



# ***AP41***

## **User's Guide**

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# FCC Statement

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## FCC Class B Radio Frequency Interference Statement

**Note:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/television technician for help.

**Notice 1:**

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Notice 2:**

Shielded interface cables, if any, must be used in order to comply with emission limits.

# About this Manual

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## ***Purpose and Scope***

This manual tells how to install and configure the system board.

## ***Organization***

This manual consists of three chapters and two appendices:

Chapter 1, **Features**, covers the specifications, layout, and components of the system board.

Chapter 2, **Hardware Setup**, tells how to set the jumpers, upgrade the CPU and the system memory, install the system board and add expansion cards.

Chapter 3, **AMI BIOS**, explains the system BIOS and tells how to configure the system by setting the BIOS parameters.

Appendix A, **Jumper Summary**, gives you a tabular summary of the jumper settings discussed in Chapter 2.

Appendix B, **SiS Drivers**, tells how to install the drivers supported by SiS.

# About this Manual

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## Conventions

The following conventions are used in this manual:

Text entered by user,  
default settings

message displayed

a, e, s, etc



Represent text input by the user,  
default settings and recommended  
selections

Denotes actual messages that appear  
on screen

Represent the actual keys that you  
have to press on the keyboard.

### NOTE

Gives bits and pieces of additional  
information related to the current topic.

### WARNING

Alerts you to any damage that might  
result from doing or not doing specific  
actions.

### CAUTION

Suggests precautionary measures to  
avoid potential hardware or software  
problems.

### IMPORTANT

Reminds you to take specific action  
relevant to the accomplishment of the  
procedure at hand.

### TIP

Tells how to accomplish a procedure  
with minimum steps through little  
shortcuts.

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**Appendix A      Jumper Summary**

**Appendix B      SiS Drivers**

# **Features 1**

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The AP41 is a 486-based system board that utilizes the PCI/ISA architecture. It supports the 486SX, DX, DX2, and DX4 series microprocessors. It has four ISA-AT and three PCI slots for future expansion. The system memory is expandable to 128 MB by adding single in-line memory modules (SIMMs). The second-level cache is upgradable to 512 KB and supports both the write-back and write-through modes.

Two SiS application-specific integrated circuit (ASIC) chipsets with built-in two-channel, PCI mode 4 IDE controller and a super I/O controller are also incorporated in the design to further enhance system performance. The board measures 220 mm x 250 mm (baby-AT size).

# Features

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## Specifications

<b>Microprocessor</b>	<b>5V CPUs</b> Intel SL-enhanced Intel SX/DX/DX2 AMD DX/DX2 Cyrix DX/DX2 Intel P24D Intel P24T
	<b>3.45V CPUs</b> Intel DX4 AMD DX2 AMD DX4/DX4-S Cyrix DX2/DX4/5X86 TI DX2
<b>Maximum Memory</b>	128 MB
<b>SIMM Sockets</b>	Four 72-pin, 32-bit
<b>ASICs</b>	SiS85C496 SiS85C497
<b>Bus Architecture</b>	ISA, PCI
<b>Expansion Slots</b>	Four ISA slots, Three PCI slots
<b>Ports</b>	One parallel port (ECP/EPP) Two serial ports Two-channel PCI mode 4 IDE One floppy disk connector
<b>Onboard Battery</b>	CR2032 3.0V lithium battery
<b>RTC</b>	146818 built-in 85C497
<b>Secondary Cache</b>	128 KB/256 KB/512 KB
<b>BIOS</b>	AMI Plug-and-Play WinBIOS
<b>Board Size</b>	220 mm x 250 mm (baby-AT)

# Features

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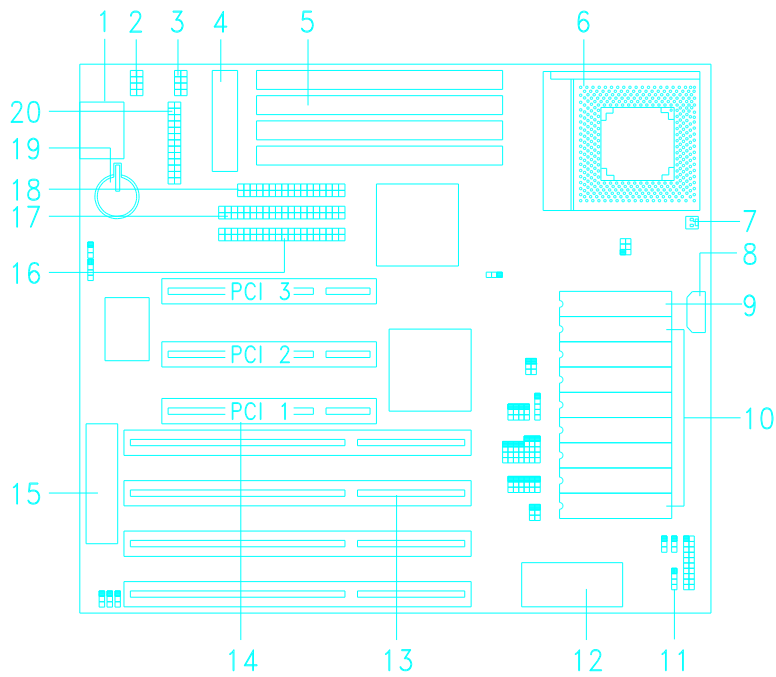
## Board Layout

1. *Keyboard connector*
2. *COM1 connector*
3. *COM2 connector*
4. *Power connector*
5. *72-pin SIMM sockets*
6. *ZIF-type CPU socket*
7. *2-pin fan connector*
8. *4-pin fan connector*
9. *Tag SRAM*
10. *Second-level cache*
11. *HDD LED connector*
12. *BIOS*
13. *ISA slots*
14. *PCI slots*
15. *Keyboard controller*
16. *IDE2 connector*
17. *IDE1 connector*
18. *FDD connector*
19. *Battery*
20. *Parallel port connector*



# Features

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## System Board Parts

### *Microprocessor*

The AP41 system board supports the Intel SL-enhanced, Intel 486SX/DX/DX2/DX4, AMD 486DX/DX2/DX4/DX4-S, Cyrix 486DX/DX2/DX4/5X86 and TI 486DX2 series microprocessors. Chapter 2 gives details on how to upgrade the processor.

# Features

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## ***ASICs***

The two ASICs onboard are the SiS85C496 and SiS85C497. The SiS85C496 acts as the PCI and CPU memory controller (PCM). It integrates the host bridge, the cache and main memory DRAM controller, the PCI bridge, the built-in IDE controller and the Fast Slow Link (FS-Link) bus.

The SiS85C497 is the AT-bus controller and megacell (ATM) component that acts as an interface the PCI/CPU/memory bus and the ISA bus.

## ***AMI BIOS***

The AMI BIOS (basic input-output system) resides in the flash ROM chip. This contains the program that performs the power-on self-tests (POST) upon booting. During POST, this program activates the peripheral devices, tests onboard memory, and prepares the system for operation. Chapter 3 gives more information on the AMI BIOS.

## ***Expansion Slots***

The board expansion slots consist of four ISA-AT and three PCI slots. These expansion slots are the parallel bars on the system board. There are rows of golden pins inside each slot that serve as a clutch to secure the contacts of expansion boards. Chapter 2 tells how to install expansion boards.

# Features

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## ***DRAM Sockets***

The system board has four 72-pin DRAM sockets that expand system memory from 1 MB to a maximum of 128 MB. These sockets accept single- and double-density SIMMs. Chapter 2 tells how to install memory modules.

## ***Two-Channel PCI Mode 4 IDE***

The board utilizes the enhanced-integrated drive electronics (E-IDE) interface that improves the data transfer rate. It also allows the system to support four E-IDE devices, including fixed disks with more than 528-MB capacity. This feature offers users increased data storage capacity.

## ***Super I/O Controller***

The onboard super I/O controller chip supports two UART 16450/16550-compatible serial ports and a parallel port (SPP, EPP, ECP)<sup>1</sup>. It also accommodates 1.2-/1.44-/2.88-MB disk drives allowing full-range access to 5.25-inch drives with 360-KB or 1.2-MB format and 3.5-inch drives with 720-KB, 1.44-MB or 2.88-MB format.

## ***Keyboard Connector***

The keyboard connector at the rear of the system board allows you to connect any AT-compatible keyboard.

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<sup>1</sup> SPP: Standard Parallel Port  
EPP: Enhanced Parallel Port (IEEE 1284 compliant)  
ECP: Extended Capabilities Port (IEEE 1284 compliant)

# Features

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## ***SRAM***

The system board supports 128-KB, 256-KB and 512-KB second-level, write-back and write-through cache.

## ***Power Management***

The AP41 conforms to the power-saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. The system board features four power-saving modes that reduce power consumption. For more information on the power-saving modes, see Chapter 3.

## Hardware Setup 2

This chapter discusses the CPU options, tells how to set jumpers, upgrade system memory, add expansion boards, and install the system board.

Install the CPU, memory, and set the jumpers before you install the system board inside a system housing. You may add the other components after installing the board. Read this chapter to learn about the components before you install them.

### CPU Options

The system board supports both 5V and 3.45V CPUs. The following tables list the CPU options for this system board.

#### 5V CPU Options

5V CPU Type		Speed (MHz)
Intel series (SL-enhanced)	486SX	25/33
	486DX	33
	486DX2	50/66
	P24D	50/66
	P24T	63/83
AMD series	486DX	33/40
	486DX2	50/66/80
Cyrix	486DX	33/40
	486DX2	50/66

# Hardware Setup

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## 3.45 V CPU Options

3.45V CPU Type	Speed (MHz)
Intel 486DX4	75/100
AMD 486DX2	66/80
AMD 486DX4	100
AMD 486DX4-S	100/120
Cyrix DX2	V50/V66/V80
Cyrix DX4	100/120
Cyrix 5X86	100
TI DX2	66/80

## ESD Precautions

Electrostatic discharge (ESD) can damage your CPU, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.

1. Do not remove a component from its protective packaging until you are ready to install it.
2. Wear a wrist grounding strap and attach it to a metal part of the system unit before handling components. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.

# Hardware Setup

## Installing a Microprocessor

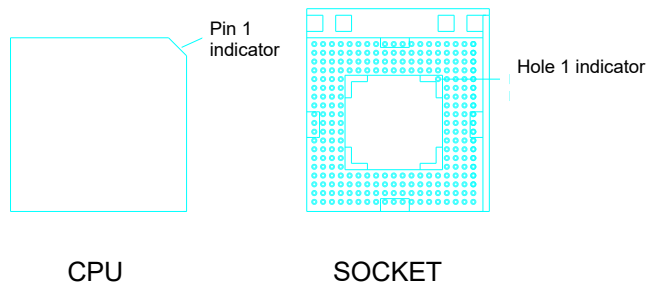
The motherboard has a zero-insertion force microprocessor socket that allows you to install a CPU without using any tools.

Follow these steps to install a CPU in a ZIF-type upgrade socket:



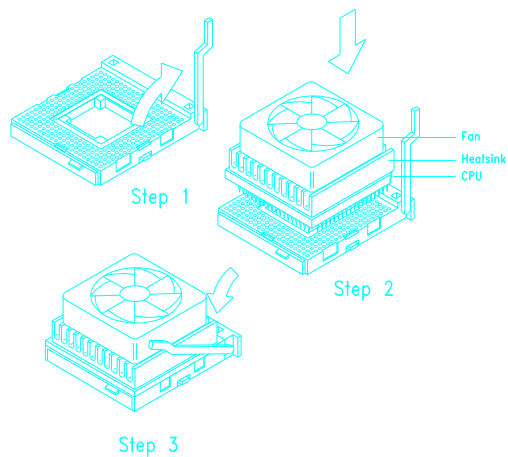
*Make sure that the system power is OFF before installing any component.*

1. Pull up the socket lever.
2. Insert the CPU with the attached heatsink and fan. Make sure that pin 1 of the CPU aligns with hole 1 of the socket. The hole on the upper right corner of the center box indicates pin 1.



## Hardware Setup

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3. Pull down the socket lever to lock the CPU into the socket.
4. Plug the fan cable into the onboard fan connector.
5. Set the jumpers accordingly. See the following sections for the correct jumper settings.

## Upgrading the Microprocessor

Follow these steps to upgrade the CPU:

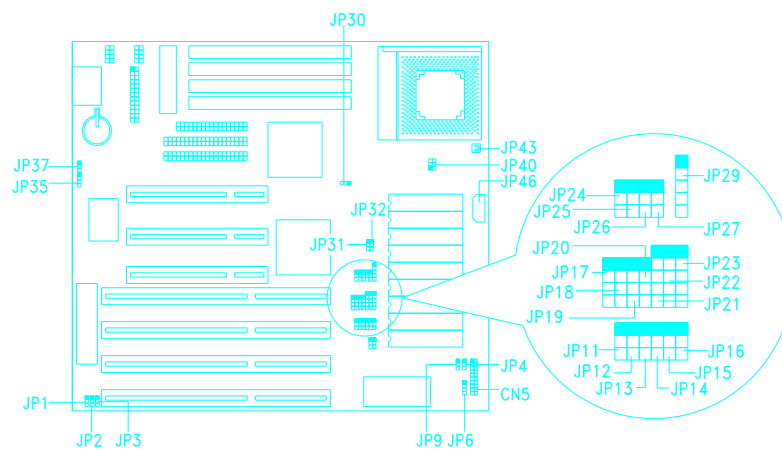
1. Turn off the system power.
2. Pull up the socket lever.
3. Remove the installed CPU.
4. Install the upgrade CPU. Refer to the section *Installing a Microprocessor* for instructions on how to install a CPU.



# Hardware Setup

## Jumper Settings

You have to change the jumper settings when you reconfigure the system. This section tells how to reset the jumpers. The figure below shows the jumper locations.



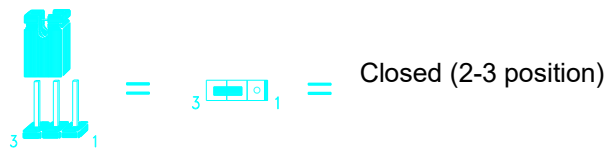
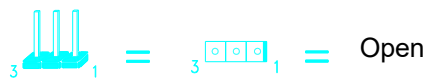
Set a jumper switch as follows:

- To close a jumper switch, insert the plastic jumper cap over two pins of a jumper.
- To open a jumper switch, remove the jumper cap.

# Hardware Setup

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The following conventions are used to represent the proper jumper settings.



*When you open a jumper, attach the plastic jumper cap to one of the pins so you won't lose it.*

# Hardware Setup

## Changing the CPU Type

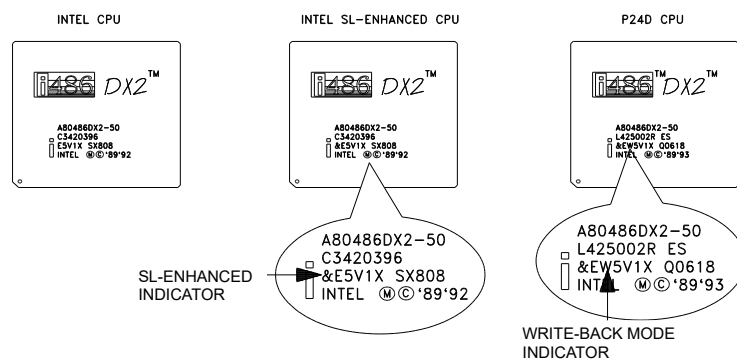
You must set jumpers **JP11** to **JP23** and **JP40** according to the CPU type. The board supports both 5V and 3.45V CPUs. Make sure that you know your CPU type and its operating voltage before you begin. Improper setting of jumpers may result in system failure.

### 5V CPU Type

For Intel processors, you must determine if your CPU is SL-enhanced or not. To check, simply look for the "&" symbol in the third row on the lower label of the CPU.

The P24D processor looks very similar to an Intel SL-enhanced CPU except for the letter "W" in the third row on the lower label of the CPU. The letter "W" indicates that the CPU supports the write-back mode.

The following figure shows how to determine an Intel SL-enhanced CPU and a P24D CPU.



# Hardware Setup

## 5V CPU TYPE JUMPER SETTINGS

	Intel 486SX SL-ENHANCED	Intel 486DX/DX2 SL-ENHANCED	Intel P24D	Intel P24T	Intel/AMD 486SX	Intel/AMD 486DX/DX2	CYRIX 486DX/DX2
<b>JP11</b>							
<b>JP12</b>							
<b>JP13</b>							
<b>JP14</b>							
<b>JP15</b>							
<b>JP16</b>							
<b>JP17</b>							
<b>JP18</b>							
<b>JP19</b>							
<b>JP20</b>							
<b>JP21</b>							
<b>JP22</b>							
<b>JP23</b>							
<b>JP40</b>							

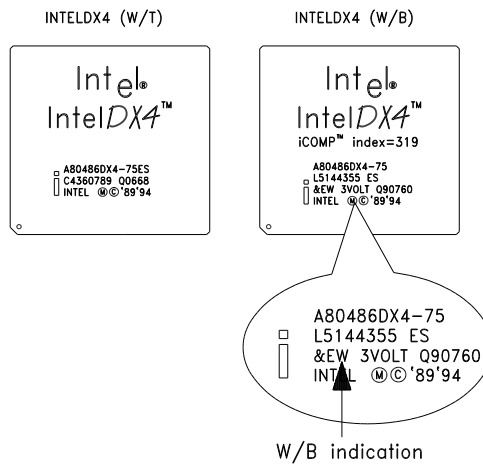
# Hardware Setup

## 3.45V CPU Type

### INTEL DX4 CPUS

You must be able to determine your IntelDX4 CPU type before you set the jumpers. Improper setting may result to system malfunction.

There are two types of 3.45V IntelDX4 CPUs: one with write-through mode support while the other is with write-back mode support. To determine an IntelDX4 CPU with write-back internal mode, look for the letter “W” in the third row on the lower label of the CPU. The letter “W” indicates write-back mode. An IntelDX4 CPU with write-through internal mode does not have this indication. See the following figure.

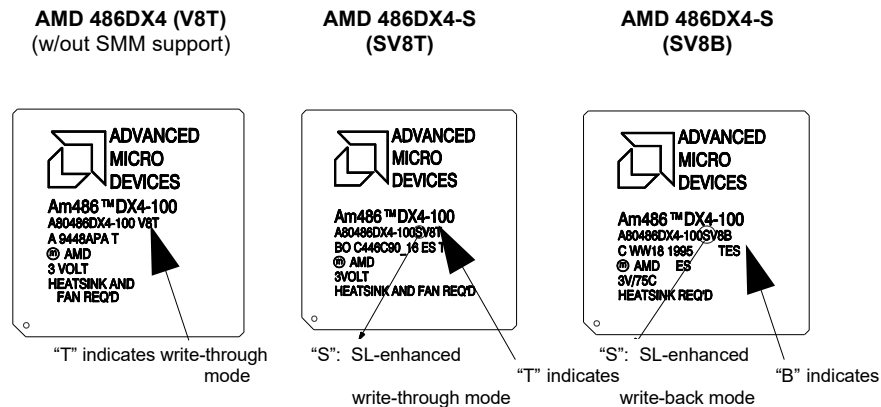


# Hardware Setup

## AMD DX4 CPUS

The 3.45V AMD DX4 processors come in three types: AMD DX4 (V8T), AMD DX4-S(SV8T) and AMD DX4-S(SV8B). The AMD DX4 (V8T) is a non SL-enhanced CPU that supports write-through internal cache mode. The AMD DX4-S(SV8T) is an SL-enhanced CPU that supports write-through internal mode. The AMD DX4-S(SV8B) is also an SL-enhanced CPU but with write-back internal cache mode support.

To determine your AMD CPU type, check the second row of your CPU label. An SL-enhanced AMD DX4 CPU has a letter "S" following the "AMD DX4-100" label. The last letter (i.e., either "B" or "T") indicates the CPU cache mode supported. See the following figure.

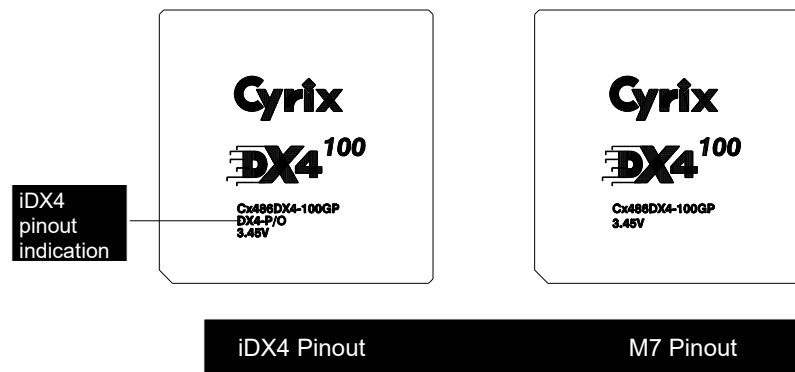


# Hardware Setup

## CYRIX DX4 CPUS

There are two types of Cyrix DX4 CPUs: Cyrix DX4 with iDX4 pinout and Cyrix DX4 with M7 pinout.

To determine the Cyrix DX4 CPU pinout, check the CPU label. A Cyrix DX4 with iDX4 pinout has a "DX4 P/O" indication on the second row of the lower CPU label. A Cyrix DX4 with M7 pinout does not have this indication and the lower CPU label has only two rows. See the figure below.



# Hardware Setup

## 3.45V CPU TYPE JUMPER SETTINGS

	Intel 486DX4 (W/T)	Intel 486DX4 (W/B)	AMD 486DX2	AMD 486DX4 (V8T)	AMD 486DX4-S (SV8B)
<b>JP11</b>					
<b>JP12</b>					
<b>JP13</b>					
<b>JP14</b>					
<b>JP15</b>					
<b>JP16</b>					
<b>JP17</b>					
<b>JP18</b>					
<b>JP19</b>					
<b>JP20</b>					
<b>JP21</b>					
<b>JP22</b>					
<b>JP23</b>					
<b>JP40</b>					



# Hardware Setup

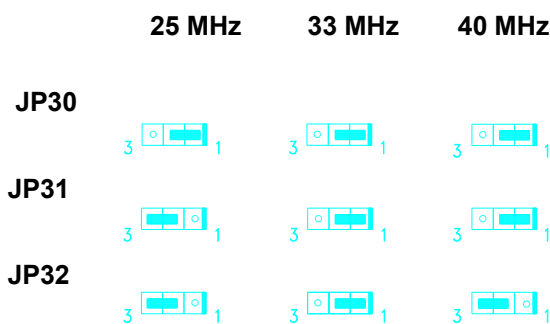
	AMD 486DX4-S (SV8T)	CYRIX 486DX2	CYRIX 486DX4 (iDX4 P/O)	CYRIX 486DX4 (M7 P/O)	CYRIX 5X86	TI 486DX2
<b>JP11</b>						
<b>JP12</b>						
<b>JP13</b>						
<b>JP14</b>						
<b>JP15</b>						
<b>JP16</b>						
<b>JP17</b>						
<b>JP18</b>						
<b>JP19</b>						
<b>JP20</b>						
<b>JP21</b>						
<b>JP22</b>						
<b>JP23</b>						
<b>JP40</b>						

# Hardware Setup

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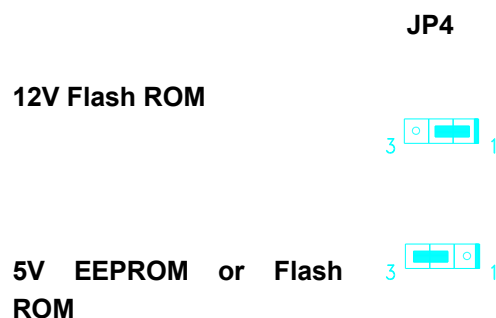
## Setting the Oscillator Frequency

You must reset jumpers **JP30**, **JP31** and **JP32** if you change the oscillator frequency.



## Setting the Flash ROM Type

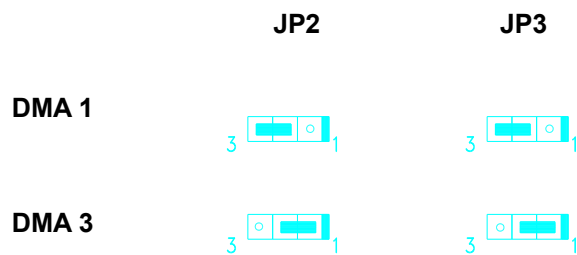
Set jumper **JP4** according to the type of Flash ROM in use. If the system uses a 5V EEPROM (or 5V Flash ROM) instead of a 12V Flash ROM, you must set the jumper to 2-3. The default setting is 2-3.



# Hardware Setup

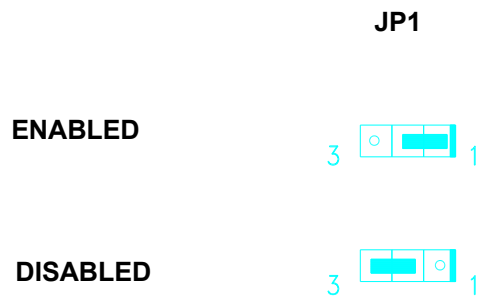
## Selecting the ECP DMA Channel

The jumpers **JP2** and **JP3** are used to select the DMA channel for ECP function. The default channel is DMA 1.



## Enabling the FDC and Super I/O Chip

The jumper **JP1** is used to enable or disable the floppy disk controller (FDC) and the super I/O chip. The SMC665 onboard I/O chip supports two serial ports, one parallel port and FDD functions. Set the jumper to Disabled if you want to use a separate I/O card.



# Hardware Setup

## Selecting the Cache Size

The system board supports 128-KB, 256-KB, and 512-KB, write-back and write-through second-level cache. See the table below for the possible cache configurations.

The second-level cache is upgradable from 128 KB to 512 KB. The system supports both write-back and write-through modes.

Cache Size	TAG SRAM (U31)	Data SRAM	Location
128 KB	16 Kb x 8 or 32 Kb x 8	32 Kb x 8 x 4 pcs.	Bank 0
256 KB	16 Kb x 8 or 32 Kb x 8	32 Kb x 8 x 8 pcs.	Banks 0 and 1
256 KB	16 Kb x 8 or 32 Kb x 8	64 Kb x 8 x 4 pcs.	Bank 0
512 KB	32 Kb x 8	64 Kb x 8 x 8 pcs.	Banks 0 and 1
512 KB	32 Kb x 8	128 Kb x 8 x 4 pcs.	Bank 0

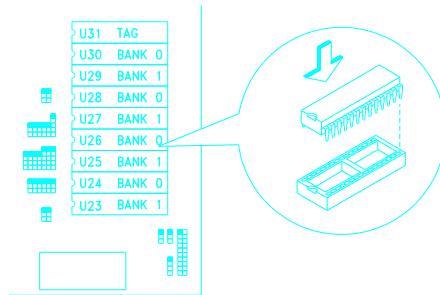
Follow these steps to install SRAMs:

1. Locate the cache sockets on the system board. See the section *Board Layout*.
2. Insert the SRAM chip into the socket. Align the straight edge of the chip with the straight edge of the socket. Also, make sure that the cut edge of the chip corresponds to the cut edge of the cache socket. See the figure below.



*Always install SRAMs beginning with Bank 0.*

# Hardware Setup



*Press the SRAM chip gently but firmly into place. Be careful not to bend the pins.*

When upgrading the cache, install the SRAM chips and set jumpers **JP24**, **JP25**, **JP26**, **JP27** and **JP29** accordingly. See the following figure.

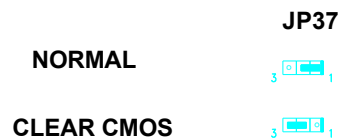
	128 KB	256 KB	256 KB	512 KB	512 KB
	32 Kb x 4	32 Kb x 8	64 Kb x 4	64 Kb x 8	128 Kb x 4
<b>JP24</b>					
<b>JP25</b>					
<b>JP26</b>					
<b>JP27</b>					
<b>JP29</b>					

# Hardware Setup

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## *Clearing the CMOS*

The 3-pin jumper **JP37** is used to clear the values in the CMOS. You need to clear the CMOS if you forget your system password. To do this, shut off the system power and short pins 2-3 of JP37 for a few seconds. Then set the jumper to the normal setting by closing pins 1-2 with a jumper cap. Enter Setup to specify a new password.



## Memory Configuration

The system memory is upgradable from 1 MB to 128 MB. The four 72-pin SIMM sockets accommodate 1-, 4-, 16- and 64-MB single-density SIMMs, and 2-, 8- and 32-MB double-density SIMMs with 70/60-ns DRAM speed.

The table below lists the SIMM types and their corresponding capacities.

<b>SIMM Type</b>	<b>Capacity</b>
256 Kb x 32/36	1 MB
512 Kb x 32/36	2 MB
1 Mb x 32/36	4 MB
2 Mb x 32/36	8 MB
4 Mb x 32/36	16 MB
8 Mb x 32/36	32 MB
16 Mb x 32/36	64 MB

# Hardware Setup

---



*The SIMM sockets accept any DRAM combinations that satisfy the 128 MB maximum memory.*

## **Installing a SIMM**



*Observe the ESD precautions when installing components.*

Follow these steps to install a SIMM:

1. Slip a SIMM at a 45° angle into a socket with the component side facing down.



*Be careful when inserting or removing SIMMs. Forcing a SIMM in or out of a socket can damage the socket or the SIMM (or both).*

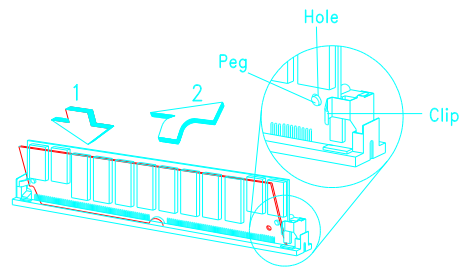
2. Gently push the SIMM up until the pegs of the socket slip into the holes on the SIMM and the holding clips lock the SIMM into a vertical position.



*The SIMM should be at a 90° angle when installed.*

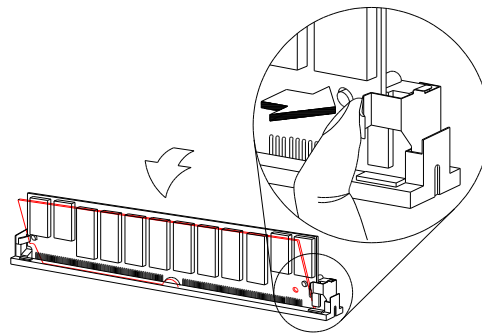
# Hardware Setup

---



## ***Removing a SIMM***

1. Press the holding clips on both sides of the SIMM outward to release it.
2. Press the SIMM downward to about a 45° angle.
3. Gently pull the SIMM out of the socket.



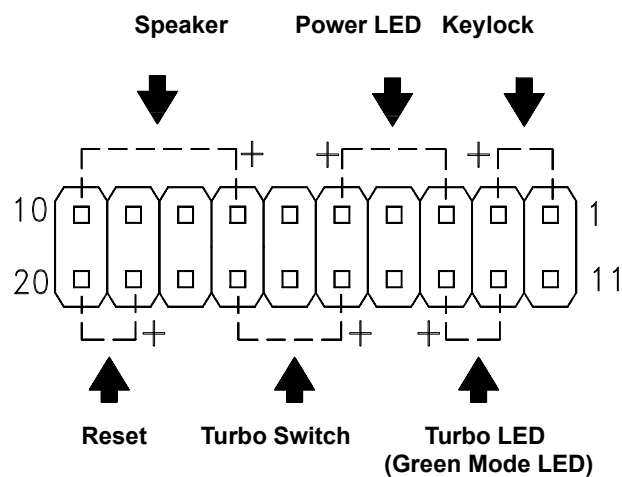


# Hardware Setup

## Connectors

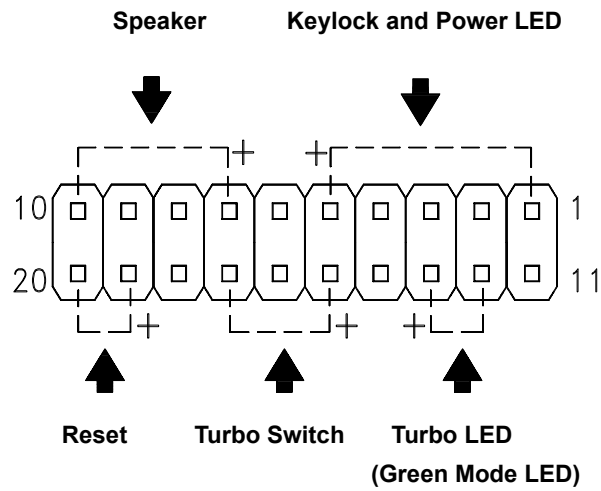
### *Multifunction Connector*

This 20-pin connector is marked **CN5** on the system board. It supports a number of system functions: LED, turbo, reset, keylock, and speaker. Attach the front panel connectors to the corresponding pins as in the illustration below.

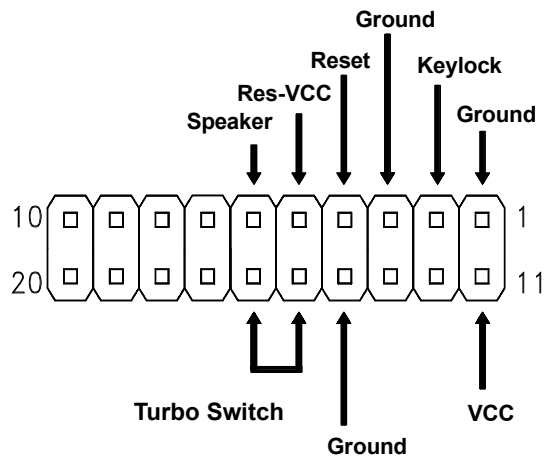


Some housings have a five-pin connector for the keylock and power LED. See the following illustration.

# Hardware Setup



Other housings may have a 12-pin connector. If your housing has this type of connector, plug it into CN5 as shown in the following figure. Make sure that the red wire of the connector connects to pin 11.



# Hardware Setup

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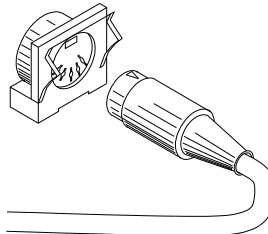
## **Turbo LED/Green Mode LED**

You can use the **CN5** LED connector either for the Turbo function or for the Green Mode function. However, you cannot use both functions at the same time. To use the LED for turbo, you need to connect the turbo switch into the CN5 multifunction connector. Take note that in turbo mode, the LED is on. In deturbo mode, the LED is off.

To use the LED for the green function, you need to connect the break switch into **JP9** (i.e, the break switch connector). The green mode LED is always on regardless of the system mode.

## ***Keyboard Connector***

The keyboard connector is a 5-pin, AT-compatible connector. The following figure shows how to connect a keyboard.

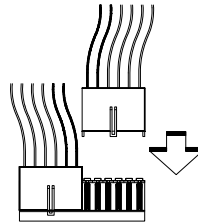


# Hardware Setup

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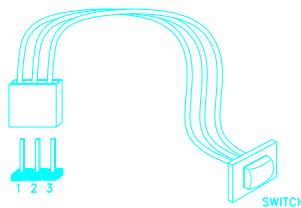
## ***Power Connector***

A standard power supply has two cables with six wires each. Attach these cables to the power connector on the board in such a way that all the black wires are in the center.



## ***Break/Suspend Connector***

The Break/Suspend connector is a 3-pin connector labeled **JP9** on the system board. Pressing the break switch on the front bezel forces the system to enter the suspend mode. Pressing any key on the keyboard returns the system to normal mode.



# Hardware Setup

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*You cannot use the break switch and the turbo switch at the same time.*

# Hardware Setup

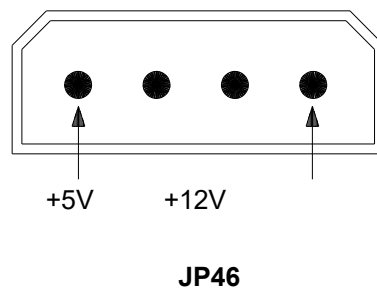
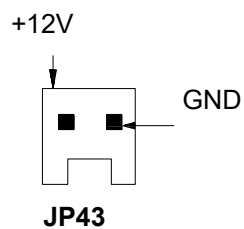
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## ***Fan Power Connectors***

The board comes with one 2-pin and one 4-pin fan power connector.

The 2-pin fan power connector is marked **JP43** on the system board. To connect, plug the connector to its corresponding pin as shown in the following figure.

To connect the 4-pin fan power connector, simply plug it into the 4-pin connector marked **JP46** on the system board.

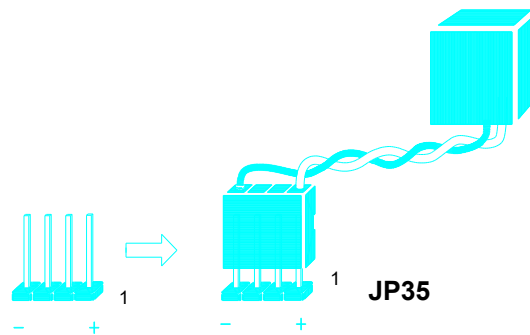


# Hardware Setup

## ***External Battery Connector***

The 4-pin external battery connector is marked **JP35** on the system board. This is used to connect an external battery in case your system board does not have an onboard battery or the 146818 RTC/battery.

To connect an external battery, simply plug the battery connector into JP35. Make sure that the positive end of the connector corresponds to pin 1. See the illustration below.



# Hardware Setup

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## Installation

The baby-AT size of the AP41 system board easily fits most housings. It has mounting holes that conform to the standard system housing.

Some housings may differ slightly in design, requiring additional steps to install the board. Read the documentation that comes with the housing.



*Make sure that you have already installed the system board components like the CPU and memory, and have set the appropriate jumpers before you proceed.*

### ***Installing the System Board***

1. Open the system housing.
2. Use at least two screws that come with the housing to secure the board.
3. Attach the power supply cables to the power connector and the front panel connectors to the multifunction connector. See the section *Connectors*.
4. Install any additional components that you have not yet installed.



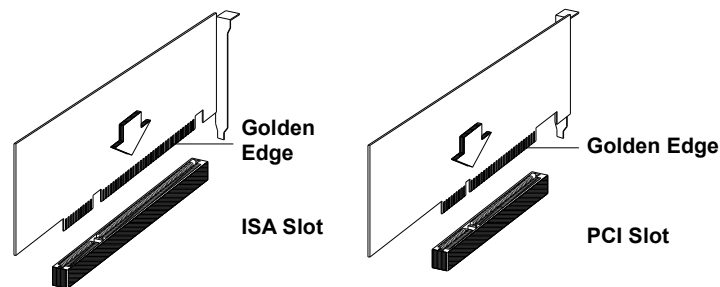
# Hardware Setup

## ***Installing Expansion Boards***

Install any expansion boards after you have installed the system board into the housing.

Follow these steps to install an expansion board.

1. Remove the bracket opposite the slot that you want to use. Save the cover for future use. Save the screw to secure the expansion board.
2. Remove the board from its protective packaging.
3. Gently insert the golden edge of the board into the slot until it fits into place.



4. Secure the board bracket with the screw.

## AMI BIOS Setup Main Menu

The AMI BIOS Setup Main Menu appears below. Press **c** to enter the system menu.



The AMI BIOS is in Windows form. You can use either the keyboard or a mouse to move between the items. To select among the Setup groups, use **v** to highlight the selected group or simply click on the icon of the selected Setup menu.

To select among the options, you can either use the arrow keys to move the highlight bar or simply click on the icon of the desired option.

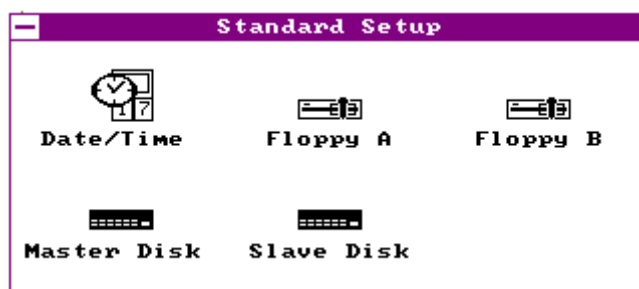
After selecting, press **e** or double-click on the icon to open the menu.

# AMI BIOS

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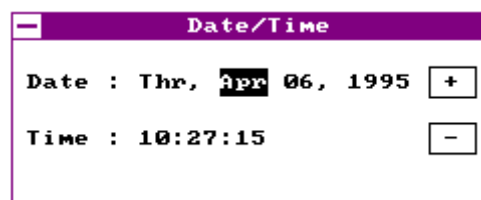
## Standard CMOS Setup

Highlight Setup using **v** or simply click on the Setup icon. Select Standard to input configuration values such as the date, time, and disk types. The Standard CMOS Setup pop-up window appears below:



### **Date/Time**

To set the date and time, highlight Date/Time and press **e** or double-click on the Date/Time icon. The following screen appears:



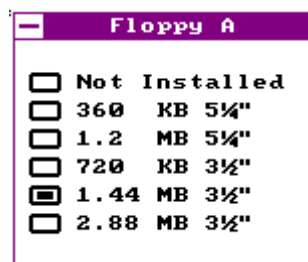
Use the arrow keys to move among the items. Press **+** and **-** or click the **+** and **-** icons to set the current date and time. Close the window by pressing **e** or double-clicking the Control menu box in the upper-left corner of the window.

# AMI BIOS

---

## ***Floppy Drives A and B***

To configure the floppy drive, select Floppy A. The following values appear on the screen:



After selecting the proper setting, press e or double-click the Control menu box to close the window.

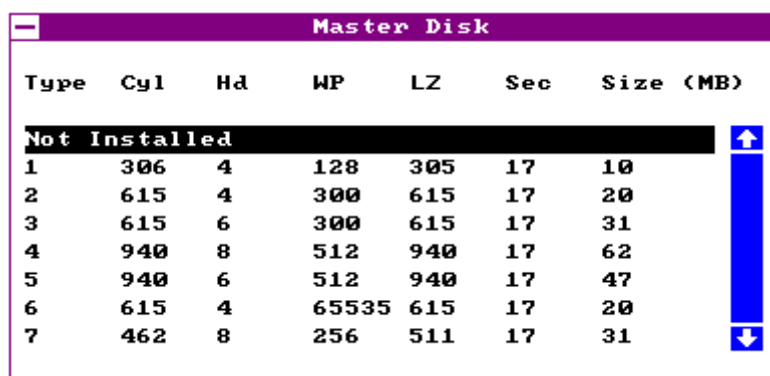
Select Floppy B and follow the same procedure to configure the second floppy drive, if present.

# AMI BIOS

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## Hard Disk Drives

Select **Master Disk** to configure the first hard disk. The following values appear on the screen:



Type	Cyl	Hd	WP	LZ	Sec	Size (MB)
<b>Not Installed</b>						
1	306	4	128	305	17	10
2	615	4	300	615	17	20
3	615	6	300	615	17	31
4	940	8	512	940	17	62
5	940	6	512	940	17	47
6	615	4	65535	615	17	20
7	462	8	256	511	17	31

Press **}** to move to the next page. Use **w** or **y** to highlight the selected parameter. If you cannot find your hard disk drive type on the list, select **User** and enter the disk parameters. You can also select **Utility Setup**. This automatically configures your hard disk. Refer to the section *Utility Setup* for more information.

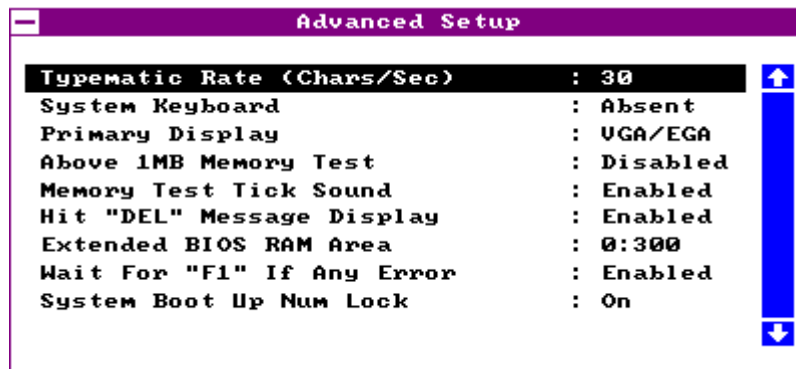
Select **ESDI** or **SCSI** depending the device installed.

If you have two hard disks installed, select **Slave Disk** and follow the same procedure to configure the second hard disk.

# AMI BIOS

## Advanced CMOS Setup

The window below appears if you select Advanced from the main menu.



The screen above does not show all the parameters of the Advanced Configuration menu. Use w or y to highlight the desired parameter. Press } to view the rest of the parameters. The following screens appear:

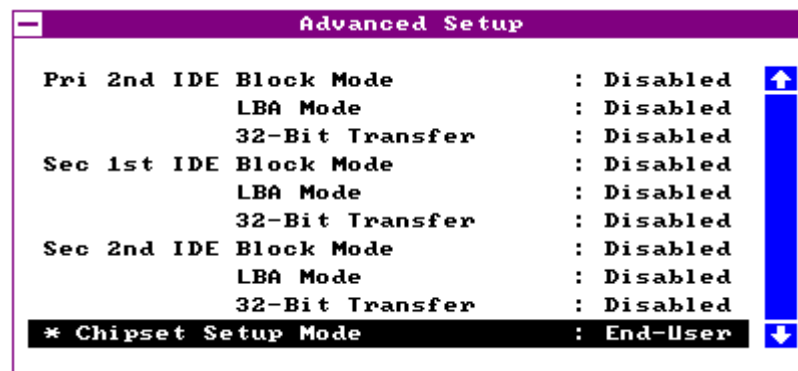
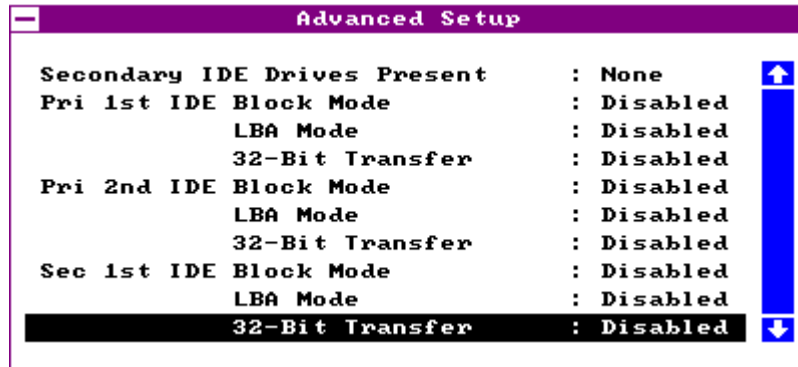
# AMI BIOS

Advanced Setup		
System Boot Up Num Lock	: On	↑
<b>Numeric Processor Test</b>	: <b>Enabled</b>	
Floppy Drive Seek At Boot	: Enabled	
Floppy Drive Swapping	: Disabled	
System Boot Up Sequence	: A:, C:	
System Boot Up CPU Speed	: High	
Turbo Switch Function	: Enabled	
Password Checking	: Setup	
CPU Selection	: Auto	↓

Advanced Setup		
<b>( Cache Control )</b>	:	↑
- External Cache	: Enabled	
External Cache Mode	: W/Bak	
<b>Cache Tag Width</b>	: <b>8 Bit</b>	
- Internal Cache	: Enabled	
Internal Cache Mode	: W/Tru	
CPU Burst Write	: Disabled	
<b>( SHADOW )</b>	:	
Shadow C800,32K	: Disabled	
Shadow D000,32K	: Disabled	↓

Advanced Setup		
Shadow D000,32K	: Disabled	↑
Shadow D800,32K	: Disabled	
Video Shadow	: Enabled	
Main BIOS Cacheable	: Enabled	
Cacheable C800,32K	: Disabled	
Cacheable D000,32K	: Disabled	
Cacheable D800,32K	: Disabled	
Video Shadow Cacheable	: Enabled	
<b>( IDE Control )</b>	:	
<b>Secondary IDE Drives Present</b>	: <b>None</b>	↓

# AMI BIOS



## ***Typematic Rate (Chars./Sec.)***

This parameter determines the typematic rate. The typematic rate settings are 15, 20, 30, and Disabled. The default setting is 30. Set it to Disabled to disregard the rate setting.



# AMI BIOS

---

## ***System Keyboard***

Set this parameter to `Present` if there is a keyboard connected to the system. However, some servers may not have keyboards. Select `Absent` if there is no keyboard present.

## ***Primary Display***

This function detects the type of VGA in use. The settings are VGA/EGA, CGA 40 x 25, CGA 80 x 25, Mono, and Absent. The default setting is VGA/EGA.

## ***Above 1 MB Memory Test***

This parameter allows your system to check all available memory. Therefore, setting this parameter to `Enabled` slows down the power-on self-test. The default setting is `Disabled`.

## ***Memory Test Tick Sound***

Enabling this parameter lets you hear the tick sound during the memory test. Disable the parameter to bypass the function.

## ***Hit "Del" Message Display***

Disabling this option prevents the `Hit <Del>` if you want `Setup` message from appearing when the system boots. The settings are `Enabled` or `Disabled`.

# AMI BIOS

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## ***Extended BIOS RAM Area***

This function allows you to relocate the BIOS from ROM to RAM. Relocating to RAM enhances system performance as information access is faster than ROM. The parameter settings are 0:300 and DOS 1K. The default address is 0:300.

## ***Wait for F1 If Any Error***

If this option is enabled, the BIOS waits for the end user to press **l** before continuing. If this option is disabled, the BIOS continues the boot process without waiting for **l** to be pressed.

## ***System Boot-up Num Lock***

Setting this parameter to **On** enables the numeric function of the numeric keypad. Set this parameter to **Off** to disregard the function. Disabling the numeric function allows you to use the numeric keypad for cursor control. The default setting is **On**.

## ***Numeric Processor Test***

This parameter is non-configurable and auto-detected by the system. If the CPU in use is a DX CPU, this parameter is automatically set to **Enabled**. However, for the SX CPU, the setting is changed to **Disabled**. This is because the SX CPU does not have an integral numeric coprocessor.

## ***Floppy Drive Seek at Boot***

When enabled, the BIOS detects whether there is a floppy disk drive installed. Disable the parameter to bypass the function.

# AMI BIOS

---

## ***Floppy Drive Swapping***

This parameter allows you to swap floppy drives. For example, if you have two floppy drives (A and B), you can assign the first drive as drive B and the second drive as drive A or vice-versa. Disable the parameter to bypass the function. The default is *Disabled*.

## ***System Boot-up Sequence***

The settings are *C:,A:* and *A:,C:* to specify the system search sequence. The default setting is *A:,C:*.

## ***System Boot-up CPU Speed***

Set the system speed to *High* or *Low* with this parameter. *High* is the default setting.

## ***Turbo Switch Function***

This parameter lets you enable or disable the turbo switch function. The default setting is *Enabled*.

## ***Password Checking***

The settings are *Setup* and *Always*. The *Setup* setting allows the system to boot and use the password only to protect the Setup Utility Configuration settings from being tampered with. The *Always* setting requires you to enter the password everytime you boot the system. The default setting is *Setup*.

# AMI BIOS

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## ***CPU Selection***

The available settings for this parameter are `Auto`, `Intel`, `AMD` and `Cyrix`. Check your CPU before setting this parameter. Otherwise, select `Auto` to automatically configure the CPU. The default setting is `Auto`.

## ***Cache***

### **External Cache**

This parameter lets you enable or disable the secondary cache. The default setting is `Enabled`. Leave it enabled unless you are troubleshooting a problem.

### **External Cache Mode**

The external cache can be set either to `Write-back` or `Write-through` modes. The `Write-back` mode is faster than the `Write-through` mode. The default is `Write-back`.

### **Cache Tag Width**

This parameter lets you set the cache tag width. The available settings are `8-bit` and `7-bit`. The default setting is `8-bit`.

### **Internal Cache**

This parameter lets you enable or disable the internal cache. The default setting is `Enabled`. Leave it enabled unless you are troubleshooting a problem.

# AMI BIOS

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## Internal Cache Mode

The internal cache is normally set to `Write-through`. If you are using a Cyrix CPU, you may change the setting to `Write-back` for better performance.

Intel P24D also supports the `Write-back` mode.

## CPU Burst Write

This parameter enables or disables the CPU cache burst-write mode for M7, P24D and P24T. The default setting is `Disabled`.

## ***Shadow C800, D000, D800, 32K***

This function is for shadowing other expansion card ROMs. The default setting for these areas is `Disabled`. If you have other expansion cards with ROMs on them, you need to know the specific addresses that the ROMs use to shadow them. Enable all the ROM Shadow settings if you don't know the addresses. This ensures the shadowing of any present ROMs.



*The F000 and E000 addresses are exclusively shadowed for BIOS.*

## ***Video Shadow***

The default setting for this parameter is `Enabled`. This copies the video display card BIOS into the system DRAM to improve system performance.

# AMI BIOS

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## ***Main BIOS Cacheable***

The default setting for this parameter is *Enabled*. This enhances the system performance. Disabling the parameter prevents the system BIOS from being cached.

## ***Cacheable C800, D000, D800, 32 K***

The default setting for these parameters is *Enabled*. This enhances the system performance. The *Disabled* setting prevents these addresses from being cached.

## ***Video Shadow Cacheable***

The default setting for this parameter is *Enabled*. This copies the video ROM area to RAM and therefore, enhances the system performance. Disabling the parameter prevents the video BIOS from being cached.

## ***Secondary IDE Drives Present***

This parameter allows you to connect a secondary IDE device to your system. The default setting is *None*.

## ***Primary 1st IDE Block Mode***

This function enhances the performance of the primary IDE hard disk connected to your IDE 1 connector. This parameter is normally set to *Disabled*. If enabled, it allows data transfer in block (multiple sectors) by increasing the data transfer rate. Disable the parameter if your hard disk does not support this feature.

# AMI BIOS

---

## ***Primary 2nd IDE Block Mode***

This function enhances the performance of the secondary IDE hard disk connected to your IDE 1 connector. This parameter is normally set to `Disabled`. If enabled, it allows data transfer in block (multiple sectors) by increasing the data transfer rate. Disable the parameter if your hard disk does not support this feature.

## ***Secondary 1st IDE Block Mode***

This function enhances the performance of the primary IDE hard disk connected to your IDE 2 connector. This parameter is normally set to `Disabled`. If enabled, it allows data transfer in block (multiple sectors) by increasing the data transfer rate. Disable the parameter if your hard disk does not support this feature.

## ***Secondary 2nd IDE Block Mode***

This function enhances the performance of the secondary IDE hard disk connected to your IDE 2 connector. This parameter is normally set to `Disabled`. If enabled, it allows data transfer in block (multiple sectors) by increasing the data transfer rate. Disable the parameter if your hard disk does not support this feature.

## **LBA Mode**

This enhanced IDE feature allows you to use a hard disk with a capacity greater than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. Set this parameter to `Enabled` if your hard disk supports this feature. The default setting is `Disabled`.

# AMI BIOS

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## **32-bit Transfer**

Normally, this parameter is set to `Disabled`. Enabling this function improves disk performance by increasing the data transfer rate from 16-bit to 32-bit.

## ***Chipset Setup Mode***

This function allows you to change the Chipset Setup DRAM and SRAM parameters according to the end-user type. The available settings are `End-user` and `Engineer`. We recommend that you set this parameter to `End-user`. See the following section for more details about the Chipset Features Setup.

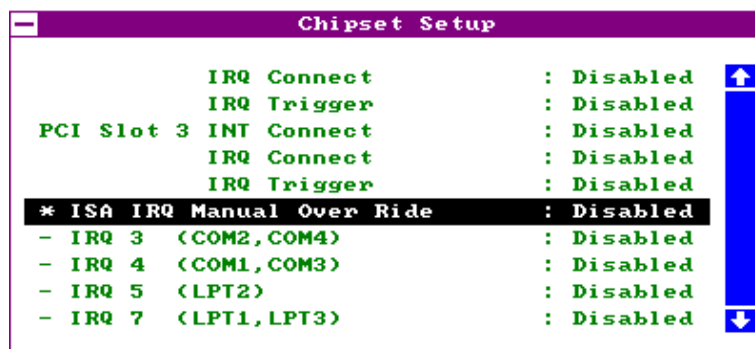
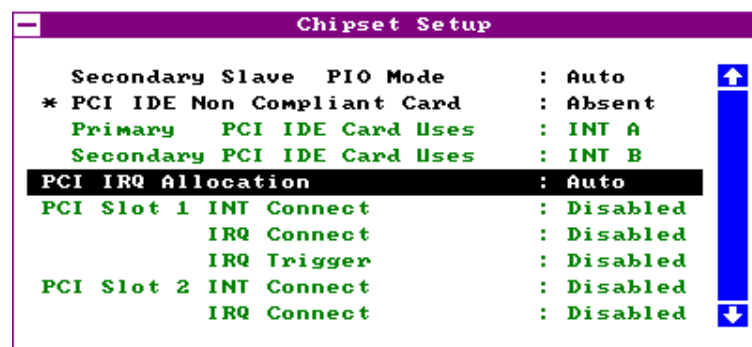
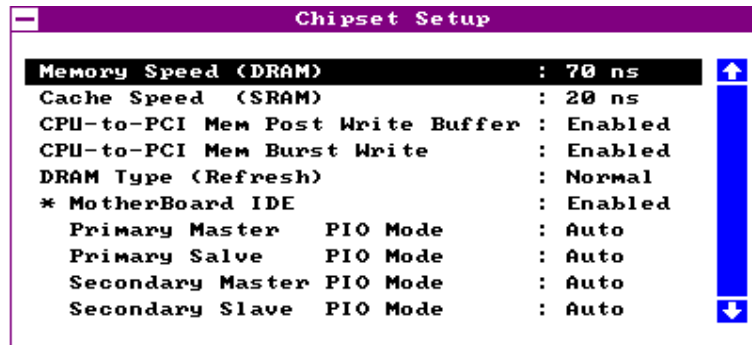
## **Chipset Features Setup**

The Chipset Features Setup controls the board's chipset settings. The controls for this menu are the same as for the previous screen.

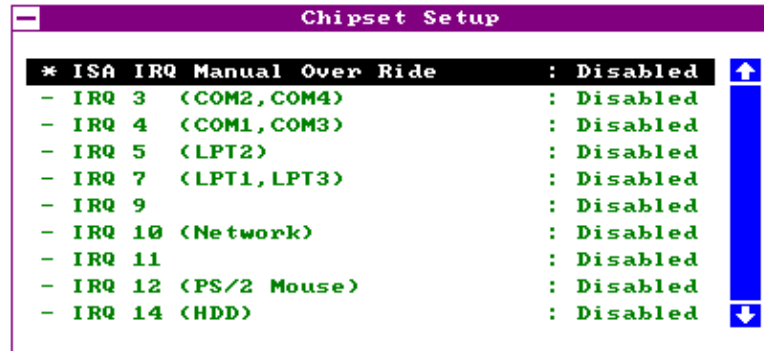
The Chipset Setup DRAM and SRAM parameters differ depending on the Chipset Setup Mode setting in the Advanced CMOS Setup. The following screens appear if you select the Chipset option from the Setup menu and if the Chipset Setup Mode parameter setting is `End-user`:



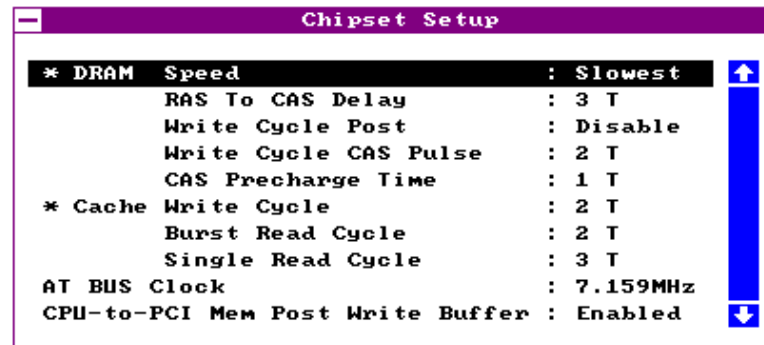
# AMI BIOS



# AMI BIOS



The screen below appears if your Chipset Setup Mode parameter setting is Engineer. Take note of the new parameters that replaced the Memory Speed (DRAM) and the Cache Speed (SRAM) parameters.



See screens 2,3 and 4 for the rest of the parameters.



*This manual describes only the parameters for End-user setting.*

# AMI BIOS

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## ***Memory Speed (DRAM)***

This parameter lets you set the DRAM speed. The supported DRAM speeds are 70 ns and 60 ns. The default setting is 70 ns.

## ***Cache Speed (SRAM)***

This parameter lets you set the SRAM cache speed. The supported DRAM speeds are 15 ns and 20 ns. The default setting is 20 ns.

## ***CPU-to-PCI Memory Post Write Buffer***

Enable this parameter to control the posting of the CPU-to-memory write data in the posting buffers. Disable the parameter to deactivate the buffering function.

## ***CPU-to-Memory Burst Write***

Enabling this parameter allows the translation of the host cycles into memory-burst cycles and controls the memory burst-write cycles. Disabling the function deactivates the memory burst writes.

## ***DRAM Type (Refresh)***

This parameter lets you select the DRAM type that you wish to support. The options are Normal and Low Power. The low-power DRAMs are special-type DRAMs. The default setting is Normal.

## **Motherboard IDE**

To take advantage of the IDE features of the motherboard, you need to set this parameter to Enabled. Disable the parameter to bypass the feature.

# AMI BIOS

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## **Primary Master PIO Mode**

If this enhanced IDE parameter is set to *Auto*, it automatically detects the PIO mode (mode 0, 1, 2, 3, 4) and sets the interface timing of the master drive connected to the primary IDE connector. If you know your HDD PIO mode, you can set this parameter manually. The default setting is *Auto*.

## **Primary Slave PIO Mode**

If this enhanced IDE parameter is set to *Auto*, it automatically detects the PIO mode (mode 0, 1, 2, 3, 4) and sets the interface timing of the slave drive connected to the primary IDE connector. If you know your HDD PIO mode, you can set this parameter manually. The default setting is *Auto*.

## **Secondary Master PIO Mode**

If this enhanced IDE parameter is set to *Auto*, it automatically detects the PIO mode (mode 0, 1, 2, 3, 4) and sets the interface timing of the master drive connected to the secondary IDE connector. If you know your HDD PIO mode, you can set this parameter manually. The default setting is *Auto*.

## **Secondary Slave PIO Mode**

If this enhanced IDE parameter is set to *Auto*, it automatically detects the PIO mode (mode 0, 1, 2, 3, 4) and sets the interface timing of the slave drive connected to the secondary IDE connector. If you know your HDD PIO mode, you can set this parameter manually. The default setting is *Auto*.

# AMI BIOS

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*For the PIO Mode parameters, we recommend that you select `Auto`. This automatically detects the correct PIO mode of your HDD and prevents configuration error caused by wrong data entry.*

## **PCI IDE Non-compliant Card**

This parameter allows you to select your PCI IDE card slot. The available selections are Slot 1, Slot 2, Slot 3 and Absent. Select `Absent` if you do not have any PCI IDE cards installed.

## **Primary PCI IDE Card Uses**

This parameter lets you assign an INT for the IDE device connected to your primary IDE connector. The settings are INT A, INT B, INT C, and INT D. If you do not have any PCI IDE cards installed in your system, this parameter becomes non-configurable.

## **Secondary PCI IDE Card Uses**

This parameter lets you assign an INT for the IDE device connected to your primary IDE connector. The settings are INT A, INT B, INT C, and INT D. If you do not have any PCI IDE cards installed in your system, this parameter becomes non-configurable.

# AMI BIOS

---

## **PCI IRQ Allocation**

The settings for this parameter are *Auto* and *Manual*. If you select *Auto*, it automatically sets the IRQs and INTs for the PCI devices installed in your system. If you want to configure your PCI device parameters, select *Manual*.

## **PCI Slot 1/2/3 INT Connect**

These parameters are configurable only if the PCI IRQ Allocation parameter is set to *Manual*. This allows you to set the INT(s) for the PCI devices. The selections are INT A, INT B, INT C and INT D. Make sure that you assign a different INT for each PCI device function.

### **IRQ CONNECT**

This parameter is configurable only if the PCI IRQ Allocation parameter is set to *Manual*. This allows you to set an IRQ for each PCI device installed in your system. The selections are IRQ 3~7, 9~12, 14, and 15. Make sure that you assign a different IRQ for each PCI device to avoid conflict.

### **IRQ TRIGGER**

This parameter lets you set when to trigger the IRQ, i.e., either at the Edge or Level of the signal.

## **ISA IRQ Manual Over Ride Parameters (IRQ 3, 4, 5, 7, 9, 10, 11, 12, 14 and 15)**

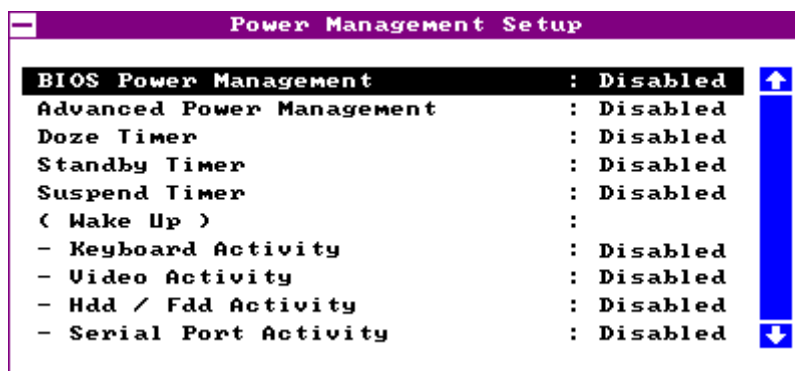
These lines allow you to assign the available IRQs to either ISA or PCI device.

# AMI BIOS

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## Power Management Setup

The screen below appears if you select Power Management from the main menu. To select, highlight Power Mgmt and press e or double-click on the Power Management icon.

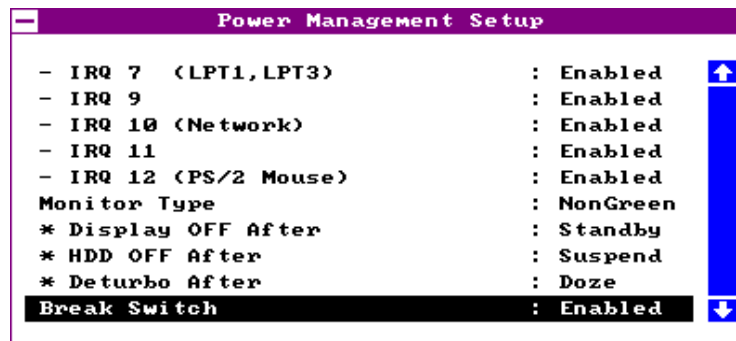
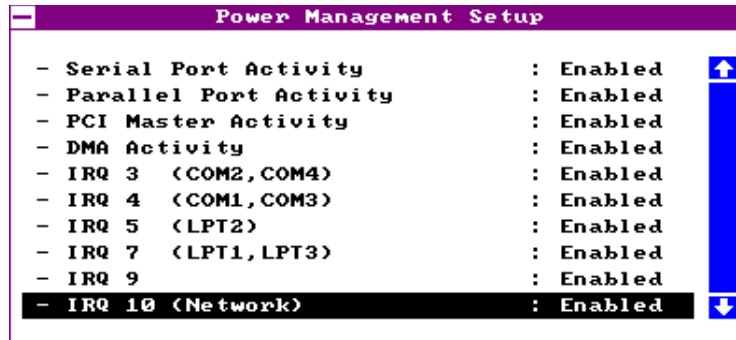
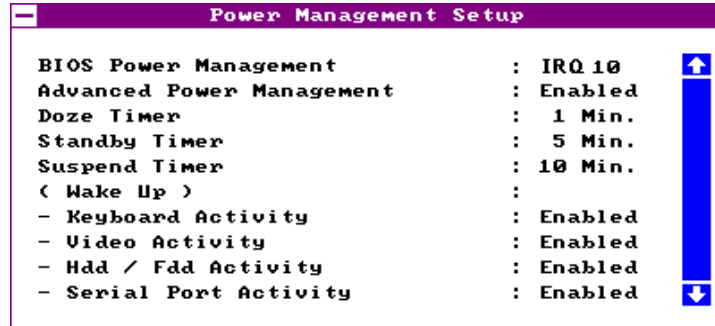


### ***BIOS Power Management Mode***

Enable this parameter to take advantage of the power-saving feature. To enable, simply select an IRQ setting. The selections are IRQ 10, IRQ 11, IRQ 12, IRQ 15 and Disabled. Disable the parameter to bypass the feature. The default setting for this parameter is Disabled.

When disabled, only the screen above appears on the monitor. When enabled, it allows you to configure the power-saving feature. The following screens appear if you enable the BIOS Power Management parameter. Use w or y to highlight the desired parameter. Press } to view the rest of the parameters.

# AMI BIOS





# AMI BIOS

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*If you are using OS/2, Windows NT, Novell or UNIX operating systems, you must disable the power management function.*

## **Advanced Power Management**

Set this parameter to `Enabled` to take full advantage of the power-saving feature. Disable the parameter to bypass the feature.

## **Doze Timer**

This function reduces the CPU clock to 8 MHz. Full power returns when an activity takes place. The available settings are 10 sec, 20 sec, 30 sec, 45 sec, 1 Min, 2 Min, 5 Min, 10 Min, 15 Min, 20 Min, 30 Min, 40 Min and Disabled.

## **Standby Timer**

This function holds the CPU clock and suspends the video signal. This activates the power-saving features on your monitor. Full power returns when an event is detected. The available settings are 10 sec, 20 sec, 30 sec, 45 sec, 1 Min, 2 Min, 5 Min, 10 Min, 15 Min, 20 Min, 30 Min, 40 Min and Disabled.

## **Suspend Timer**

The suspend timer stops the CPU internal clock and suspends the video signal. Full power returns when activity is detected. The settings are 10 sec, 20 sec, 30 sec, 45 sec, 1 Min, 2 Min, 5 Min, 10 Min, 15 Min, 20 Min, 30 Min, 40 Min and Disabled. This feature conserves the most energy.

# AMI BIOS

---

## **Wake-up Events**

Enabling these parameters allow your system to monitor the I/O activities. Any activity detected resets the power-management timers and resumes the system to normal mode.



*You must enable at least one IRQ activity. Otherwise, the system stays in suspend mode..*

## **Monitor Type**

This option lets you set the monitor type. The selections are Green and Non-Green.

## **Display Off After**

This parameter lets you set the display-off mode. The selections are Doze, Suspend, Standby and Disabled. Once the system enters the specified mode, the monitor screen turns blank. Monitors with green function allows you to save more power since the system shuts down the VH sync. once it enters the specified power-saving mode.

## **HDD Off After**

This option lets you specify which mode to "spin down" your hard disk. The disk returns to full speed once the system returns to normal mode. The settings are Doze, Suspend, Standby and Disabled.

# AMI BIOS

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## ***Deturbo After***

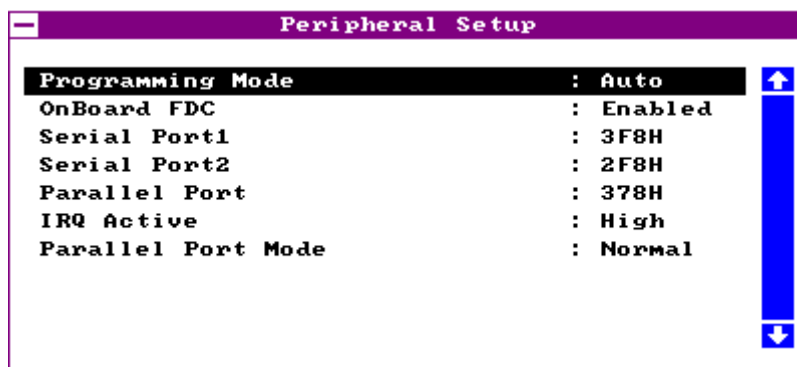
This function lets you specify the mode when to release the system from turbo mode. The settings are Doze, Suspend, Standby and Disabled.

## ***Break Switch***

This option lets you enable or disable the break switch. Enabling this parameter allows the system to enter suspend mode and return to normal mode by simply pressing the break switch. However, enabling the break switch disables your turbo functions. Disable the parameter to take advantage of the turbo functions.

## **Peripheral Setup**

This screen appears if you select Peripherals or double-click on the Peripheral Setup icon from the Setup menu. The Peripheral Setup screen allows you to set up your system peripherals.



# AMI BIOS

---

## ***Programming Mode***

The settings for this option are Auto and Manual. The Manual setting allows you to set up the screen items manually. The Auto setting sets up all the items automatically except for the Parallel Port Mode parameter.

## ***Onboard FDC***

Enabling this function allows you to use the onboard floppy disk controller (FDC). The default setting is Enabled.

## ***Serial Port 1***

This parameter allows you to set the base address of serial port 1. The available settings are 3F8H, 2F8H, 3E8H, 2E8H and Disabled. The default setting is 3F8H.

## ***Serial Port 2***

This parameter allows you to set the base address of serial port 2. The available settings are 3F8H, 2F8H, 3E8H, 2E8H and Disabled. The default setting is 2F8H.

## ***Parallel Port***

This parameter allows you to set the base address of the parallel port. The available settings are 3BCH, 378H, 278H and Disabled. The default setting is 378H.

# AMI BIOS

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## ***IRQ Active***

This option specifies if the parallel and serial port IRQs are active high or active low. The default setting is `High`.

## ***Parallel Port Mode***

This option lets you set the parallel port mode. The settings are `Normal`, `SPP`, `EPP & SPP`, `ECP` and `ECP & EPP`. The default setting is `Normal`.

## **Utility Setup**

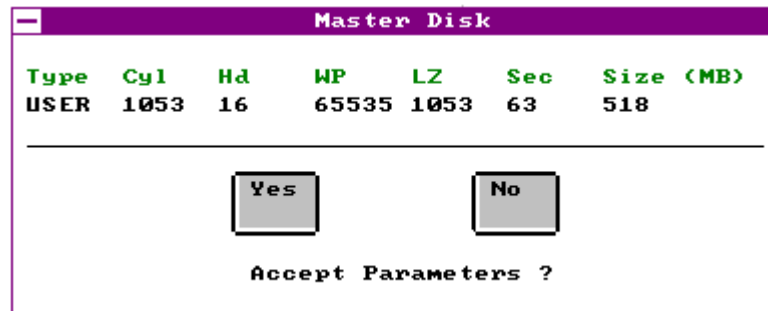
### ***Detect Master and Detect Slave***

These functions allow your system to automatically configure the hard disk. This screen appears if you select `Detect Master` or `Detect Slave` option.



After a few seconds, the screen below appears showing your disk parameters. Select `Yes` to accept the values.

# AMI BIOS



## Color Set

This pop-up window appears if you select Color Set from the Utility Setup menu.



Color Set lets you select the color of your windows background. The selections are LCD, Army, Pastel, and Sky.

# AMI BIOS

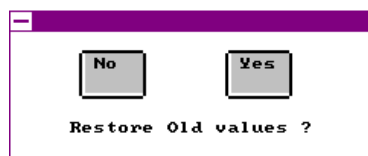
---

## Default Setup

Select this option to automatically set your system configuration parameters. To select, highlight **Default** and press **e**.

### *Original*

This option loads the values that you saved before shutting off the system. The following prompt appears if you select **Original** from the **Default Setup** menu. Choose **Yes** to load the original values.



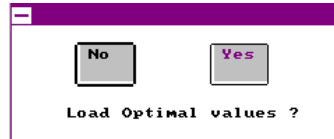
### *Optimal*

Choose this option and the BIOS configures the system using the best-case values to optimize system performance. However, these values may not be applicable to your system. If your system does not boot after choosing this setting, reconfigure it using the **Fail-safe** settings. Refer to the following section.

The screen below appears if you choose **Optimal** from the **Default Setup** menu. Select **Yes** to load the optimum values.

# AMI BIOS

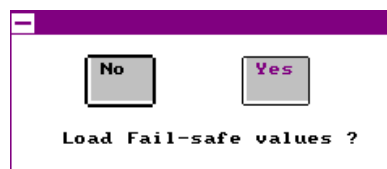
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## ***Fail-safe***

Choose this option and the BIOS automatically configures the system using the most stable settings. These settings are not necessarily the best settings for system performance, but safe and stable enough to guarantee you that your system will boot. This is useful if you are having problems with your current system configuration and need to determine the cause.

A prompt appears if you choose Fail-safe from the Default Setup menu. Select `Yes` to load the fail-safe values.





# AMI BIOS

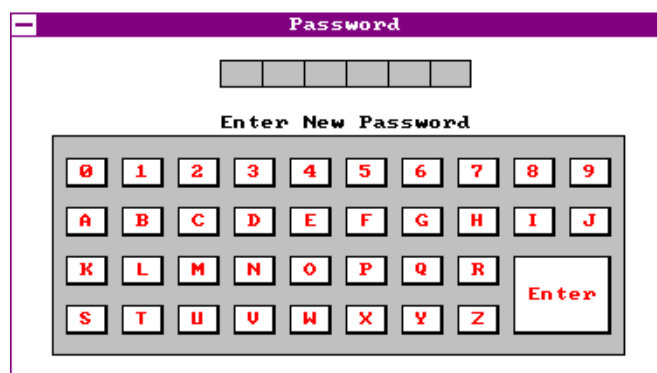
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## Security Setup

### *Password*

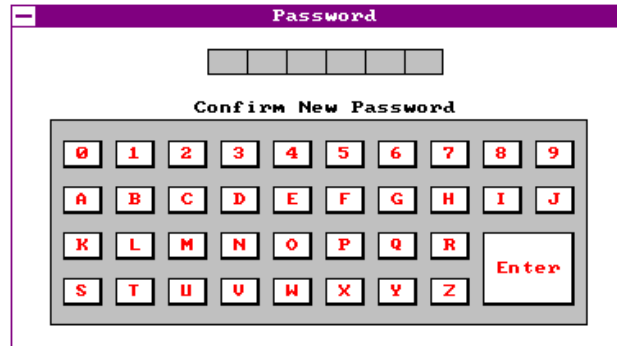
The system password prevents unauthorized use of your computer. If you enabled the password feature, it is impossible to boot the computer without entering the password.

To set a password, highlight Password or simply double-click the Password icon. The following screen appears:



Your password can consist of up to six characters. The password does not appear on the screen. WinBIOS prompts you to retype the password. The following screen appears.

# AMI BIOS



If you forget your password, you must clear the CMOS RAM and reconfigure the system.

To disable the password, press e when prompted for your password. Press e again when prompted to retype the password.



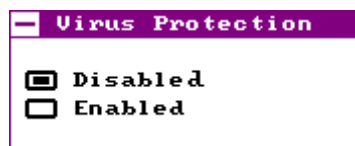
# AMI BIOS

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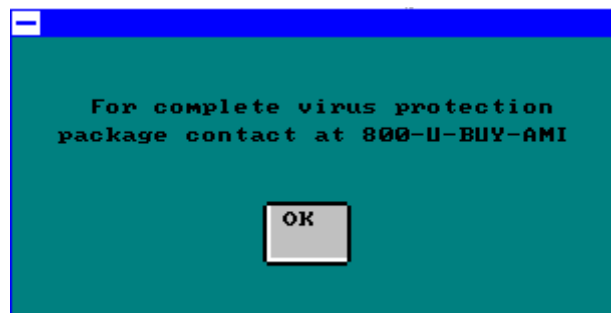
## ***Anti-virus***

Set this parameter to `Enabled` to protect the boot sector and partition table of your hard disk from virus intrusion. Set it to `Disabled` to bypass the feature.

A prompt appears when you select Anti-virus from the Security Setup menu:



Select `Enabled` and the screen below appears:

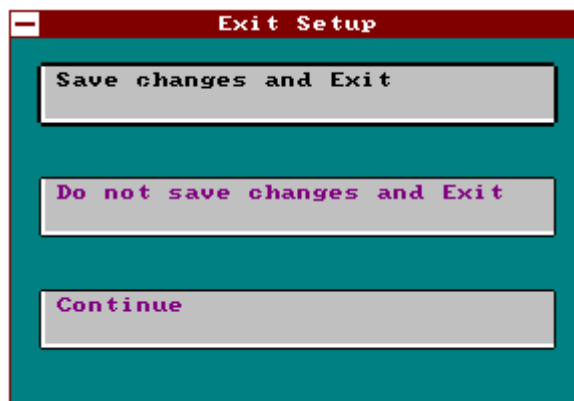


# AMI BIOS

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## Exit Setup

To exit Setup, you can either double-click on the Control menu box or simply press  $\wedge$ . A dialog box appears on the screen.



If you select Save Changes and Exit, BIOS automatically saves all CMOS values before leaving Setup. Select Do Not Save Changes and Exit to exit Setup without saving the CMOS values. Select Continue to return to Setup if you want to reconfigure your system.

# AMI BIOS

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## NCR SCSI BIOS and Drivers

The NCR 53C810 SCSI BIOS resides on the same flash memory chip as the system BIOS. To use the onboard NCR BIOS, you need to install an NCR 53C810 SCSI controller card in your system.

All SCSI devices that you install in your system require software drivers. The NCR SCSI BIOS directly supports SCSI hard disks under DOS, Windows and OS/2. It also uses DOS-format and SCO UNIX-format support floppy disk device drivers that come with the NCR 53C810 SCSI controller card. The DOS-format device drivers are for SCSI devices used with DOS, Windows NT, Novell NetWare and OS/2. The SCO UNIX-format device drivers are for SCSI devices used with SCO UNIX. These drivers offer higher performance than the direct BIOS support.

To use the device drivers, you must install them in your system hard disk drive and add them to your system configuration files. For detailed installation instructions, see the README files that come with the drivers.



*The system board also supports the AMI Flash Memory Writer Utility that allows you to upgrade the system BIOS. For more information on this utility, contact your local distributor.*

# AMI BIOS

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# Jumper Summary **A**

## CPU Type

### 5V CPU TYPE

	Intel 486SX SL-enhanced	Intel 486DX/DX2 SL-enhanced	Intel P24D	Intel P24T
JP11	2-3	2-3	1-2	1-2
JP12	1-2	1-2	1-2	1-2
JP13	Open	Open	Open	1-2
JP14	Open	Open	1-2	Open
JP15	Open	Open	1-2	Open
JP16	Open	Open	1-2	1-2
JP17	3-4	3-4	1-2, 3-4	3-4
JP18	2-3	1-2, 3-4	1-2, 3-4	1-2, 3-4
JP19	Open	Open	Open	1-2
JP20	Open	3-4	3-4	2-3
JP21	4-5	4-5	4-5	1-2
JP22	1-2	1-2	2-3	Open
JP23	2-3	2-3	2-3	2-3
JP40	1-3, 2-4	1-3, 2-4	1-3, 2-4	1-3, 2-4

	Intel/AMD 486SX	Intel/AMD 486DX/DX2	Cyrix 486DX/DX2
JP11	2-3	2-3	2-3
JP12	Open	Open	1-2
JP13	Open	Open	Open
JP14	Open	Open	Open
JP15	Open	Open	Open
JP16	Open	Open	2-3
JP17	Open	Open	2-3
JP18	2-3	1-2, 3-4	1-2, 3-4
JP19	Open	Open	2-3
JP20	Open	3-4	3-4
JP21	Open	Open	2-3
JP22	Open	Open	Open
JP23	Open	Open	1-2
JP40	1-3, 2-4	1-3, 2-4	1-3, 2-4

# Jumper Summary

## 3.45V CPU TYPE

	Intel 486DX4 (W/T)	Intel 486DX4 (W/B)	AMD 486DX2	AMD 486DX4 (V8T)	AMD 486DX4-S (SV8B)	AMD 486DX4-S (SV8T)
JP11	2-3	1-2	2-3	2-3	1-2	2-3
JP12	1-2	1-2	Open	Open	1-2	1-2
JP13	Open	Open	Open	Open	Open	Open
JP14	Open	1-2	2-3	Open	1-2	Open
JP15	Open	1-2	Open	Open	1-2	Open
JP16	Open	1-2	Open	Open	1-2	Open
JP17	3-4	1-2, 3-4	Open	Open	1-2, 3-4	3-4
JP18	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4
JP19	Open	Open	Open	Open	Open	Open
JP20	3-4	3-4	3-4	3-4	3-4	3-4
JP21	4-5	4-5	Open	Open	4-5	4-5
JP22	1-2	2-3	Open	Open	2-3	1-2
JP23	2-3	2-3	Open	Open	2-3	2-3
JP40	3-5, 4-6	3-5, 4-6	3-5, 4-6	3-5, 4-6	3-5, 4-6	3-5, 4-6

	Cyrix 486DX2	Cyrix 486DX4 (iDX4 P/O)	Cyrix 486DX4 (M7 P/O)	Cyrix 5X86	TI 486DX2
JP11	2-3	2-3	2-3	2-3	2-3
JP12	1-2	1-2	1-2	1-2	1-2
JP13	Open	Open	Open	Open	Open
JP14	Open	1-2	Open	1-2	Open
JP15	Open	1-2	Open	1-2	Open
JP16	2-3	1-2	2-3	1-2	2-3
JP17	2-3	1-2, 3-4	2-3	1-2, 3-4	2-3
JP18	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4
JP19	2-3	Open	2-3	Open	2-3
JP20	3-4	3-4	3-4	3-4	3-4
JP21	2-3	4-5	2-3	4-5	2-3
JP22	Open	2-3	Open	2-3	Open
JP23	1-2	2-3	1-2	2-3	1-2
JP40	3-5, 4-6	3-5, 4-6	3-5, 4-6	3-5, 4-6	3-5, 4-6



# Jumper Summary

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## Oscillator Frequency

	25 MHz	33 MHz	40 MHz
<b>JP30</b>	1-2	1-2	1-2
<b>JP31</b>	2-3	1-2	1-2
<b>JP32</b>	2-3	1-2	2-3

## Flash ROM Type

Type	JP4
12V Flash ROM	1-2
5V EEPROM or Flash ROM	2-3

## ECP DMA Channel

DMA Channel	JP2	JP3
DMA 1	2-3	2-3
DMA 3	1-2	1-2

## FDC and Super I/O Chip

Function	JP1
Enabled	1-2
Disabled	2-3

# Jumper Summary

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## Cache Type and Size

Cache Size	JP24	JP25	JP26	JP27	JP29
32 KB x 4 = 128 KB	1-2	1-2	2-3	1-2	1-2, 3-4
32 KB x 8 = 256 KB	1-2	2-3	2-3	2-3	2-3, 4-5
64 KB x 4 = 256 KB	1-2	2-3	1-2	1-2	1-2, 3-4
64 KB x 8 = 512 KB	2-3	2-3	2-3	2-3	2-3, 4-5
128 KB x 4 = 512 KB	2-3	2-3	2-3	1-2	1-2, 3-4

## CMOS

Function	JP37
Normal	1-2
Clear CMOS	2-3

## Onboard Connectors

Connector	Function
JP6	HDD LED connector
CN5	Multifunction connector
JP35	External battery connector
JP43	2-pin fan connector
JP46	4-pin fan connector
JP45	Power connector

## **SiS Drivers B**

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This appendix tells how to install the SiS supported drivers using the installation utility.

### ***DOS, Windows, WFW (Workgroup) and NetWare***

To install DOS, Windows, WFW (Workgroup) and NetWare drivers, simply run INSTALL.EXE.

### ***Windows NT***

1. From the Windows NT Setup Options menu, select Add/Remove SCSI Adapters.
2. Select the Add button in the SCSI Adapter Setup.
3. From the Adapter: list dialog box, select Others (Requires a disk from a hardware manufacturer).
4. The Insert Diskette dialog box appears. Insert the SiS driver into drive A and type A:WINNT.
5. The screen displays the Select OEM Option dialog box. Select SiS 32-bit Local-bus IDE Adapter and click on OK.
6. The Select SCSI Adapter Option dialog box appears. Click on Install. This installs the drivers to the hard disk.
7. Installation is successful if the SCSI Adpater Setup dialog box reappears and SiS 32-bit Local-bus IDE Adapter appears on the list of installed drivers.
8. Reboot the system.

# SiS Drivers

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## OS/2

1. From the OS/2 desktop, open the OS/2 system.
2. Open System Setup.
3. Select `Device Driver Install`.
4. Insert the driver diskette into drive A or B.
5. Change the source directory to `A:\OS2` or `B:\OS2`.
6. Select `Install`.
7. Click on `OK`.

## SCO UNIX

To install the SCO UNIX drivers, refer to the `README.SCO` file in the SCO directory.

### Installing SCO UNIX 3.2.X

1. Install SCO UNIX 3.2.4.X or SCO Open Desktop 2.X using the default SCO UNIX IDE drivers.
2. Boot your SCO UNIX system and bring it into single-user mode.
3. Copy the `SiS496.TAR` file to your `/TMP` directory using the `doscp` command. For example, if you are using drive A, type:

```
DOSCP A:SiS496.TAR/TMP
```

4. Prepare a SCO UNIX formatted diskette.
5. From the root directory, type the following commands:

```
MKDIR/SIS
```

## SiS Drivers

---

```
CD/SOS
```

```
TAR XVF/TMP/SIS486.TAR
```

6. Insert the diskette into the drive and enter the following command:

```
TAR CVF/DEV/ (diskette drive 0 device name)
```

Your diskette drive 0 device name may be:

- RFD096DS15            5.25 DSHD
- RFD0135DS18        3.5 DSHD
- RFD048DS9           5.25 DSHD
- RFD0135DS9         3.5 DSHD

7. Start the installation by typing `CUSTOM`.
8. Follow the screen instructions to install the SiS IDE driver. A new kernel replaces the original kernel and the original kernel is renamed as `UNIX.OLD`.
9. Reboot your system for the new kernel to take effect. The new kernel initializes the chip to the new timing setting.