AP43

User's Guide

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FCC Statement

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

Purpose and Scope

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

Organization

This manual consists of three chapters and two apendices:

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

Conventions

The following conventions are used in this manual:

`Text entered by user, default settings`	Represent text input by the user, default settings and recommended selections
`message displayed`	Denotes actual messages that appear on screen
a, e, s, etc	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

Chapter

Features 1

The AP43 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).

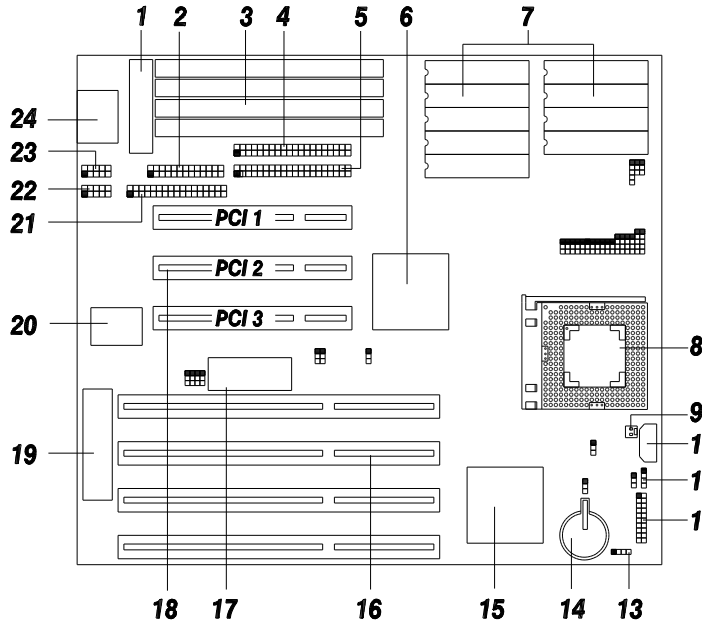
Features

Specifications

Microprocessor	***5V CPUs*** Intel SL-enhanced Intel SX/DX/DX2 AMD DX/DX2 Cyrix DX/DX2 Intel P24D Intel P24T
	3.45V CPUs Intel DX4 AMD DX2 AMD DX4/DX4-S/Am5x86 Cyrix DX2/DX4/5X86 TI DX2/DX4
Maximum Memory	128 MB
SIMM Sockets	Four 72-pin, 32-bit
ASIC Chips	SiS85C496 SiS85C497
Bus Architecture	ISA, PCI
Expansion Slots	Four ISA slots, Three PCI slots
Ports	One parallel port (ECP/EPP) Two serial ports (UART 16C550) Two-channel PCI mode 4 IDE One floppy-disk connector (1.2/1.44/2.88 MB)
Onboard Battery	CR2032 3.0V lithium battery
RTC	146818 built-in 85C497
Secondary Cache	128 KB/256 KB/512 KB
BIOS	AMI Plug-and-Play WinBIOS
Board Size	220 mm x 250 mm (baby-AT)

Board Layout

1. *Power connector*
2. *Printer connector*
3. *SIMM sockets*
4. *IDE1 connector*
5. *IDE2 connector*
6. *SiS 85C496 ASIC*
7. *Second-level cache*
8. *CPU socket*
9. *Two-pin fan connector*
10. *Four-pin fan connector*
11. *HDD LED connector*
12. *Multifunction connector*
13. *External battery connector*
14. *Battery*
15. *SiS 85C497 ASIC*
16. *ISA slots*
17. *AMI BIOS*
18. *PCI slots*
19. *Keyboard controller*
20. *Super I/O chip*
21. *FDC connector*
22. *COM2 connector*
23. *COM1 connector*
24. *AT-keyboard connector*



Features

System Board Parts

Microprocessor

The AP43 system board supports the Intel SL-enhanced, Intel 486SX/DX/DX2/DX4, AMD 486DX/DX2/DX4/DX4-S/Am5x86, Cyrix Cx486DX/DX2/DX4/5X86 and TI 486DX2/DX4 series microprocessors. Chapter 2 tells how to upgrade the processor.

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.

Features

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.

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 hard disks with more than 528-MB capacity. This feature offers users increased data storage capacity.

Features

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)[1]. 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. See Chapter 2 for directions on how to install a keyboard.

SRAM

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

Power Management

The AP43 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.

[1] SPP: Standard Parallel Port
EPP: Enhanced Parallel Port (IEEE 1284 compliant)
ECP: Extended Capabilities Port (IEEE 1284 compliant)

Chapter

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 board inside a 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 486DX 486DX2 P24D P24T	25/33 33 50/66 50/66 63/83
AMD series	486DX 486DX2	33/40 50/66/80
Cyrix	486DX 486DX2	33/40 50/66

Hardware Setup

3.45 V CPU Options

3.45V CPU Type		Speed (MHz)
Intel	486DX4	75/100
AMD series	486DX2 486DX4 Am5x86	66/80 100/120 133
Cyrix series	486DX2 486DX4 5X86	V50/V66/V80 100 100/120
TI series	486DX2 486DX4	66/80 100

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.

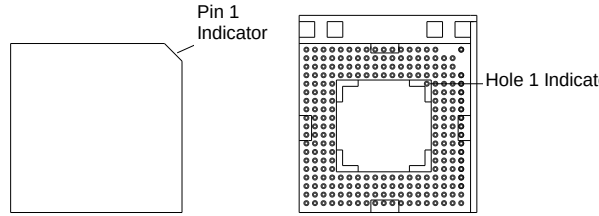
Installing a Microprocessor

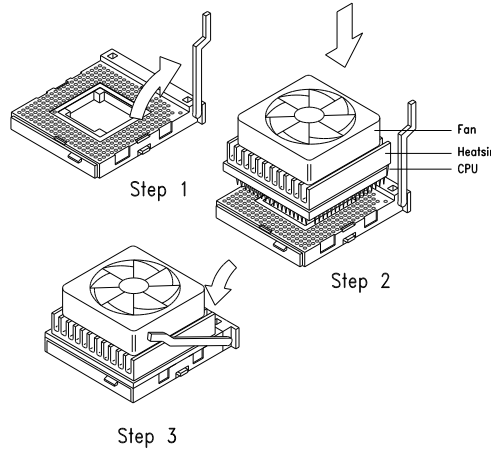
The motherboard has a zero-insertion force microprocessor socket that allows you to install a CPU without using any tools.

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 socket indicates pin 1.





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.

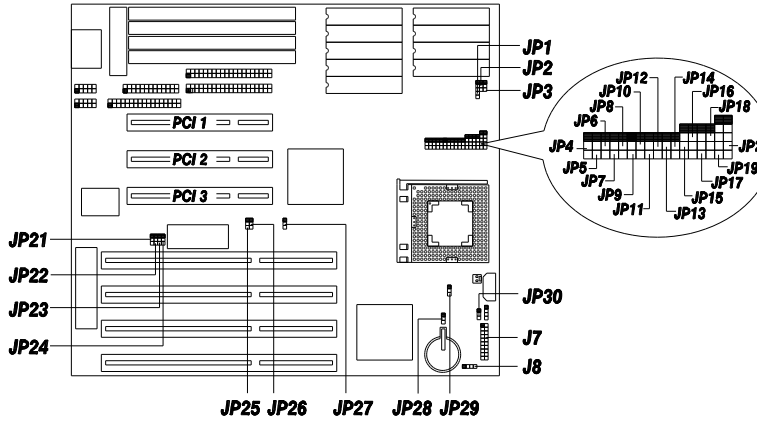
Upgrading the Microprocessor

Follow these steps to upgrade the CPU:

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

Jumper Settings

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

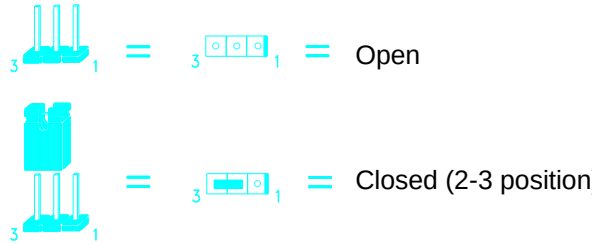


Hardware Setup

Set a jumper switch as follows:

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

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.

Changing the CPU Type

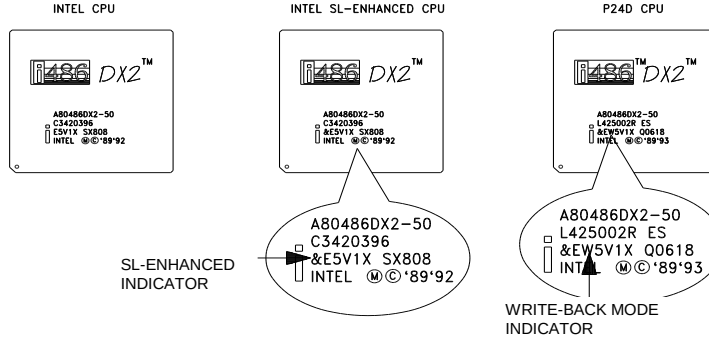
You must set jumpers **JP6** to **JP10**, **JP12***, **JP13** to **JP20** and **JP29** according to the CPU type. The board supports both 5V and 3.45V CPUs. Make sure that you know your CPU type and its operating voltage before you begin. Improper setting of jumpers may result in system failure.

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.

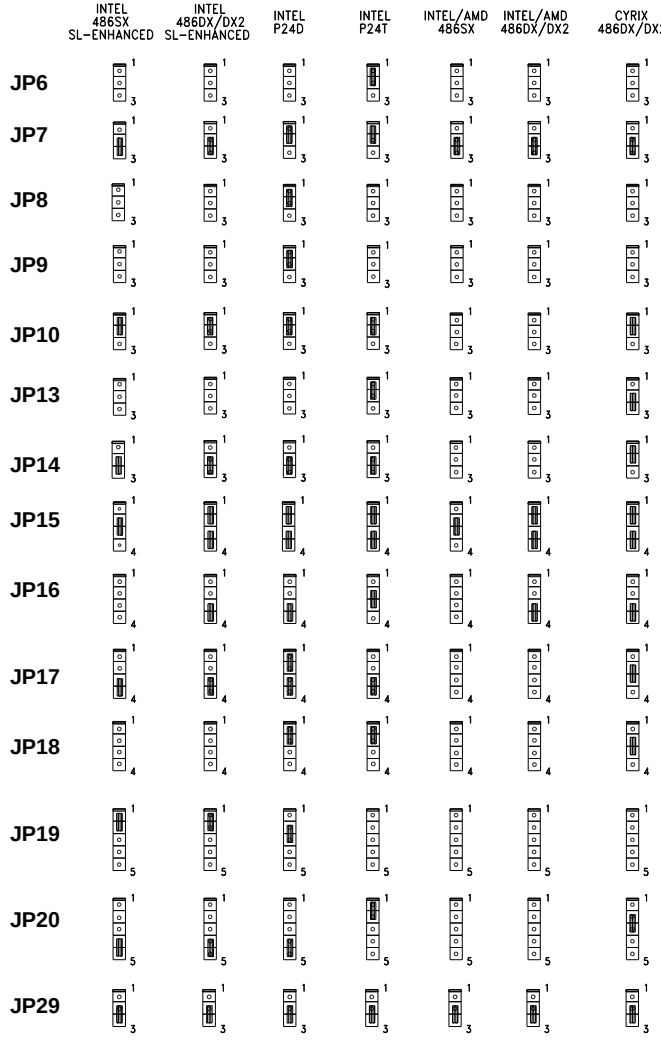
The P24D processor looks very similar to an Intel SL-enhanced CPU except for the letter “W” in the third row on the lower label of the CPU. The letter “W” indicates that the CPU supports the write-back mode.

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



* Set JP12 only if the CPU in use is a 3.45V CPU. Otherwise, the jumper remains open.

5V CPU TYPE JUMPER SETTINGS

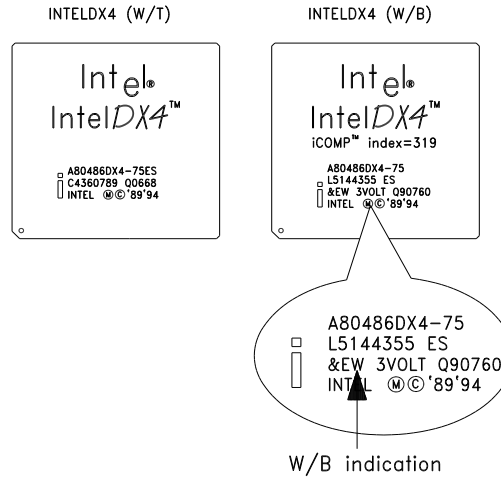


3.45V CPU Type

INTELDX4 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.

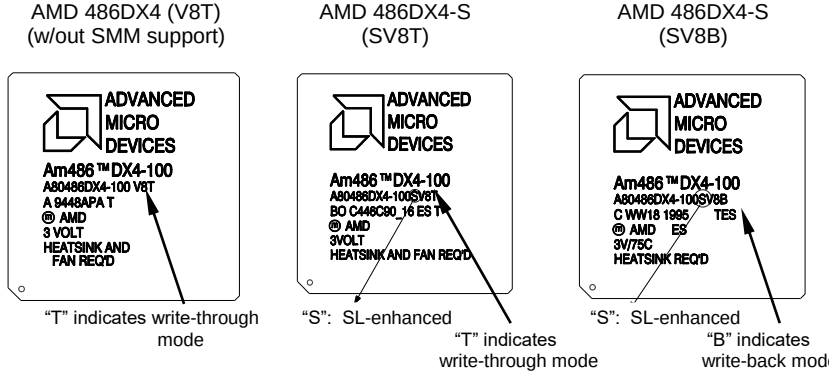


Hardware Setup

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.

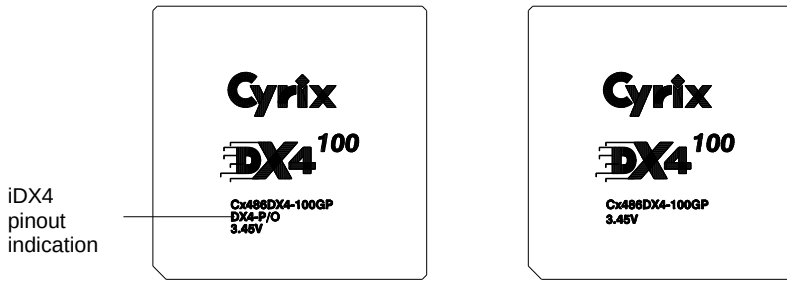
To determine your AMD CPU type, check the second row of your CPU label. An SL-enhanced AMD DX4 CPU has a letter "S" following the "AMD DX4-100" label. The last letter (i.e., either "B" or "T") indicates the CPU cache mode supported. See the following figure.



CYRIX DX4 CPUS

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

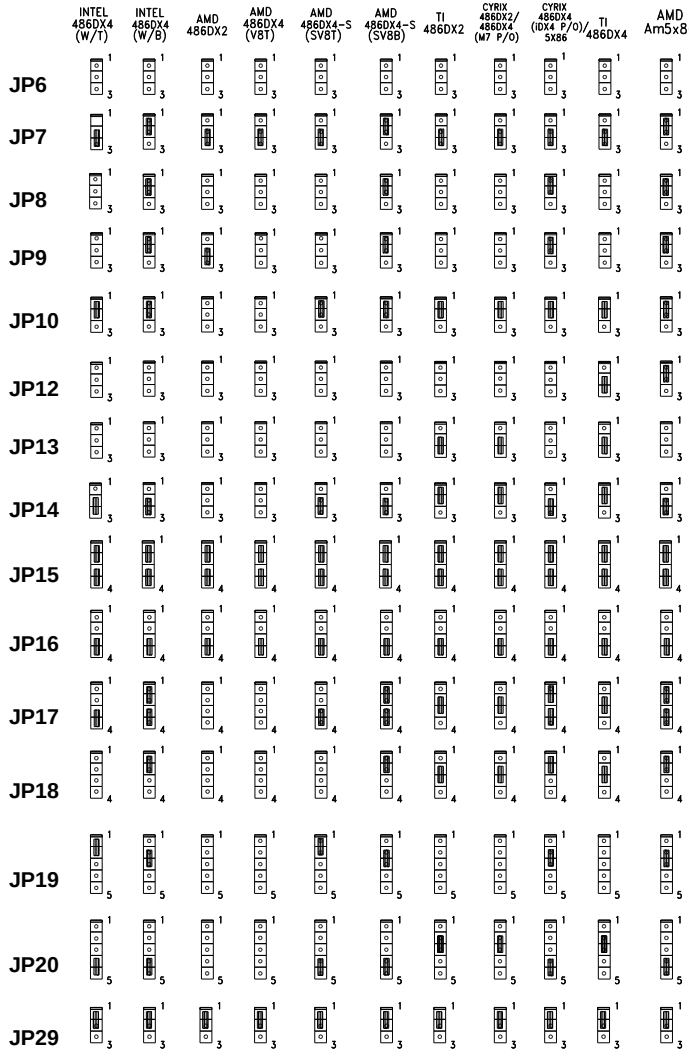
To determine the Cyrix DX4 CPU pinout, check the CPU label. A Cyrix DX4 with iDX4 pinout has a “DX4 P/O” indication on the second row of the lower CPU label. A Cyrix DX4 with M7 pinout does not have this indication and the lower CPU label has only two rows. See the figure below.



iDX4 Pinout M7 Pinout

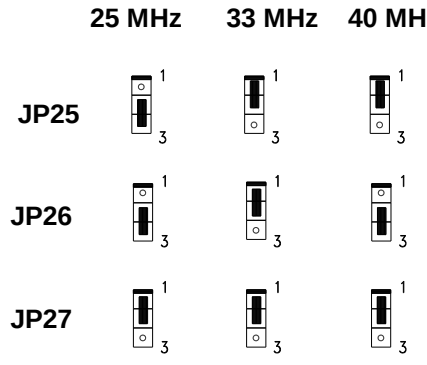
Hardware Setup

3.45V CPU TYPE JUMPER SETTINGS



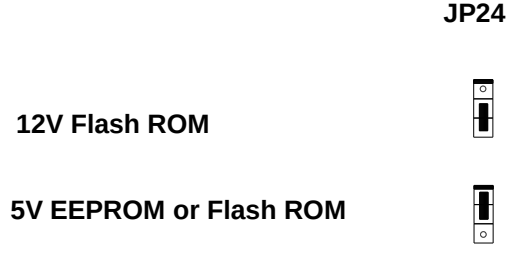
Setting the Oscillator Frequency

You must reset jumpers **JP25**, **JP26** and **JP27** if you change the oscillator frequency.



Setting the Flash ROM Type

Set jumper **JP24** 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

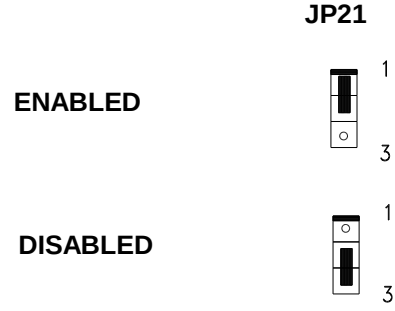
Selecting the ECP DMA Channel

The jumpers **JP22** and **JP23** 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 **JP21** allows you to enable or disable the floppy disk controller (FDC) and the super I/O chip. The onboard I/O chip supports two serial ports, one parallel port and FDD functions. Set the jumper to 2-3 if you want to use a separate I/O card.



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 (U9)	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

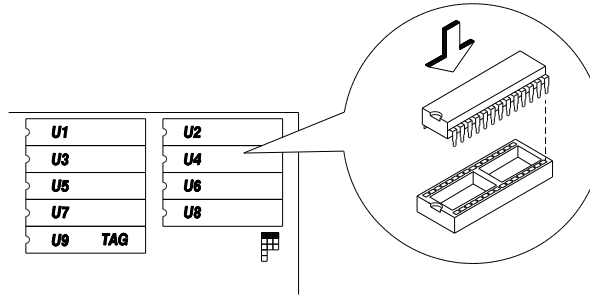
Follow these steps to install SRAMs:

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.



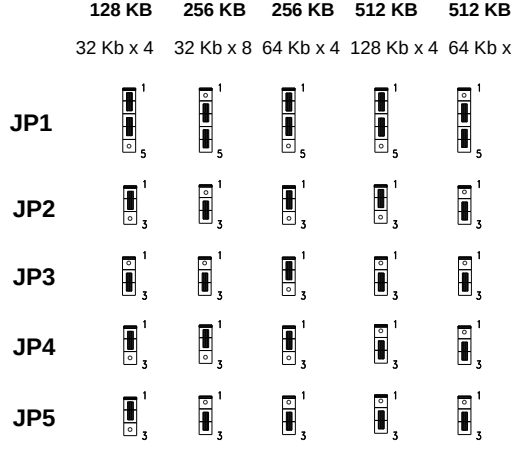
Always install SRAMs beginning with Bank 0.

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 **JP1, JP2, JP3, JP4** and **JP5** accordingly. See the following figure.



Clearing the CMOS

The 3-pin jumper **JP28** clears 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 JP28 for a few seconds. Reset the jumper back to the normal setting by closing pins 1-2 with a jumper cap. Enter Setup to specify a new password.

JP28

NORMAL 

CLEAR CMOS 

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.

SIMM Type	Capacity
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^{o} angle into a socket with the component side facing down.

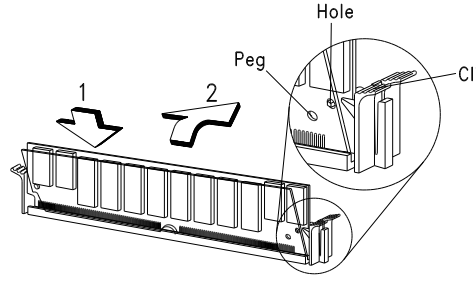


Be careful when inserting or removing SIMMs. Forcing a SIMM in or out of a socket can damage the socket or the SIMM (or both).

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.

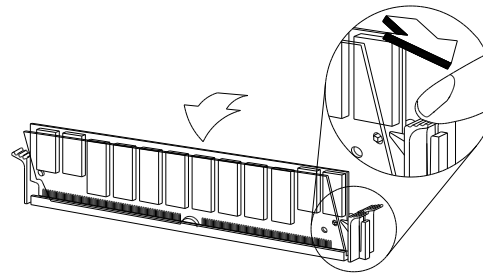


The SIMM should be at a 90^{o} angle when installed.



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^{o} angle.
3. Gently pull the SIMM out of the socket.

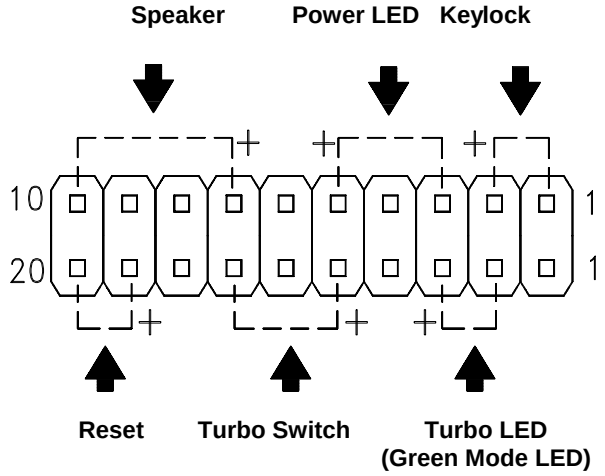


Hardware Setup

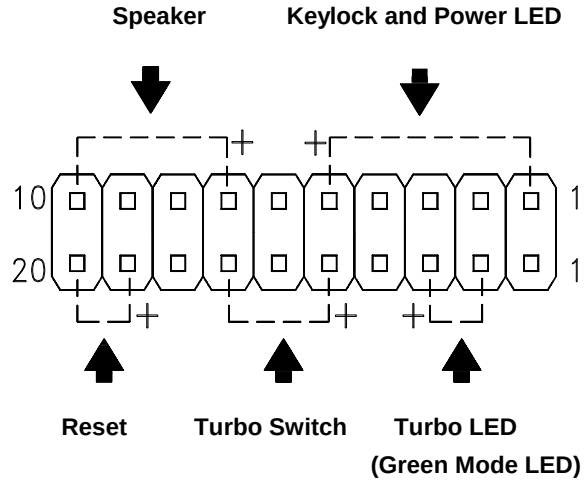
Connectors

Multifunction Connector

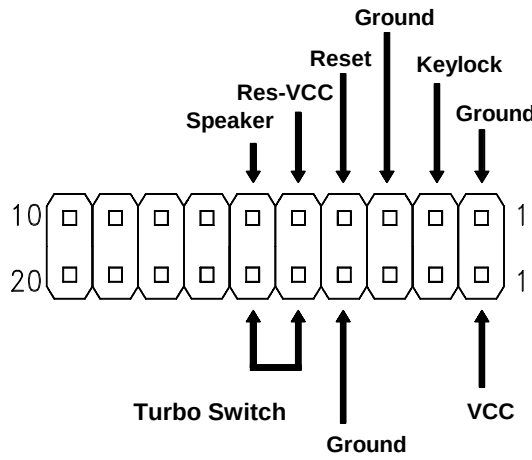
This 20-pin connector is marked **J7** on the system board. It supports a number of system functions: LED, turbo, reset, keylock, and speaker. Attach the front panel connectors to the corresponding pins as in the illustration below.



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



Other housings may have a 12-pin connector. If your housing has this type of connector, plug it into J7 as shown in the following figure. Make sure that the red wire of the connector connects to pin 11.



Hardware Setup

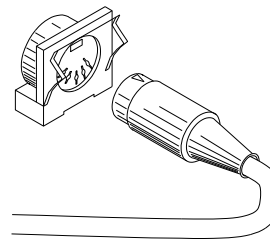
Turbo LED/Green Mode LED

You can use the J7 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 JP30 (i.e, the break switch connector). The green mode LED is always on regardless of the system mode.

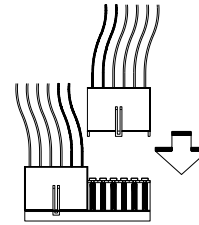
Keyboard Connector

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



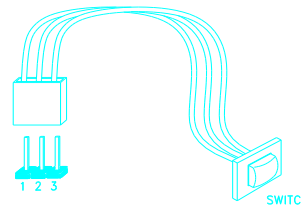
Power Connector

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 **JP30** 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.



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

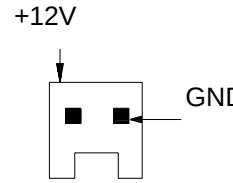
Hardware Setup

Fan Power Connectors

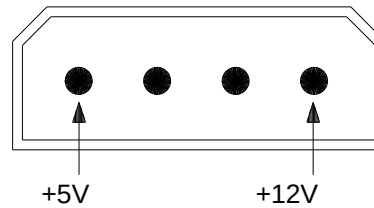
The board comes with one 2-pin and one 4-pin fan power connector.

The 2-pin fan power connector is marked **CN3** 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 **CN4** on the system board.



CN3

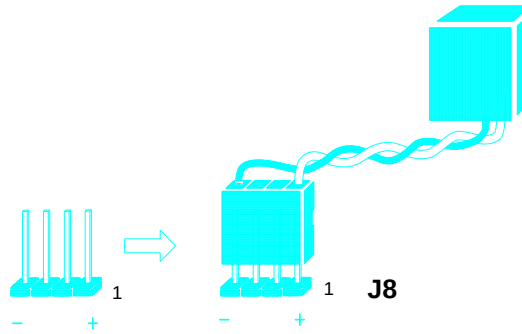


CN4

External Battery Connector

The 4-pin external battery connector is marked **J8** 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 J8. Make sure that the positive end of the connector corresponds to pin 1. See the illustration below.



Hardware Setup

Installation

The baby-AT size of the AP43 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

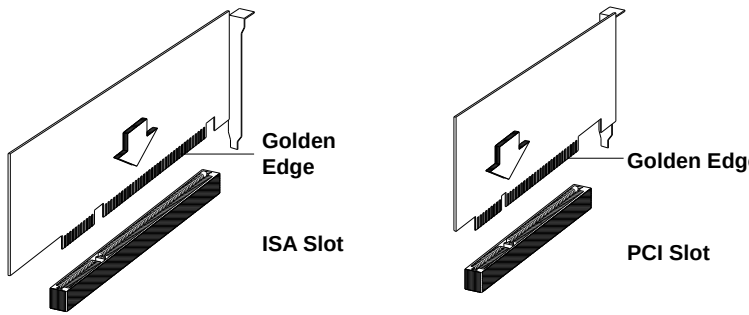
1. Open the system housing.
2. Use at least two screws that come with the housing to secure the board.
3. Attach the power supply cables to the power connector and the front panel connectors to the multifunction connector. See the section *Connectors*.
4. Install any additional components that you have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

Installing Expansion Boards

Install any expansion boards after you have secured the system board in the housing.

Follow these steps to install an expansion board.

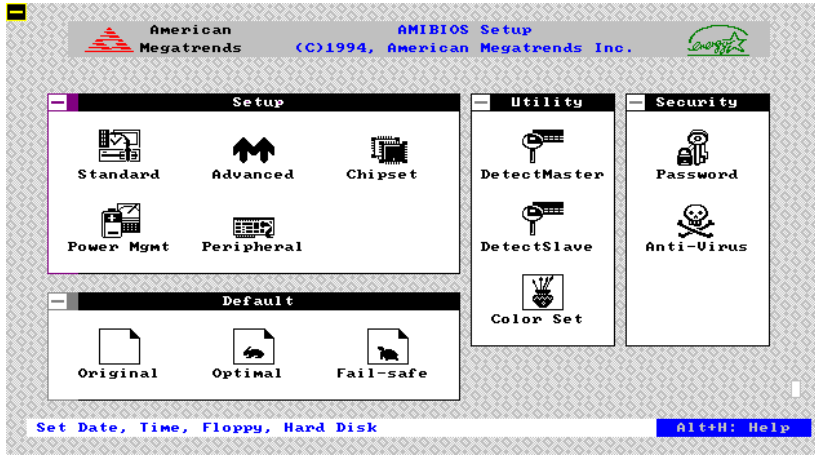
1. Observe the ESD precautions before removing the expansion card from its protective packaging.
2. Remove the bracket opposite the slot that you want to use. Save the cover for future use. Save the screw to secure the expansion board.
3. Remove the board from its protective packaging.
4. Gently insert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



5. 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.

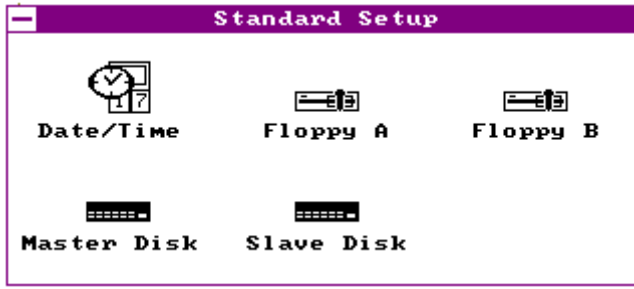
To select among the options, you can either use the arrow keys to move the highlight bar or simply click on the icon of the desired option.

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

AMI BIOS

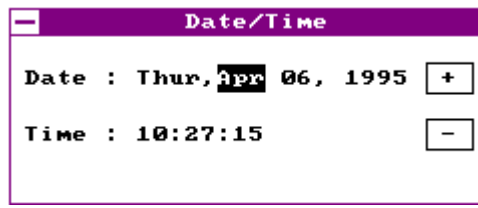
Standard CMOS Setup

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

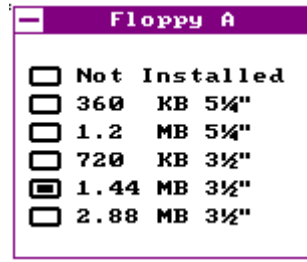
To set the date and time, highlight `Date/Time` and press e or double-click on the Date/Time icon. The following screen appears:



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.

Floppy Drives A and B

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



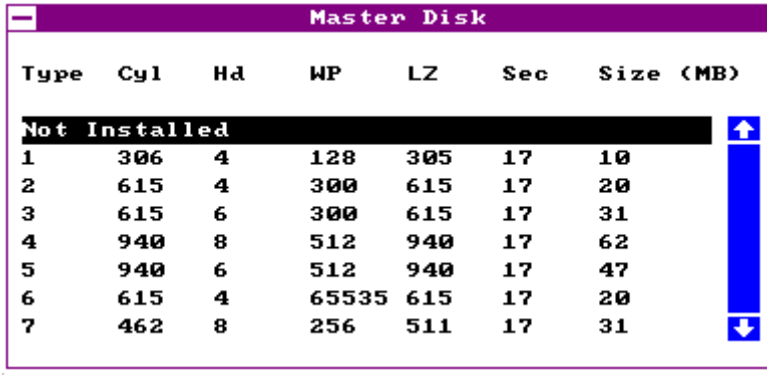
After selecting the proper setting, press e or double-click the Control menu box to close the window.

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

AMI BIOS

Hard Disk Drives

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



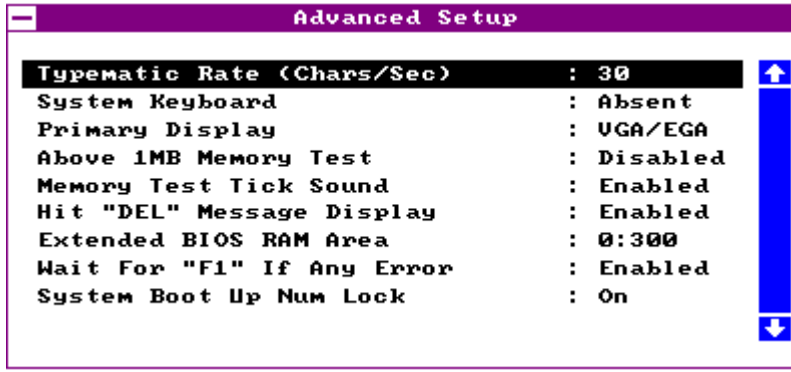
Press } to move to the next page. Use W or Y to highlight the selected parameter. If you cannot find your hard disk drive type on the list, select `User` and enter the disk parameters. You can also select Utility Setup. This automatically configures your hard disk. Refer to the section *Utility Setup*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

Select `ESDI` or `SCSI`, depending the device installed.

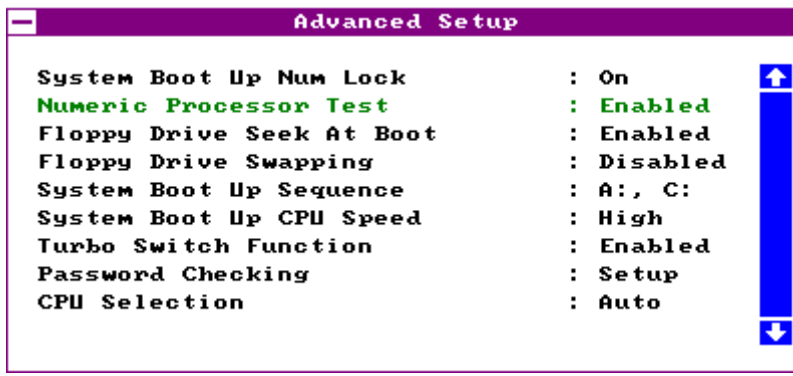
If you have two hard disks installed, select `Slave Disk` and follow the same procedure to configure the second hard disk.

Advanced CMOS Setup

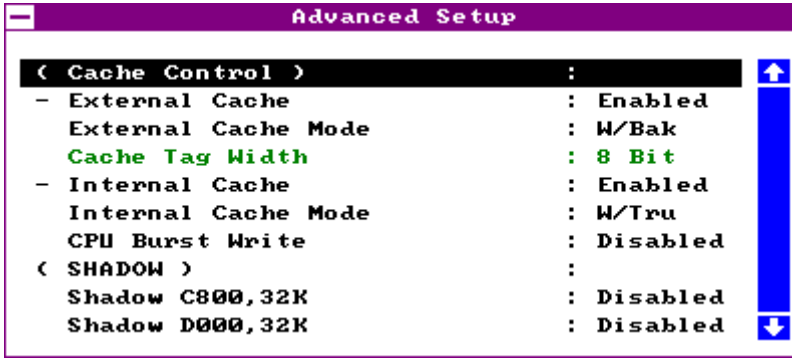
The window below appears if you select Advanced from the main menu.

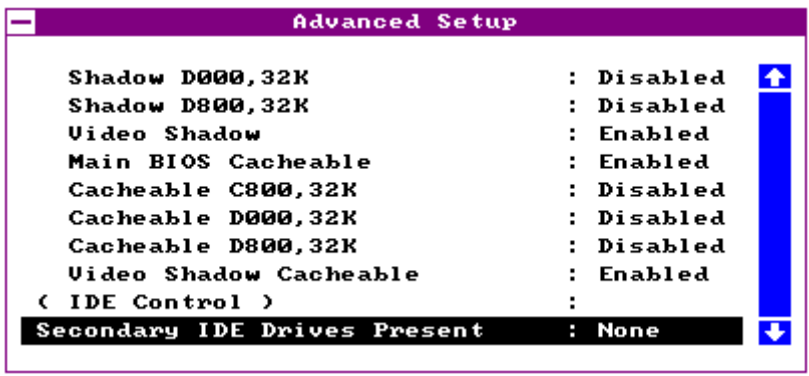


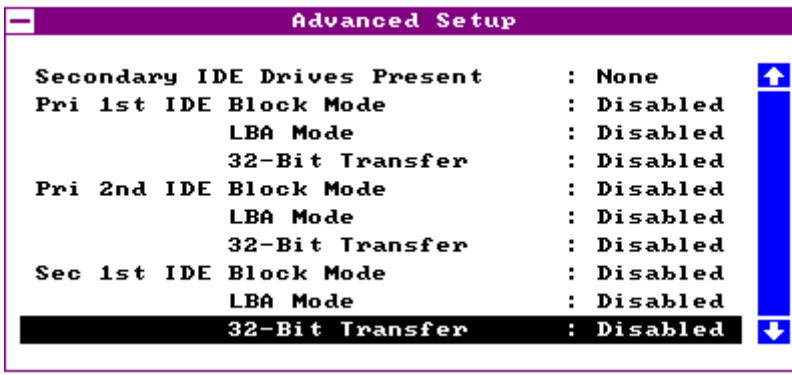
The screen above does not show all the parameters of the Advanced Configuration menu. Use w or y to highlight the desired parameter. Press } to view the rest of the parameters. The following screens appear:

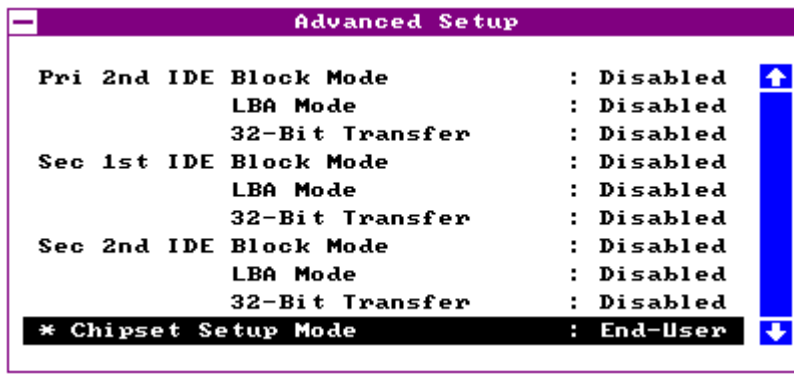


AMI BIOS


Advanced Setup
(Cache Control) :
- External Cache : Enabled
External Cache Mode : W/Bak
Cache Tag Width : 8 Bit
- Internal Cache : Enabled
Internal Cache Mode : W/Tru
CPU Burst Write : Disabled
(SHADOW) :
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
(IDE Control) :
Secondary IDE Drives Present : None


Advanced Setup
Secondary IDE Drives Present : None
Pri 1st IDE Block Mode : Disabled
LBA Mode : Disabled
32-Bit Transfer : Disabled
Pri 2nd IDE Block Mode : Disabled
LBA Mode : Disabled
32-Bit Transfer : Disabled
Sec 1st IDE Block Mode : Disabled
LBA Mode : Disabled
32-Bit Transfer : Disabled



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.

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`.

AMI BIOS

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.

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

When enabled, the BIOS waits for the end user to press l before continuing. If 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.

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:`.

AMI BIOS

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 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`.

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.

Internal Cache Mode

The internal cache is normally set to `Write-through`. However, if you are using a Cyrix DX4 or an Intel P24D CPU, you must change the setting to `Write-back` for better performance.

CPU Burst Write

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

AMI BIOS

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.

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.

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.

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.

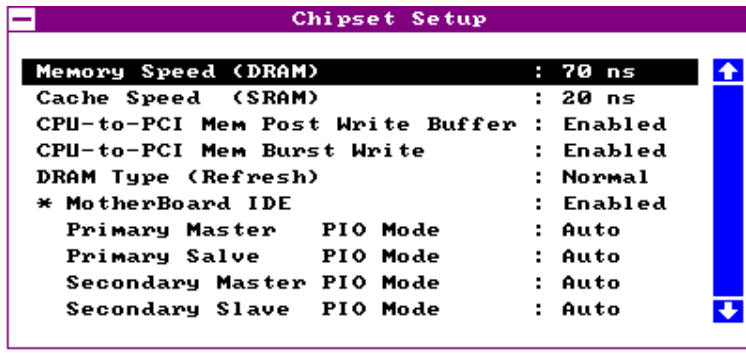
Chipset Setup Mode

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.

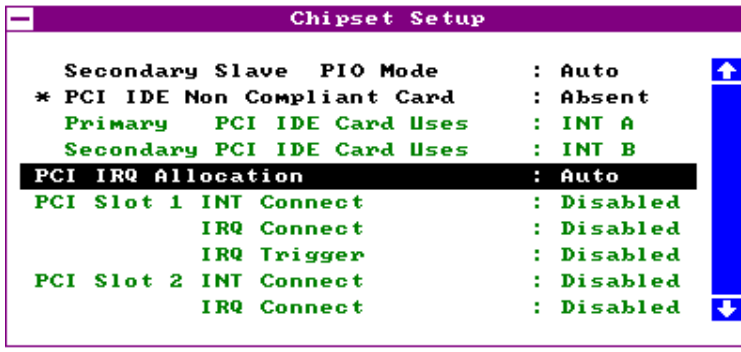
Chipset Features Setup

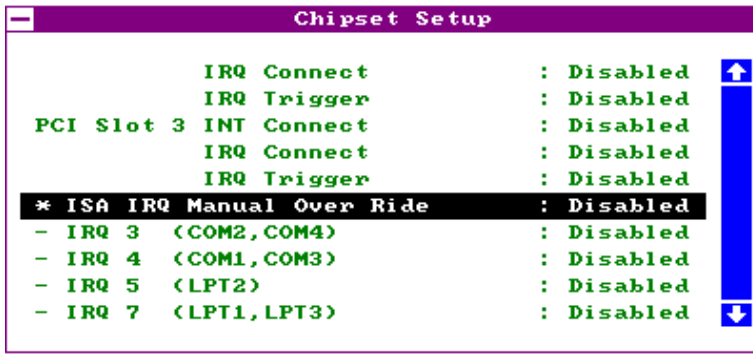
The Chipset Features Setup controls the board's chipset settings. The controls for this menu are the same as for the previous screen.

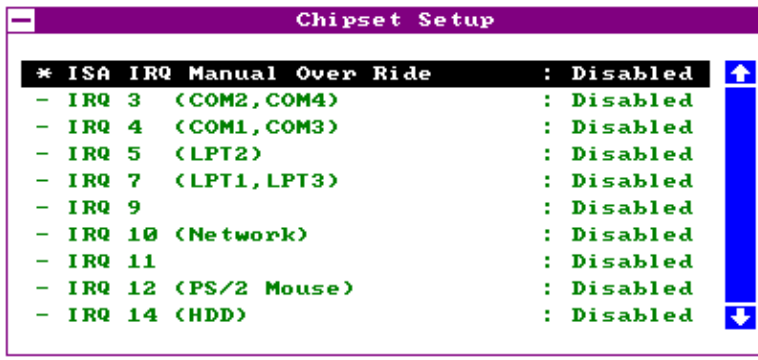
The Chipset Setup DRAM and SRAM parameters differ depending on the Chipset Setup Mode setting in the Advanced CMOS Setup. The following screens appear if you select the Chipset option from the Setup menu and if the Chipset Setup Mode parameter setting is `End-user`:



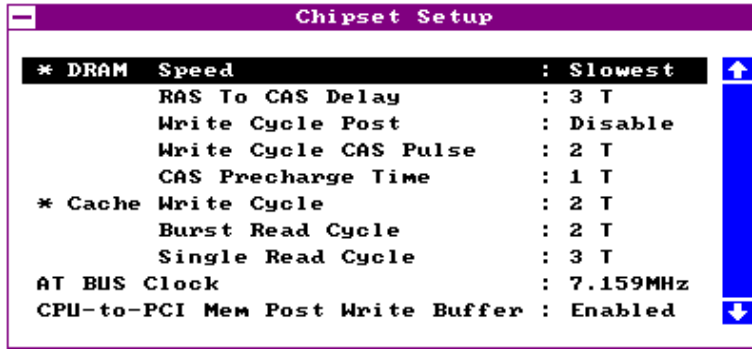
AMI BIOS


Chipset Setup
Secondary Slave PIO Mode : Auto
* PCI IDE Non Compliant Card : Absent
Primary PCI IDE Card Uses : INT A
Secondary PCI IDE Card Uses : INT B
PCI IRQ Allocation : Auto
PCI Slot 1 INT Connect : Disabled
IRQ Connect : Disabled
IRQ Trigger : Disabled
PCI Slot 2 INT Connect : Disabled
IRQ Connect : Disabled


Chipset Setup
IRQ Connect : Disabled
IRQ Trigger : Disabled
PCI Slot 3 INT Connect : Disabled
IRQ Connect : Disabled
IRQ Trigger : Disabled
* ISA IRQ Manual Over Ride : Disabled
- IRQ 3 (COM2,COM4) : Disabled
- IRQ 4 (COM1,COM3) : Disabled
- IRQ 5 (LPT2) : Disabled
- IRQ 7 (LPT1,LPT3) : Disabled


Chipset Setup
* ISA IRQ Manual Over Ride : Disabled
- IRQ 3 (COM2,COM4) : Disabled
- IRQ 4 (COM1,COM3) : Disabled
- IRQ 5 (LPT2) : Disabled
- IRQ 7 (LPT1,LPT3) : Disabled
- IRQ 9 : Disabled
- IRQ 10 (Network) : Disabled
- IRQ 11 : Disabled
- IRQ 12 (PS/2 Mouse) : Disabled
- IRQ 14 (HDD) : Disabled

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 End-user setting parameters.

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-PCI 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.

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`.



We recommend that you set this parameter to Auto*. If you prefer to set the PIO mode manually, make sure that you know your HDD type.*

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.



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.

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.

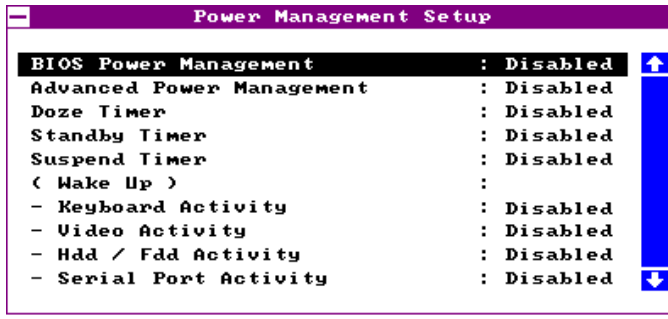
ISA IRQ Manual Over Ride Parameters (IRQ 3, 4, 5, 7, 9, 10, 11, 12, 14 and 15)

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

AMI BIOS

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.

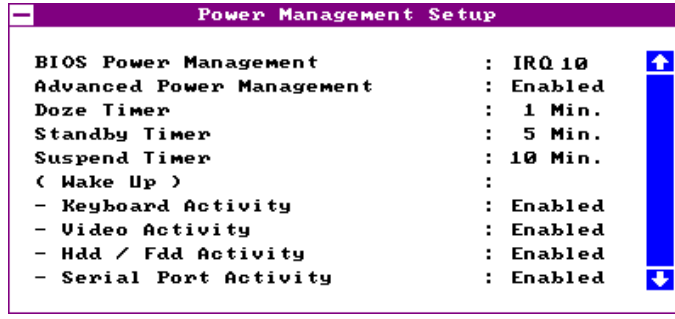


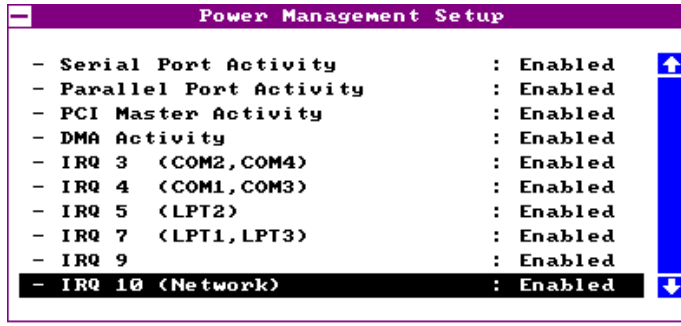
BIOS Power Management Mode

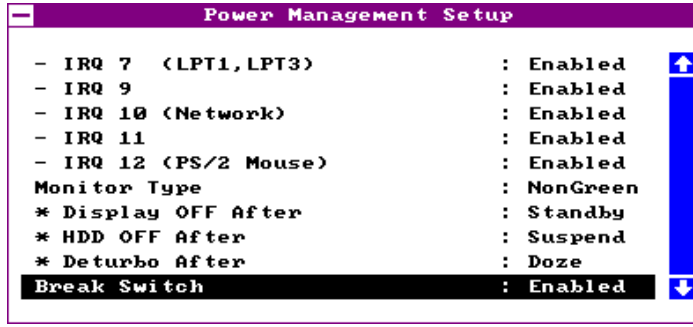
The settings for this parameter depend on the CPU type in use. If the CPU in use has SMM feature, the available settings for this parameter are Enabled and Disabled. Select `Enabled` to take advantage if the power-saving feature.

If the CPU in use is a non-SMM type, you need to assign an IRQ for the power-saving function. The selections are 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 remaining parameters.


Power Management Setup
BIOS Power Management : IRQ 10
Advanced Power Management : Enabled
Doze Timer : 1 Min.
Standby Timer : 5 Min.
Suspend Timer : 10 Min.
(Wake Up) :
- Keyboard Activity : Enabled
- Video Activity : Enabled
- Hdd / Fdd Activity : Enabled
- Serial Port Activity : Enabled


Power Management Setup
- Serial Port Activity : Enabled
- Parallel Port Activity : Enabled
- PCI Master Activity : Enabled
- DMA Activity : Enabled
- IRQ 3 (COM2,COM4) : Enabled
- IRQ 4 (COM1,COM3) : Enabled
- IRQ 5 (LPT2) : Enabled
- IRQ 7 (LPT1,LPT3) : Enabled
- IRQ 9 : Enabled
- IRQ 10 (Network) : Enabled


Power Management Setup
- IRQ 7 (LPT1,LPT3) : Enabled
- IRQ 9 : Enabled
- IRQ 10 (Network) : Enabled
- IRQ 11 : Enabled
- IRQ 12 (PS/2 Mouse) : Enabled
Monitor Type : NonGreen
* Display OFF After : Standby
* HDD OFF After : Suspend
* Deturbo After : Doze
Break Switch : Enabled



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. 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 reduces 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.

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.

Deturbo After

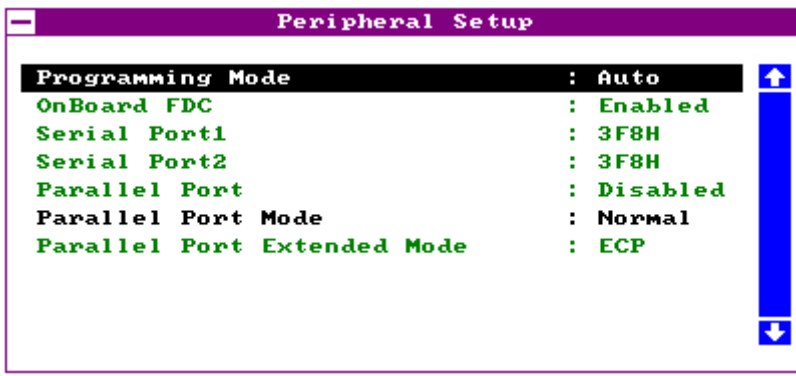
This function lets you specify the mode when to release the system from turbo mode. The settings are Doze, Suspend, Standby and Disabled.

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.



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`.

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`.

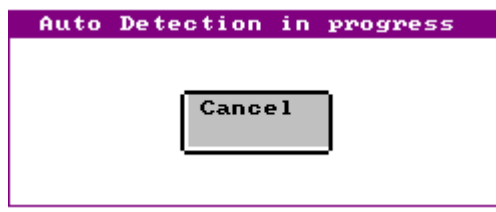
Parallel Port Extended Mode

This parameter is configurable only if the Parallel Port Mode parameter is set to `Extended`. This enables the extended mode functions of the parallel port. The selections are EPP, ECP, and ECP & EPP. The EPP setting allows the parallel port to operate in bidirectional mode at maximum speed. The ECP setting allows the parallel port to operate in bidirectional mode and at a speed higher than maximum data transfer rate. The ECP & EPP setting enables the parallel port to support both features. The default setting is `ECP`.

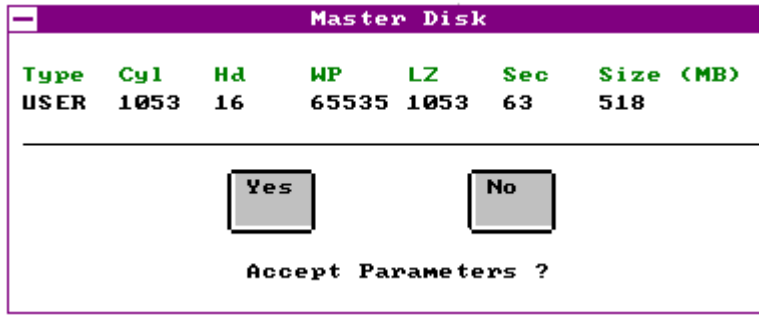
Utility Setup

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.



Color Set

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



Color Set lets you specify 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

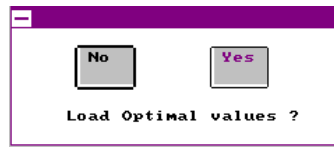
This option loads the values that you saved before shutting off the system. The following prompt appears if you select `Original` from the Default Setup menu. Choose `Yes` to load the original values.



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.

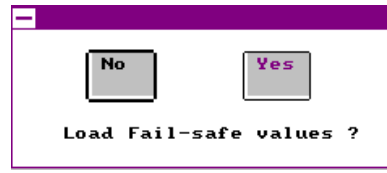
The screen below appears if you choose `Optimal` from the Default Setup menu. Select `Yes` to load the optimum values.



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 they are safe and stable enough to guarantee 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.



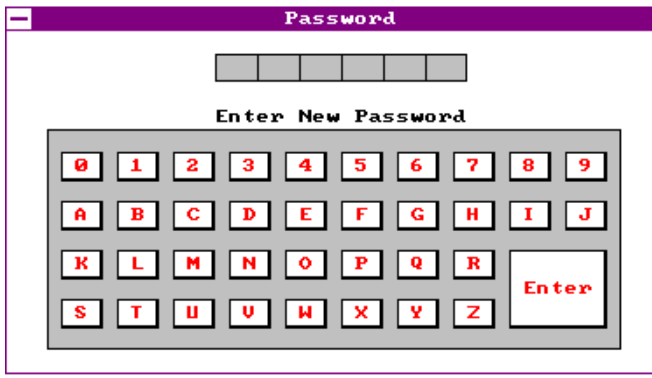
AMI BIOS

Security Setup

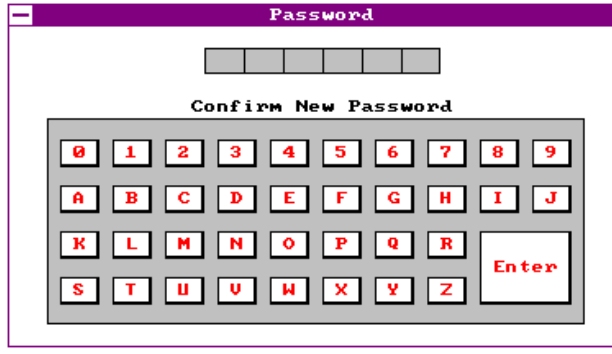
Password

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:

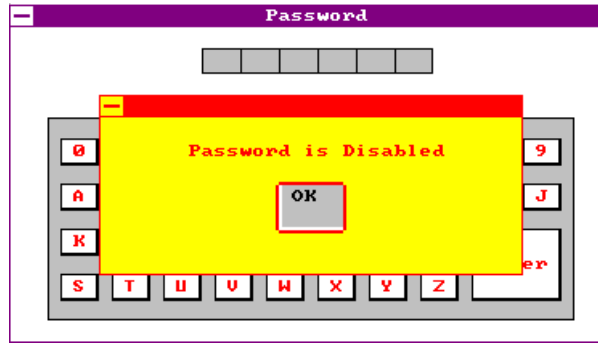


Your password can consist of up to six characters. The password does not appear on the screen. WinBIOS prompts you to retype the password. The following screen appears.



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.

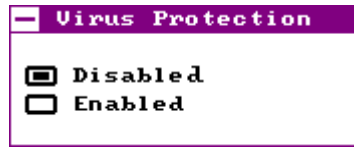


AMI BIOS

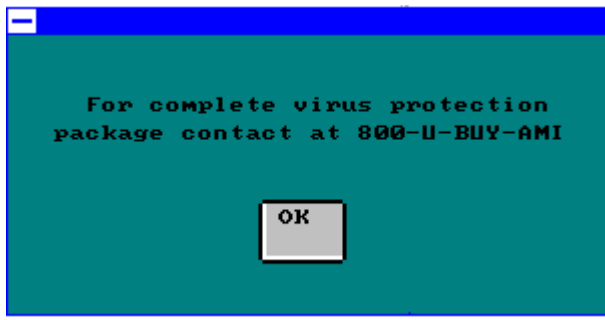
Anti-virus

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:

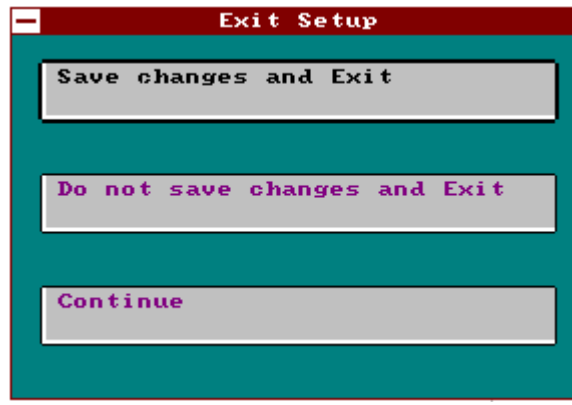


Select `Enabled` and the screen below appears:



Exit Setup

To exit Setup, you can either double-click on the Control menu box or simply press ^. 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

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.

Jumper Summary A

CPU Type

5V CPU TYPE

	Intel 486SX SL-enhanced	Intel 486DX/DX2 SL-enhanced	Intel P24D	Intel P24T
JP6	Open	Open	Open	1-2
JP7	2-3	2-3	1-2	1-2
JP8	Open	Open	1-2	Open
JP9	Open	Open	1-2	Open
JP10	1-2	1-2	1-2	1-2
JP13	Open	Open	Open	1-2
JP14	2-3	2-3	2-3	2-3
JP15	2-3	1-2, 3-4	1-2, 3-4	1-2, 3-4
JP16	Open	3-4	3-4	2-3
JP17	3-4	3-4	1-2, 3-4	3-4
JP18	Open	Open	1-2	1-2
JP19	1-2	1-2	2-3	Open
JP20	4-5	4-5	4-5	1-2
JP29	2-3	2-3	2-3	2-3

	Intel/AMD 486SX	Intel/AMD 486DX/DX2	Cyrix 486DX/ DX2
JP6	Open	Open	Open
JP7	2-3	2-3	2-3
JP8	Open	Open	Open
JP9	Open	Open	Open
JP10	Open	Open	1-2
JP13	Open	Open	2-3
JP14	Open	Open	1-2
JP15	2-3	1-2, 3-4	1-2, 3-4
JP16	Open	3-4	3-4
JP17	Open	Open	2-3
JP18	Open	Open	2-3
JP19	Open	Open	Open
JP20	Open	Open	2-3

Jumper Summary

JP29	2-3	2-3	2-3

Jumper Summary

3.45V CPU TYPE

	Intel 486DX4 (W/T)	Intel 486DX4 (W/B)	AMD 486DX2	AMD 486DX4 (V8T)	AMD 486DX4-S (SV8T)	AMD 486DX4-S (SV8B)
JP6	Open	Open	Open	Open	Open	Open
JP7	2-3	1-2	2-3	2-3	2-3	1-2
JP8	Open	1-2	Open	Open	Open	1-2
JP9	Open	1-2	2-3	Open	Open	1-2
JP10	1-2	1-2	Open	Open	1-2	1-2
JP12	Open	Open	Open	Open	Open	Open
JP13	Open	Open	Open	Open	Open	Open
JP14	2-3	2-3	Open	Open	2-3	2-3
JP15	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4
JP16	3-4	3-4	3-4	3-4	3-4	3-4
JP17	3-4	1-2, 3-4	Open	Open	3-4	1-2, 3-4
JP18	Open	1-2	Open	Open	Open	1-2
JP19	1-2	2-3	Open	Open	1-2	2-3
JP20	4-5	4-5	Open	Open	4-5	4-5
JP29	1-2	1-2	1-2	1-2	1-2	1-2

	TI 486DX2	Cyrix 486DX2/ 486DX4 (M7 P/O)	Cyrix 486DX4 (iDX4 P/O)/ 5X86	TI DX4	AMD Am5x86
JP6	Open	Open	Open	Open	Open
JP7	2-3	2-3	2-3	2-3	1-2
JP8	Open	Open	1-2	Open	1-2
JP9	Open	Open	1-2	Open	1-2
JP10	1-2	1-2	1-2	1-2	1-2
JP12	Open	Open	Open	2-3	1-2
JP13	2-3	2-3	Open	2-3	Open
JP14	1-2	1-2	2-3	1-2	2-3
JP15	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4	1-2, 3-4
JP16	3-4	3-4	3-4	3-4	3-4
JP17	2-3	2-3	1-2, 3-4	2-3	1-2, 3-4
JP18	2-3	2-3	1-2	2-3	1-2
JP19	Open	Open	2-3	Open	2-3
JP20	2-3	2-3	4-5	2-3	4-5
JP29	1-2	1-2	1-2	1-2	1-2

Jumper Summary

Oscillator Frequency

	25 MHz	33 MHz	40 MHz
JP25	2-3	1-2	1-2
JP26	2-3	1-2	2-3
JP27	1-2	1-2	1-2

Flash ROM Type

Type	JP24
12V Flash ROM	2-3
5V EEPROM or Flash ROM	1-2

ECP DMA Channel

DMA Channel	JP22	JP23
DMA 1	2-3	2-3
DMA 3	1-2	1-2

FDC and Super I/O Chip

Function	JP21
Enabled	1-2
Disabled	2-3

Jumper Summary

Cache Type and Size

Cache Size	JP1	JP2	JP3	JP4	JP5
32 KB x 4 = 128 KB	1-2, 3-4	1-2	2-3	1-2	1-2
32 KB x 8 = 256 KB	2-3, 4-5	2-3	2-3	1-2	2-3
64 KB x 4 = 256 KB	1-2, 3-4	1-2	1-2	1-2	2-3
64 KB x 8 = 512 KB	2-3, 4-5	2-3	2-3	2-3	2-3
128 KB x 4 = 512 KB	1-2, 3-4	1-2	2-3	2-3	2-3

CMOS

Function	JP28
Normal	1-2
Clear CMOS	2-3

Onboard Connectors

Connector	Function
JP11	Reserved
JP31	HDD LED connector
J7	Multifunction connector
J8	External battery connector
CN3	2-pin fan connector
CN4	4-pin fan connector
CN2	Power connector

SiS Drivers B

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

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`
   - `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.