 SIMMs ___ 16 MB x 9 SIMMs
Memory Installed: (check the banks installed)	___ Bank0 ___ Bank1
Total Amount of Memory:	_____ MB
Other Options: (check the options installed)	___ Weitek

EISA Slot 1

Card Description: _____

Manufacturer: _____

EISA Master: ___ Yes   ___ No
                        ___ 16-bit   ___ 32-bit

ISA Master: ___ Yes   ___ No
                        ___ 8-bit   ___ 16-bit

Memory Description

Space is provided below for configuration information for two memory banks. Some EISA adapter cards have up to eight memory banks. Duplicate this sheet if there are more than two memory banks.

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

DMA Channel Description

DMA channels used: ___ 0   ___ 1   ___ 2   ___ 3
                        ___ 5   ___ 6   ___ 7

Data size   ___ 8-bit   ___ 16-bit   ___ 32-bit

Timing: ___ Compatible   ___ Type A
                        ___ Type B ___ Type C

Share: ___ Yes   ___ No

EISA Slot 1, cont'd

Interrupt Description

Edge-Triggered Interrupts:

Interrupt line used: ___ IRQ3 ___ IRQ4
                      ___ IRQ5 ___ IRQ6
                      ___ IRQ7 ___ IRQ9
                      ___ IRQ10   ___ IRQ11
                      ___ IRQ12   ___ IRQ14
                                         ___ IRQ15

Share: ___ Yes   ___ No

Level-Triggered Interrupts

Interrupt line used: ___ IRQ3 ___ IRQ4
                      ___ IRQ5 ___ IRQ6
                      ___ IRQ7 ___ IRQ9
                      ___ IRQ10   ___ IRQ11
                      ___ IRQ12   ___ IRQ14
                                         ___ IRQ15

Switch and Jumper Settings

_____

_____

_____

EISA Slot 2

Card Description: _____

Manufacturer: _____

EISA Master: ___ Yes   ___ No
                             ___ 16-bit   ___ 32-bit

ISA Master: ___ Yes   ___ No
                             ___ 8-bit   ___ 16-bit

Memory Description

Space is provided below for configuration information for two memory banks. Some EISA adapter cards have up to eight memory banks. Duplicate this sheet if there are more than two memory banks.

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

DMA Channel Description

DMA channels used: ___ 0   ___ 1   ___ 2   ___ 3
                             ___ 5   ___ 6   ___ 7

Data size   ___ 8-bit   ___ 16-bit ___ 32-bit

Timing: ___ Compatible   ___ Type A
                    ___ Type B ___ Type C

Share: ___ Yes   ___ No

EISA Slot 2, cont'd

Interrupt Description

Edge-Triggered Interrupts

Interrupt line used:

___ IRQ3 ___ IRQ4	
___ IRQ5 ___ IRQ6	
___ IRQ7 ___ IRQ9	
___ IRQ10	___ IRQ11
___ IRQ12	___ IRQ14
	___ IRQ15

Share: ___ Yes   ___ No

Level-Triggered Interrupts

Interrupt line used:

___ IRQ3 ___ IRQ4	
___ IRQ5 ___ IRQ6	
___ IRQ7 ___ IRQ9	
___ IRQ10	___ IRQ11
___ IRQ12	___ IRQ14
	___ IRQ15

Switch and Jumper Settings

_____

_____

_____

EISA Slot 3

Card Description: _____

Manufacturer: _____

EISA Master: ___ Yes   ___ No
                     ___ 16-bit   ___ 32-bit

ISA Master: ___ Yes   ___ No
                     ___ 8-bit   ___ 16-bit

Memory Description

Space is provided below for configuration information for two memory banks. Some EISA adapter cards have up to eight memory banks. Duplicate this sheet if there are more than two memory banks.

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

DMA Channel Description

DMA channels used: ___ 0   ___ 1   ___ 2   ___ 3
                     ___ 5   ___ 6   ___ 7

Data size   ___ 8-bit   ___ 16-bit   ___ 32-bit

Timing: ___ Compatible   ___ Type A
                     ___ Type B ___ Type C

Share: ___ Yes   ___ No

EISA Slot 3, cont'd

Interrupt Description

Edge-Triggered Interrupts

Interrupt line used:	___ IRQ3 ___ IRQ4
	___ IRQ5 ___ IRQ6
	___ IRQ7 ___ IRQ9
	___ IRQ10 ___ IRQ11
	___ IRQ12 ___ IRQ14
	___ IRQ15

Share: ___ Yes   ___ No

Level-Triggered Interrupts

Interrupt line used:	___ IRQ3 ___ IRQ4
	___ IRQ5 ___ IRQ6
	___ IRQ7 ___ IRQ9
	___ IRQ10 ___ IRQ11
	___ IRQ12 ___ IRQ14
	___ IRQ15

Switch and Jumper Settings

_____

_____

_____

EISA Slot 4

Card Description: _____

Manufacturer: _____

EISA Master: ___ Yes   ___ No
                      ___ 16-bit   ___ 32-bit

ISA Master: ___ Yes   ___ No
                      ___ 8-bit   ___ 16-bit

Memory Description

Space is provided below for configuration information for two memory banks. Some EISA adapter cards have up to eight memory banks. Duplicate this sheet if there are more than two memory banks.

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

DMA Channel Description

DMA channels used: ___ 0   ___ 1   ___ 2   ___ 3
                                  ___ 5   ___ 6   ___ 7

Data size   ___ 8-bit   ___ 16-bit ___ 32-bit

Timing: ___ Compatible   ___ Type A
                           ___ Type B___ Type C

Share: ___ Yes   ___ No

EISA Slot 4, cont'd

Interrupt Description

Edge-Triggered Interrupts

Interrupt line used: ___ IRQ3 ___ IRQ4
                                     ___ IRQ5 ___ IRQ6
                                     ___ IRQ7 ___ IRQ9
                                     ___ IRQ10   ___ IRQ11
                                     ___ IRQ12   ___ IRQ14
                                                   ___ IRQ15

Share: ___ Yes   ___ No

Level-Triggered Interrupts

Interrupt line used: ___ IRQ3 ___ IRQ4
                                     ___ IRQ5 ___ IRQ6
                                     ___ IRQ7 ___ IRQ9
                                     ___ IRQ10   ___ IRQ11
                                     ___ IRQ12   ___ IRQ14
                                                   ___ IRQ15

Switch and Jumper Settings

_____

_____

_____

EISA Slot 5

Card Description: _____

Manufacturer: _____

EISA Master: ___ Yes   ___ No
                      ___ 16-bit   ___ 32-bit

ISA Master: ___ Yes   ___ No
                      ___ 8-bit   ___ 16-bit

Memory Description

Space is provided below for configuration information for two memory banks. Some EISA adapter cards have up to eight memory banks. Duplicate this sheet if there are more than two memory banks.

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

DMA Channel Description

DMA channels used: ___ 0   ___ 1   ___ 2   ___ 3
                                ___ 5   ___ 6   ___ 7

Data size   ___ 8-bit   ___ 16-bit   ___ 32-bit

Timing: ___ Compatible   ___ Type A
                         ___ Type B ___ Type C

Share: ___ Yes   ___ No

EISA Slot 5, cont'd

Interrupt Description

Edge-Triggered Interrupts

Interrupt line used: ___ IRQ3   ___ IRQ4
                             ___ IRQ5   ___ IRQ6
                             ___ IRQ7   ___ IRQ9
                             ___ IRQ10   ___ IRQ11
                             ___ IRQ12   ___ IRQ14
                                               ___ IRQ15

Share: ___ Yes ___ No

Level-Triggered Interrupts

Interrupt line used: ___ IRQ3   ___ IRQ4
                             ___ IRQ5   ___ IRQ6
                             ___ IRQ7   ___ IRQ9
                             ___ IRQ10   ___ IRQ11
                             ___ IRQ12   ___ IRQ14
                                               ___ IRQ15

Switch and Jumper Settings

_____

_____

_____

EISA Slot 6

Card Description: _____

Manufacturer: _____

EISA Master: ___ Yes ___ No
___ 16-bit ___ 32-bit

ISA Master: ___ Yes ___ No
___ 8-bit ___ 16-bit

Memory Description

Space is provided below for configuration information for two memory banks. Some EISA adapter cards have up to eight memory banks. Duplicate this sheet if there are more than two memory banks.

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes ___ No

Type: ___ RAM ___ ROM

Use: ___ System ___ Expanded ___ Virtual ___ Other

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes ___ No

Type: ___ RAM ___ ROM

Use: ___ System ___ Expanded ___ Virtual ___ Other

DMA Channel Description

DMA channels used: ___ 0 ___ 1 ___ 2 ___ 3
___ 5 ___ 6 ___ 7

Data size ___ 8-bit ___ 16-bit ___ 32-bit

Timing: ___ Compatible ___ Type A
___ Type B ___ Type C

Share: ___ Yes ___ No

`EISA Slot 6,` cont'd

Interrupt Description

Edge-Triggered Interrupts

Interrupt line used:
___ IRQ3	___ IRQ4
___ IRQ5	___ IRQ6
___ IRQ7	___ IRQ9
___ IRQ10	___ IRQ11
___ IRQ12	___ IRQ14
	___ IRQ15

Share: ___ Yes ___ No

Level-Triggered Interrupts

Interrupt line used:
___ IRQ3	___ IRQ4
___ IRQ5	___ IRQ6
___ IRQ7	___ IRQ9
___ IRQ10	___ IRQ11
___ IRQ12	___ IRQ14
	___ IRQ15

Switch and Jumper Settings

_____

_____

_____

EISA Slot 7

Card Description: _____

Manufacturer: _____

EISA Master: ___ Yes   ___ No
                               ___ 16-bit   ___ 32-bit

ISA Master: ___ Yes   ___ No
                               ___ 8-bit   ___ 16-bit

Memory Description

Space is provided below for configuration information for two memory banks. Some EISA adapter cards have up to eight memory banks. Duplicate this sheet if there are more than two memory banks.

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

DMA Channel Description

DMA channels used: ___ 0   ___ 1   ___ 2   ___ 3
                                ___ 5   ___ 6   ___ 7

Data size   ___ 8-bit   ___ 16-bit   ___ 32-bit

Timing: ___ Compatible   ___ Type A
                            ___ Type B ___ Type C

Share: ___ Yes   ___ No

EISA Slot 7, cont'd

Interrupt Description

Edge-Triggered Interrupts

Interrupt line used:
- ___ IRQ3 ___ IRQ4
- ___ IRQ5 ___ IRQ6
- ___ IRQ7 ___ IRQ9
- ___ IRQ10   ___ IRQ11
- ___ IRQ12   ___ IRQ14
-                ___ IRQ15

Share: ___ Yes   ___ No

Level-Triggered Interrupts

Interrupt line used:
- ___ IRQ3 ___ IRQ4
- ___ IRQ5 ___ IRQ6
- ___ IRQ7 ___ IRQ9
- ___ IRQ10   ___ IRQ11
- ___ IRQ12   ___ IRQ14
-                ___ IRQ15

Switch and Jumper Settings

_____

_____

_____

```
EISA Slot 8
```

Card Description: _____

Manufacturer: _____

EISA Master: ___ Yes   ___ No
                         ___ 16-bit   ___ 32-bit

ISA Master: ___ Yes   ___ No
                         ___ 8-bit   ___ 16-bit

Memory Description

Space is provided below for configuration information for two memory banks. Some EISA adapter cards have up to eight memory banks. Duplicate this sheet if there are more than two memory banks.

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

Amount of Memory: _____

Starting Address (hex): _____

Cacheable: ___ Yes   ___ No

Type: ___ RAM   ___ ROM

Use: ___ System   ___ Expanded   ___ Virtual ___ Other

DMA Channel Description

DMA channels used: ___ 0   ___ 1   ___ 2   ___ 3
                            ___ 5   ___ 6   ___ 7

Data size   ___ 8-bit   ___ 16-bit   ___ 32-bit

Timing: ___ Compatible   ___ Type A
                       ___ Type B ___ Type C

Share: ___ Yes   ___ No

EISA Slot 8, cont'd

Interrupt Description

Edge-Triggered Interrupts

Interrupt line used: ___ IRQ3 ___ IRQ4
                                 ___ IRQ5 ___ IRQ6
                                 ___ IRQ7 ___ IRQ9
                                 ___ IRQ10   ___ IRQ11
                                 ___ IRQ12   ___ IRQ14
                                                ___ IRQ15

Share: ___ Yes   ___ No

Level-Triggered Interrupts

Interrupt line used: ___ IRQ3 ___ IRQ4
                                 ___ IRQ5 ___ IRQ6
                                 ___ IRQ7 ___ IRQ9
                                 ___ IRQ10   ___ IRQ11
                                 ___ IRQ12   ___ IRQ14
                                                ___ IRQ15

Switch and Jumper Settings

_____

_____

_____

Appendix B EISA Configuration Worksheets

Index